



Recycling

International

May 2013, No.4



7 Interviews
with recycling
opinion leaders

Ship recycling:
**Europe steers away
from the rocks**

WorldScrap:
**Moving at the speed
of e-commerce**

ISRI Convention:
**Recyclers meet in the
Fun Capital of the World**

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Orlando is the self-proclaimed 'Fun capital of the world'. But 'fun' is not the first word that comes to mind when I recall the latter hours of our recent stay in the city. 'Surreal', yes. 'Goofy', yes. But 'fun'....?

Just plain Goofy

In April, the Recycling International team paid an enjoyable and fruitful visit to the Institute of Scrap Recycling Industries' Convention & Expo in Orlando. On the night before flying home from this mega-event, we dined with a bunch of friends at the Red Lobster restaurant and followed up with a night-cap in our hotel. Later in our room, as Helga and I were getting ready for bed, she suddenly said: 'Oh my God, what is happening to your face?' I looked in the mirror and, to my horror, saw that my face had swollen to almost twice its normal size. I was staring at the embryonic phase of the Elephant Man.

We decided to wait a while to see if it would go away, but it did not; on the contrary, my arms and chest also became puffy. 'I'm calling a doctor,' Helga insisted. 'We're not going to travel tomorrow with you in such a state.' After more than 20 years of marriage, I know when contradicting Helga is pointless, so I just nodded. She phoned the concierge to say her husband was seriously ill and needed a doctor immediately.

Twenty minutes later, there was a knock at the door and Helga showed the doctor in. He was a man in his early thirties, with dark hair in a small ponytail which was kept together by a yellow elastic hair band. He wore an expensive, dark-blue Armani suit

to the doctor's face. He put down his case and said: 'Well, let's have a look.'

He proceeded to examine my face, torso, mouth, nose and ears and made me say 'Aaah' a couple of times. He then stepped back and looked at me contemplatively. 'What do you think it is?' I asked him. He paused for a moment and then said in a grave tone: 'I think you've got syphilis.' There was a silence during which Helga and I exchanged glances of disbelief. Finally I gurgled: 'Syphilis? That's impossible. Can't it be something else?' After a brief pause, he said: 'Maybe it could be an allergic reaction to something, but I'm afraid you've got all the symptoms of syphilis.' At this point, Helga butted in: 'Suppose it is an allergic reaction - can you do something against that?' 'No problem,' replied the doctor. 'I can give him a shot of antibiotics which should help during the flight home.'

We decided to go for that option. The doctor pulled a form from his case which he presented to me. 'You first have to sign this form, which relieves me from all liabilities that might result from what I'm going to give you.' As I had no choice, I duly signed. He then took a syringe from his case, filled it with a clear fluid from a small bottle, disinfected my arm and administered the shot. 'That's it,' he said. He

put the syringe back in his case and took out a small, black wooden box. He opened it and presented me with a choice of colourful plasters. 'Do you want a Goofy, Donald Duck or Scrooge McDuck?' he asked. I chose a Goofy, which he

applied on the tiny wound made by the syringe. He put the box back in the case and asked how we wanted to pay the US\$ 325 for his 15-minute consultation. We settled up, he shook our hands and then he left. After a pause, Helga and I looked at each other - and then burst into a half-hour laughing frenzy.

Just for the record, the swelling turned out to be due to an allergic reaction. □

*'Do you want a Goofy,
Donald Duck or
Scrooge McDuck?'*

and an impeccable white shirt with a burgundy tie. His shoes and his belt were made of matching alligator skin. In his left hand, he held a brown leather case. He approached the bed on which I was lying, extended a hand and said: 'I am Dr Guillermo Trafigurata. How are you?' I shook the proffered hand and said: 'Not too well, actually. Just look at my face; I'm swollen like a corpse that has been in the water for two weeks.' This brought a wry smile

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Sections

- 3 Viewpoint
- 6 Events Calendar
- 8 News
- 114 Next issue

Markets Analysis

- 96 Ferrous scrap
- 102 Stainless steel scrap
- 104 Non-ferrous scrap
- 108 Recovered paper
- 109 Textiles

And also...

- 55 Women in recycling: Elizabeth Wilmot of Turtle Wings
- 62 bvse paper conference: A kaleidoscopic view of paper
- 66 Recovered paper: No let-up in Asia's fibre imports
- 68 Supplier: Catalyst recycler Duesmann & Hensel
- 71 Tyres: Czech tyre plant underlines Pallmann's ambitions
- 111 In the laboratory: Operation Ocean Clean-up

Seven personal perspectives from recycling opinion-leaders / 30

In the first of a two-part special to celebrate the 15th anniversary of Recycling International, we asked seven opinion-leaders across different fields of recycling to look back on the changes and challenges of the last decade and a half. In the second part, to be published in our August issue, they switch their focus to the future of recycling. Our seven interviewees are: *Francis Veys (BIR)*; *Robin Wiener (ISRI)*; *Tony Bird (Bird Group of Companies)*; *Mike Biddle (MBA Polymers)*; *Janez Potočnik (EU environment minister)*; *Michael Braungart (Cradle-to-Cradle)*; and *Prof. Christian Ekberg (Chalmers University, Sweden)*.



Fifteen years of Recycling International: a period of change and stubborn challenges

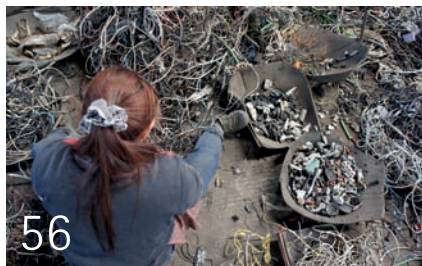
In this scene-setting article for our 15th anniversary issue, Recycling International signposts major changes that have taken place since its launch in 1998 and highlights some of the more obstinate challenges of the past decade and a half.



22

WorldScrap: moving at the speed of e-commerce

In 2004, Mike Chen of Ningbo-based WorldScrap launched the first edition of his World Recycling E-Market. Today, it is used by hundreds of thousands of scrap traders in China and elsewhere. Along the way, that scrap might very well be processed by equipment manufactured by a division of WorldScrap's parent company and then run through its yard in Ningbo.



56

Ship recycling: Europe steers away from the rocks

The ShipRec ship recycling conference was held in the Swedish city of Malmö in the eleventh hour prior to a crucial European Parliament vote on a controversial recycling levy. The impending ballot provided a focus - and even an added edge - to the conference debate.



46

Recyclers meet in the Fun Capital of the World

In early April, the international recycling industry gathered in the US city of Orlando for the annual Convention and Expo of the US Institute of Scrap Recycling Industries (ISRI). In a series of articles, we bring you comprehensive feedback from this huge event, including a round-up from the exhibition floor and from Spotlight sessions dedicated to key recycling commodities and issues.



72

4-6 June Cologne (Germany)

End Of Life Plastics

International conference and exhibition on end-of-life plastics
Applied Market Information
Phone: +44 117 924 9442
Fax: +44 117 311 1534
Email: rmm@amiplastics.com
www.amiconferences.com

11-13 September Dubrovnik (Croatia)

ICBR 2013

International congress for battery recycling – ICM
Phone: +41 62 785 1000
Fax: +41 62 785 1005
Email: info@icm.ch
www.icm.ch

13-14 June Murcia (Spain)
11th National Congress on Recovery and Recycling

FER
Phone: +34 91 391 52 70
Fax: +34 91 391 52 71
Email: congreso@recuperacion.org
www.congreso.recuperacion.org

17-19 September Gorinchem (the Netherlands)

Recycling 2013

Trade fair for the recycling industry
Evenementhal Gorinchem
Phone: +31 183 680 688
Fax: +31 183 680 600
www.evenementhal.nl

17-19 June Dusseldorf (Germany)
2nd Copper Recycling Conference

Metal Bulletin Events
phone: +44 207 779 7222
fax: +44 207 779 5367
Email: registrations@metalbulletin.com
www.metalbulletin.com/Events

25-26 September Istanbul (Turkey)
3rd Steel Scrap Conference

Metal Bulletin Events
phone: +44 207 779 7222
fax: +44 207 779 8294
Email: marketing@metalbulletin.com
www.metalbulletin.com/events/scrap

18-19 June Hyderabad (India)
EWM India 2013

International conference and expo on e-waste & used battery management – EWM
Phone: +91 981 102 1630
Fax: +91 1 4240 3200
Email: jop@ewm.org.in
www.ewm.org.in

8-10 October São Paulo (Brazil)
Exposucata

Reciclagem Moderna
Phone: +55 115 535 6695
Email: exposucata@exposucata.com
www.exposucata.com

5-7 September Karlsruhe (Germany)
Recycling Aktiv

Outdoor recycling exhibition show
Geoplan GmbH
Phone: +49 72 29 6060
Fax: +49 72 29 60639
Email: info@geoplanGmbH.de
www.recycling-aktiv.de

28-30 October Warsaw (Poland)
BIR Autumn Convention

Bureau of International Recycling
Phone: +32 2 627 5770
Fax: +32 2 627 5773
Email: bir@bir.org
www.bir.org

19-20 November Melbourne (Australia)
Australasian Waste & Recycling Expo

Trade show and conference for the waste and recycling industry
Phone: +61 3 9261 4500
E-mail: awre@divexhibitions.com.au
www.awre.com.au

3-6 December Paris (France)
Pollutec 2013

Reed Exhibitions
Phone: +33 1 4756 2113
Fax: +33 1 4756 2120
www.pollutec.com

10-12 September Birmingham (UK)
RWM Exhibition

EMAP
Phone: +44 20 7728 3724
Fax: +44 20 7728 4200
www.rwmexhibition.com

6-9 November Rimini (Italy)
Ecomondo

17th international trade fair of material & energy recovery and sustainable development – Rimini Fiera
Phone: +39 0541 744 492
Fax: +39 0541 744 475
Email: a.astolfi@riminifiera.it
www.ecomondo.com

25-26 November Düsseldorf (Germany)

EAC 2013

European aluminium congress Gesamtverband der Aluminiumindustrie
Phone: +49 211 4796 271
Fax: +49 211 4796 410
Email: information@aluinfo.de
www.aluinfo.de

2014

11-12 September Orlando (USA)
E-Scrap Conference

Resource Recycling
Phone: +1 503 233 1305
Fax: +1 503 233 1356
Email: cara@resource-recycling.com
www.e-scrapconference.com

13-15 November Singapore
Electronics Recycling Asia WRF 2013

ICM
Phone: +41 62 785 1000
Fax: +41 62 785 1005
Email: info@icm.ch
www.icm.ch

28-29 November Paris (France)
Identiplast

11th international conference on plastics waste recovery
Plastics Europe
Phone: +33 1 4653 1067
Email: info.fr@plasticseurope.org
www.plasticseurope.org

22-24 January Salzburg (Austria)
IERC 2014

13th International electronics recycling congress
ICM
Phone: +41 62 785 1000
Fax: +41 62 785 1005
Email: info@icm.ch
www.icm.ch

4-6 June Cologne (Germany)
End of Life Plastics Conference & Exhibition

The End of Life Plastics 2013 conference will provide a forum for leading corporate responsibility managers and brand owners, the plastics industry, recyclers, R&D professionals and the technology supply chain to debate the optimum environmental solutions for managing end-of-life polymer materials, as well as the market realities and economics of each option.

Scrap plastics are a commercially viable source of income, and effective management can greatly increase sustainability and diminish the carbon footprint of a product, according to the organisers. Conference speakers will review options

such as recovery and mechanical recycling, energy from incineration, plastics-to-fuel technology and chemical recycling.

Taking place at the Maritim Hotel on the banks of the Rhine in the heart of Cologne, the event will start with an evening welcome reception and exhibition on June 4, followed by a two-day programme.

For more information, contact:
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Steel lightweighting to redefine auto industry?

The steel auto body structures of the near future 'can be as lightweight as today's aluminium bodies', insists WorldAutoSteel, the automotive group of the World Steel Association. All crash performance standards have been met at a comparable cost to current steel structures, it emphasises.

The steel industry's most recent studies boost mass savings to 39% compared to a baseline steel body structure carrying an internal combustion engine and adjusted for a battery-electric powertrain and year 2020 regulatory requirements. The optimised FutureSteelVehicle (FSV) body would weigh just 176.8 kg, 'putting steel on par with today's aluminium production designs', asserts the automotive group. 'Our latest lightweighting projects show the continuing potential of steel and demonstrate how car makers can take advantage of steel's design flexibility and use advanced high-strength steels (AHSS) to meet their difficult challenges for improving fuel economy and reducing

greenhouse gas emissions,' says WorldAutoSteel's director Cees ten Broek.

The FSV programme has developed optimised AHSS body structures for four proposed 2015-2020 model-year vehicles, such as the battery electric (BEV) and plug-in hybrid electric (PHEV) A- and B-class vehicles. 'Although the programme focused on electrified powertrains, the design and material advancements are equally applicable for any type of automobile,' underlines WorldAutoSteel.

The FSV programme employs various advanced steels and steel technologies, using more than 20 new AHSS grades - all of which are expected to be 'commercially available' in the 2015-2020 technology horizon. 'These steels answer the call of automakers for stronger, formable steels needed for lighter structures that meet increasingly stringent crash requirements,' notes the automotive group. 'They are evidence of steel's continual self-reinvention to meet automotive design challenges.' www.worldautosteel.org



Waste-to-energy market set for take-off

The global waste-to-energy (WTE) market will reach US\$ 7.4 billion in 2013, according to a new study by London-based research firm Visiongain. 'Waste-to-energy provides a win-win solution to urban consumer societies by effectively processing large municipal solid waste volumes, while creating electricity and/or local heating,' asserts Visiongain. Its report points out that an

increasing number of governments are offering support to the industry or creating regulations 'to drive it forward'. However, WTE is expensive and cannot compete with low-cost landfill without incentives, Visiongain argues. It says the main challenges for the sector are unsustainable landfilling, methane emissions reduction, growing waste volumes and lack of space. www.visiongain.com



BIR urges information-sharing on theft and fraud

The BIR world recycling organisation has reiterated its call to members to use the services of the International Chamber of Commerce's anti-crime unit, the International Maritime Bureau (IMB), in order to minimise losses to container theft and fraud.

The BIR and the IMB joined forces recently to collate information on such illegal activities. 'Once a critical mass of information has been reached, the IMB can analyse the data and provide some meaningful assistance to industry in combating the problem,' states BIR. Reports of fraud and malpractice by existing trading partners are also welcomed by the IMB. 'These reports will be

sanitised and kept on record, with the Bureau acting as a clearing house for information which can be utilised by the BIR membership,' explains the world body. 'There has previously been a reluctance to share such information, but by disseminating such details others in the industry may avoid losses and the potential fraudsters themselves discouraged.' One facility available to BIR members is checking counterparties against IMB's company database, which currently comprises over 200 000 companies. 'Over the years, this has proved to be an effective loss-prevention tool for IMB members in other industries,' BIR points out.

www.icc-ccs.org

Martijn Reintjes joins 'Recycling International' team

'Recycling International' welcomes Martijn Reintjes (47), who recently joined our team as associate editor. He has over 20 years of international editorial experience in public and business-to-business news media.

Reintjes started his journalism career in the early 1990s, working for several regional newspapers in the Netherlands. For four years, he was a reporter on the Caribbean edition of a leading Dutch national newspaper, based in the Netherlands Antilles. In 1999, Reintjes joined leading business-to-business publisher Reed Business where he was (chief) editor on several leading hospitality magazines.

The switch from hospitality to the world of recycling is big and challenging, according to Reintjes. 'It is a privilege to work on the leading magazine for the global recycling industries,' he says. 'I am eager to learn everything about the recycling industries and I look forward to meeting the people who are involved.'

To contact Martijn Reintjes:
Martijn@recyclinginternational.com
 T +31 263 120 994





China's textiles sector urged to go 'green'

Textile and clothing manufacturers in China will have to promote sustainable production and green measures such as recycling from now on, according to the government.

The requirement is part of a directive reflecting the nation's 12th Five-Year Plan relating to social and economic development and calls for the textiles sector to collaborate with the government in reaching the plan's 'circular economy' goals. These cover promoting energy efficiency and water conservation, developing alternative organic fibres, and producing recycled fibres. The industry is expected to embrace eco-friendly production by including biodegradable slurry in textile finishing or by opting for digital printing, air-flow dyeing and cold pad-batch dyeing rather than traditional chemical dyeing. Chinese apparel manufacturers have also been advised to invest in green technologies as a response to the possibility that developed overseas markets will impose further 'green tariffs'. He Jiankun, low emissions expert and Tsinghua University professor, claims: 'Were carbon tariffs imposed, the



textile industry would be hit hard.' The China National Textile and Apparel Council has already issued a stern warning to non-compliant companies. 'Companies who fail to keep up with the requirement will be phased out,' predicts Yang Donghui, director of the state-owned agency. According to recent figures from the China Association of Resource Comprehensive Utilization, the country produces roughly 20 million tonnes of wasted fabrics every year. If 60% of this volume were to be recycled, 4.7 million tonnes of natural fibres and 9.4 million tonnes of chemical fibres would be saved, it has been calculated. China has the potential to yield up to 8 million tonnes of fibre from recycled materials alone. www.english.ctei.gov.cn



Mexico tackles used tyre troubles

Once home to a towering pile of some 5 million used tyres, one of Mexico's largest dump sites has undergone a clean-up such that the numbers have now been reduced to 'less than a million', according to the nation's Ministry of Environment and Natural Resources (SEMARNAT). SEMARNAT estimates that 80% of the end-of-life tyres that end up in Mexico's northern border cities originate from the USA, translating into some 600 000 used tyres per year. The government body entered into a partnership 10 years ago

with various recycling companies in problem areas like Ciudad Juárez, Tijuana and Nuevo Laredo to tackle the growing problem of tyres swamping landfills. 'We're using one million tyres per year as an alternative fuel for our cement kilns,' says Gustavo Nuñez of cement manufacturer Cementos de Chihuahua - one of the local companies to support the recycling mission. Many businesses are grinding down tyres to use in surfacing sports facilities, he adds.

www.semarnat.gob

Joke of the Month



Hotshots

Bob stood over his tee short on the 18th hole for what seemed like forever. He waggled, tapped his toes, looked down, looked up, but never started his backswing. Finally, David, his playing partner, asked: 'Why on Earth are you taking so long to make this shot?'

'My wife is up there watching me from the clubhouse, and I want to make this shot a good one,' answered Bob. His friend cast him a hesitant grin. 'Good Lord, you haven't got a chance of hitting her from here!'

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People

John Warne/Bryce Malone

US manufacturer Bulk Handling Systems (BHS) has promoted its director of sales and marketing John Warne to the position of president and has hired Bryce Malone to fill the vacancy left behind. Warne joined the manufacturing specialist in 2012 and, as president, will oversee company-wide sales and operations, including research & development and engineering. www.bulkhandlingsystems.com

Bill Waltz

North American glass recycler Strategic Materials has announced that its ceo Bill Waltz has left the company, although no reason for his departure has been given. It was in 2009 that Waltz joined Strategic Materials, which is hailed as the 'largest glass processor in North America' and which operates more than 40 plants across the region. www.strategicmaterials.com

Business

Danieli/Riverside Products

Italian steel and engineering specialist Danieli has snapped up US company Riverside Products. The acquired business will adopt the name Danieli Riverside Products, with the Italian company taking control of primary facilities at Bettendorf in the USA and satellite operations in the UK and China. According Danieli's executive vice president Emanuele Brusini, the Riverside product line and business units will be merged into the Danieli Centro Recycling division. www.danieli.com

Sadoff Iron & Metal/Aluminum Resources

Ferrous, non-ferrous, alloys and e-scrap recycler Sadoff Iron & Metal of Wisconsin has acquired fellow US recycling player Aluminum Resources for an undisclosed sum. The acquired business will take the name of the parent company and be known as Sadoff Iron & Metal Company. www.sadoff.com

Momentum Recycling

US company Momentum Recycling has started operations at its new glass recycling plant in Salt Lake City, Utah. The facility has a monthly production capacity of over 2700 tonnes of glass while providing indoor storage for some 1400 tonnes. With the help of the 'state-of-the-art' plant, which produces 'premium CleanGlass', increasing Utah's recycling rate of just 4% towards the national average of 28% 'is getting a lot easier', the company says. www.momentumrecycling.com

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European Parliament votes 'no' to shipping levy



Following passionate industry objections, the European Parliament has thrown out the proposal to impose a ship recycling levy on commercial vessels calling at ports in Europe, Bloomberg has reported.

The EU assembly in Strasbourg rejected the much-discussed recommendation to insert the tax into draft EU legislation meant to limit the risks of health and environmental damage posed by the dismantling of vessels. The proposal, suggested by the EU environment committee earlier this year, was knocked back by 299 votes to 292. Instead, the European Parliament has called for its regulators to propose an 'incentive-based system' to encourage safe ship recycling by the end of 2015.

EU governments have yet to give their opinion on the Commission proposal. Any differences between governments and the EU Parliament would have to be smoothed over in negotiations before a final agreement.

As reported previously, the European Community Shipowners' Associations (ECSA), the International Chamber of Shipping and the Asian Shipowners' Forum are among those organisations to have voiced their opposition to the proposed tax. The ECSA's secretary general Alfons Guinier described it as a 'grave offence to the EU's trading partners, not just major ship recycling nations such as China and India, but to major shipping nations such as Japan and Singapore'.

Besides, the levy as well as the suggested sanctions against non-compliant shipowners outside the EU would have been 'seriously damaging' to the Hong Kong Convention, claimed ICS secretary general Peter Hinchliffe. He also argued that the move would have 'undermined years of hard work' by governments as well as by shipowners and ship recyclers to develop a binding and workable global solution. www.ecsa.eu

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Business

Schulz's Recycling

US scrap metal recycler Schulz's Recycling has opened a new site at Wausau in Wisconsin which will serve as a retail business feeder yard for its nearby full-service operation. Schulz's owner Jeff Isroff says of the 23 000-square-foot facility: 'We are the only recycler in the city and felt that we could benefit from having a retail scrap operation in Wausau.' www.schulzsrecycling.com

Consumer Electronics Association

The Consumer Electronics Association, the Institute of Scrap Recycling Industries and InnoCentive have joined forces to launch this year's CRT Challenge - the industry competition which sets out to identify innovative and financially viable methods of recycling cathode ray tube (CRT) glass. Proposals for the CRT Challenge must be submitted by June 30 this year and will be judged according to economic and environmental benefits. The winning idea will win US\$ 10 000 as well as help in commercialising the recycling concept. www.innocentive.com

NASCAR/Liberty Tire Recycling

Two US automotive players have teamed up, with the NASCAR auto sports association selecting Liberty Tire Recycling as the official tyre recycler for the organisation's month-long, industry-wide Race to Green initiative designed to reduce the carbon footprint of the nation's sports sector. According to the race car brand, such collaborations have enabled the programme to recycle roughly 120 000 Goodyear tyres each year across its top three national series.

www.nascar.com and www.libertytire.com

Onlinewastexchange.com

A global online B2B trading platform known as Onlinewastexchange.com has been launched by a company located at Isernhagen in Germany which specialises in the exchange of non-hazardous waste and recyclable materials. The new and free trading platform does not directly buy or sell materials but presents 'a cost- and time-effective alternative to traditional brokers'.

www.onlinewastexchange.com

Sigmatex

Sigmatex, a UK company that develops and manufactures carbon fibre textiles for composite applications, has announced the launch of novel production process based on 'high-speed weaving principles', named sigmaST. Through the utilisation of a new production process, sigmaST offers 'exceptionally high-quality, near-zero crimp spread tow fabrics' without the drawback of low output rates often associated with current tape woven products.

www.sigmatex.com

Sainsbury's/Ball & Young

UK supermarket chain Sainsbury's is helping supporters of the annual Comic Relief charity event to transform the campaign's plastic red noses into carpet underlay. The polyurethane foam noses were bought on a massive scale at Sainsbury's locations across the country and are now on their way to the Northamptonshire factory of leading UK carpet underlay manufacturer Ball & Young where they will be recycled into its award-winning Cloud 9 range. www.underlay.com

Subway

The Subway restaurant chain has added to its sustainability credentials by introducing catering trays containing 95% recycled PET derived from post-consumer soda and water bottles. The trays are being introduced in almost 29 000 outlets throughout the USA and Canada, the brand says. The move will prevent around 1.8 million lb (816 million kg) of plastic materials from entering the waste stream annually, the company estimates. www.subway.com

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FRANCE
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GERMANY
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Westerwälder Eisen-Rohstoff

INDIA
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China's import demands 'not unreasonable'

'China will put more efforts toward green development, recycled development and low-carbon development,' the country's new president Xi Jinping told delegates at the Boao Forum for Asia Annual Conference 2013 last week. He added that China 'needs to balance industrial development with green, sustainable development'.

The statement was made alongside China's 'Operation Green Fence' mounted against low-quality imports. To date, this crackdown by the Chinese government has led to roughly 70% of all incoming containers being subjected to careful inspection.

According to Dr Simon Ellin, chief executive of the UK's Recycling Association, the Chinese requirement that incoming recovered fibre should contain less than

1.5% out-throws is 'not unreasonable and is attainable'. He has told letsrecycle.com that, at present, the UK supplies around 10% of China's recovered paper imports, adding: 'For the UK to continue the sustainable growth of our recycling industry, we need to ensure that we work to the highest possible standards to protect our position as a leading exporter to China.'

Over the years, the recycling industry has 'proved to be very adept at adapting to changes in the industry', states Dr Ellin. He expects all Recycling Association members to 'comfortably meet the quality requirements of all markets' but also asserts: 'If there are operators out there who are not focusing their attention on quality, they are in for a rude awakening.'

www.therecyclingassociation.com

Increased US spending on recycling equipment

The US scrap recycling industry invested more than US\$ 14 billion in equipment between 2006 and 2011, a new report from the Institute of Scrap Recycling Industries (ISRI) has revealed. The study was initiated in order to arrive at 'a credible quantification' of how much scrap processing, handling and related equipment is deployed in the country's scrap sector.

According to the Washington-based body, investment made per unit averaged US\$ 200 000. Overall expenditure on equipment increased by 20%, or US\$ 1.8 billion, between 2008 and 2011, partly due to the 'accelerated depreciation' credit that was put into law. 'The finan-

cial windfall to the industry was a direct result of the RISE Act associated with the stimulus package developed in 2008,' notes ISRI. As a result of the credit, companies invested in new and/or higher-value equipment - thus 'by-passing loan considerations in tight credit markets'. Meanwhile, ISRI says that approximately 15% of total scrap equipment revenues for US manufacturers is generally derived from export sales. It also estimates that scrap recycling players will invest some US\$ 15 billion in equipment over the next five years.

The study was conducted by international business research firm Strategic Analysis Inc. (SAI). www.isri.org

Business

Battery

US battery recycling player Battery has installed its first rechargeable battery Swap Stations at Whole Foods Market stores in the states of Washington and Oregon. The new kiosks provide local residents with a drop-off site and an opportunity to exchange their depleted single-use alkaline AA and AAA batteries for new ones from Battery. Eventually, the company wants to reduce the environmental impact of the 2.5 billion batteries thrown away annually across the entire country. www.batteryinc.com

Rumber Materials

US recycled products manufacturer Rumber Materials has picked up a 2012 Evergreen Award from the country's General Services Administration (GSA). This recognition in the sports and recreation category celebrates Rumber's support for the federal government's environmental initiatives through the manufacture of composite building materials from recycled lumber. www.rumber.com

Recycling.com

London-based online trading platform Recycling.com has begun to host live trades. 'Current live trades have a value of over US\$ 500 000 and there is also a large ferrous auction planned for the next few weeks, which will on its own be worth around US\$ 1 million,' the company states. Though its initial focus has been on Europe and Asia, it also intends to target North America. www.recycling.com

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Dumping story labelled a 'myth'

The UK government's Department for Environment, Food and Rural Affairs (Defra) has refuted claims by the 'Daily Mail' newspaper that millions of tonnes of the country's household waste is being

shipped overseas to be dumped in landfills. Labelling it a 'myth', Defra states that any material that is legally exported for recycling is 'dealt with properly' and recycled into other products.

On April 6, the 'Daily Mail' ran a front-page story with the title 'The great recycling con trick' in which it alleged the illegal landfilling of recyclables in countries such as China, India and Indonesia. According to the newspaper, this activity is the direct result of 'compulsory recycling schemes' set up in order to meet the requirements of the UK's Waste Framework Directive.

'It is absolutely illegal to export household waste from the UK for dumping,' insists Defra. Saying it has 'busted the myth', Defra adds: 'Anyone caught illegally exporting materials that are not properly sorted will be prosecuted. Only sorted materials such as metals, paper, card, glass or plastic that can be reused again can legally be exported. We are

clamping down on people illegally exporting waste and giving enforcement agencies the necessary powers to combat illegal activity. Under international law, importing countries will also refuse entry to illegal shipments of waste.'

Matthew Farrow, director of policy at the Environmental Services Association (ESA), has told letsrecycle.com: 'The article blurs the distinction between illegal waste exports where material is deliberately misdescribed and unfit for purpose, and legitimate export of recyclate which is valued by overseas reproducers and is a natural part of the global recycling economy. We all want to see illegal exports stopped, but articles like this confuse rather than enlighten the householder.' www.defra.gov.uk

Five-fold growth projected for bioplastics

'Global bioplastics production capacity is set to grow 500% by 2016,' asserts the European Bioplastics association.

In a recent report, it reveals that Europe's bio-economy sectors are already 'worth Euro 2 trillion in annual turnover and account for 22 million jobs in the EU'. Global production capacity of bioplastics amounted to some 1.2 million tonnes in 2011 and will rise to almost 6 million tonnes by 2016, it is envisaged.

However, the report also notes that bioplastics production capacity is growing 'fastest outside of Europe'. Asia accounts for 34.6% of total volumes, followed by South America on 32.8%, Europe on 18.5% and North America on 13.7%. European Bioplastics predicts that Asia and South America will be even more dominant within the bioplastics industry by 2016, accounting respectively for 46.3% and 45.1% of a total projected production capacity of 5.778

million tonnes. The shares held by Europe and North America will shrink to, respectively, 4.9% and 3.5%.

'Drop-in solutions represent the single largest sector of the global bioplastics production,' states European Bioplastics. Examples include partly bio-based, non-biodegradable commodity plastics such as polyethylene, PET or polypropylene that can be 'easily recycled along their conventional counterparts'.

www.en.european-bioplastics.org



Ever-brighter lamp recycling results in the UK



The UK's lamp recycling rate jumped from 29.4% in 2011 to 39.5% last year - thus continuing the annual improvement seen since data were first recorded for the sector in 2008, notes Recolight, the domestic e-scrap compliance scheme for the lighting industry. Calling the results for 2012 'particularly strong', Recolight asserts that the increase in the recycling rate partly

originates from a reduction in the tonnage of new lamps put on the market but without a corresponding reduction in tonnages of lamps recycled. Figures released by the UK's Environment Agency show that the domestic lamp recycling rate was 23.2% in 2008, 24.1% in 2009 and 26% in 2010. For 2012, the UK business recycling rate for all e-scrap sectors was 'just 5%' compared to the

forementioned lamp industry result of just below 40%, it is observed.

Recolight's ceo Nigel Harvey comments: 'The lighting industry has set the benchmark for business WEEE (waste electrical and electronic equipment) recycling; the 2012 figures demonstrate that we are well on the way to meeting the first set of higher targets outlined within the recast WEEE Directive.' www.recolight.co.uk

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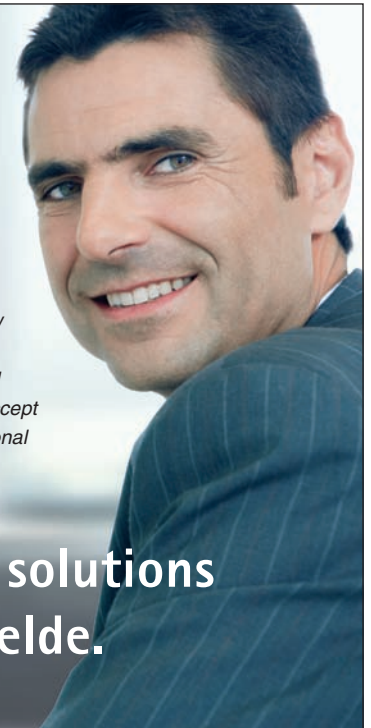
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UNEP: resources 'rethink' required

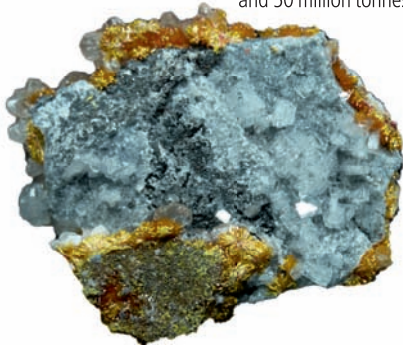
'A far more sophisticated approach is urgently needed to address the challenges of recycling complex products, which contain a broad variety of interlinked metals and materials,' insists Achim Steiner, United Nations' under-secretary-general and executive director of the United Nations Environment Programme (UNEP). Citing two new reports from UNEP, he asserts that product designers need to ensure that rare earth metals can be easily recovered at the end-of-life stage.

Both reports state that the potential for recycling is 'enormous' as countries around the globe generate between 20 and 50 million tonnes

of e-scrap per year. In Europe alone, the figure exceeds 12 million tonnes and is expected to grow at a rate of at least 4% annually. Meanwhile, 'less than one-third of some 60 metals studied have an end-of-life recycling rate above 50% and 34 elements are below 1% recycling'. Steiner comments: 'As populations in emerging economies adopt similar technologies and lifestyles to those currently used in OECD countries, global metal needs will be three to nine times larger than all the metals currently used in the world.' This consistent growth in demand calls for a 'rethink' of current recycling practices.

German federal environment minister Peter Altmaier has said: 'Our aim must be to break the raw materials spiral by using materials more consciously. In Germany, raw materials are already applied much more efficiently than 10 years ago. But we can achieve even more. By 2020, we want to double raw materials efficiency compared to 1994 levels.'

www.unep.org/resourcepanel



Desso 'C2C' carpet recycling boost for UAE

European carpet manufacturer Desso has embraced the cradle-to-cradle (C2C) concept and is producing a carpet tile range with a polyolefin-based backing. This means that up to 97% of the materials used have been assessed as either optimal or tolerable according to the C2C criteria, and can be reused or recycled.

It is now hoped this innovation will reduce the pressure on landfill sites in the United Arab Emirates; in Dubai, for example, landfills are expected to have reached their capacity in less than seven years from now. 'Contributing to that problem are the millions of square metres of worn-out carpet that is thrown away every year,' asserts Andre Dulka, Desso's regional director for the Middle East, Africa & India. The company is the first carpet manufacturer in Europe, the Middle East and Africa

to adopt the cradle-to-cradle design, he claims. Recent figures indicate that, in Dubai alone, there is 9.2 million square metres of office space with potentially another 1.6 million square metres coming on line this year. 'Clearly not all of that space is occupied, but imagine that amount of carpet being incinerated or dumped over the coming years as worn carpet is replaced, creating yet more waste management headaches,' says Dulka.

The new range, called Desso EcoBase, has already achieved C2C 'Silver Certification'. The carpet relies on Desso's new separation technique, Refinity, which enables the company to separate the yarn and other fibres from the backing, thereby producing two main material streams which can be recycled.

www.dessohome.eu

Source: AMEInfo

Growth path for asphalt recycling in the USA

'The asphalt industry remains the country's number one recycler,' the US National Asphalt Pavement Association (NAPA) has pointed out. According to its new study, a total of 66.7 million tons of reclaimed asphalt pavement was used in the construction sector in 2011. This is equivalent to 'a 7% increase from 2010 and a 19% increase from 2009'. In 2011, more than 99% of asphalt pavement reclaimed from roads was used in new pavements instead of going to landfills. In the survey, over 98% of producers reported using the material in their mixes for new construction, pavement preservation, rehabilitation and other projects; this figure is 'up slightly' from the 96% of businesses using the material in 2010, according to NAPA. The same upward trend can be observed

for recycled asphalt shingles, usage of which 'also continued to climb' to 1.2 million tons in 2011 for an 8% increase over 2010 and a 52.5% leap since 2009. 'Thanks to broad adoption of sustainable construction practices, the asphalt pavement industry saved taxpayers more than US\$ 2.2 billion during the 2011 paving season through the use of recycled materials and energy-saving, warm-mix technologies,' it is underlined by NAPA.

John Keating, NAPA's chairman and president of Oldcastle Materials, says that there is still 'room to do more'. He is certain that the asphalt pavement industry is 'ready to reach even higher levels of sustainability' in road construction. www.asphaltpavement.org

AFRA accredits two more aircraft recyclers

The US Aircraft Fleet Recycling Association (AFRA) has expanded its list of accredited recyclers by adding Minnesota-based Aircraft Demolition and Dutch player Aircraft End-of-Life Solutions (AELS). According to the association, the accreditations are based on its renewed Best Management Practices Guide dealing with recycling aircraft materials.

AFRA currently offers two accreditations: one for disassembly of aircraft and the other for materials recycling. The association comprises 71 members in 11 countries, including Boeing Commercial Aircraft, Europe Aviation and Rolls Royce. Between them, these companies are said to recycle 'up to 150 airplanes a year' - or over 30 000 tonnes of aluminium.

'We had thought that our activities were already at the standards in the BMP Guide but we found out that some of our practices and procedures could in fact be improved,' says Derk Jan van Heerden, general manager of AELS. 'The accreditation process not only covered the third-



party recycling of fan blades which we carry out for a client, it also covered all the recycling of airframes which we carry out, which is a key part of our business.' At present, the market for aircraft parts is worth around US\$ 2 billion per annum, says AFRA. It estimates that 12 000 to 15 000 aircraft will reach their end-of-life stage by 2030.

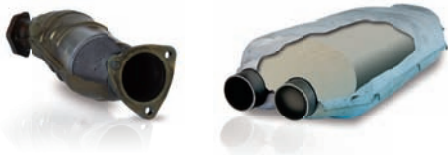
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EPA's move on PCBs to boost recycling

The US Environmental Protection Agency (EPA) has completed an interpretation of regulations concerning the management and recycling of polychlorinated biphenyls (PCBs), according to a report from Bloomberg BNA.

The interpretation applies to plastic scraps that contain PCB levels of less than 50 parts per million, the EPA has explained in a recent notice in the Federal Register. 'EPA is adopting the generic 50 ppm exclusion for the processing, distribution in commerce and use, based on the agency's determination that the use, processing and distribution in commerce of products with less than 50 ppm

PCB concentration will not generally present an unreasonable risk of injury to health or the environment,' it stated.

The new interpretation will 'generate environmental benefits and protect human health' by promoting recycling and preventing PCBs from entering the environment, the agency argues. The exclusion will not apply to plastics containing PCB concentrations greater than 50 parts per million.

Under the final interpretation of the rules, recyclers must follow a list of voluntary procedures, established by the US Institute of Scrap Recycling Industries (ISRI), which seek to prevent the intro-

duction of PCBs into recycled plastics. These involve the development and introduction of a documented materials management programme.

ISRI believes that the interpretation will reduce oil consumption by 30 million barrels per year, eliminate up to 5 million tons of carbon dioxide emissions, and save more than 50 million cubic yards of landfill space. ISRI's president Robin Wiener says the development will 'enable more recycling', adding: 'The technologies for separat-

ing and recycling the plastics are already being employed in Europe and Asia, and the agency's action will now allow similar investments to be made here in the US, instead of overseas.'

www.epa.gov



Plastics manufacturing to 'migrate back' to UK?

Recycled polymers could help stimulate a return to plastic product manufacturing in the UK, according to Keith Freegard, director of Salford-based Axion Polymers. He asserts that changing attitudes towards sustainability and rising costs for Far Eastern producers will present interesting market opportunities for British businesses. Branded producers and retailers in the UK have recognised the need to offer customers sustainable products using raw materials that have been recycled in the nation's 'well-developed plastics recycling chain', notes Freegard. Though they have 'traditionally struggled to compete against the manufacturing might of Asian producers', he forecasts that this may

change by 'tapping into the UK's proven plastics recycling infrastructure' as well as the nation's post-Olympic pride.

Freegard foresees a 'growing trend' for some of the manufacturing activity to 'migrate back' to the UK now importers are confronted with rising labour prices, higher electricity costs and excessive custom transfers. He adds that this development would result in shorter supply chains and reduced lead times, as well as simpler stock management.

Axion is playing its part by supplying its UK-sourced 100% recycled polymers derived from waste fridge and end-of-life vehicle plastics to leading domestic manufacturers for a variety of applications. www.axionpolymers.com



Alang's breakers benefit from shipping industry woes



A decline in the fortunes of the global shipping industry has boosted Indian shipbreakers in Alang despite stiff competition from Pakistan, Bangladesh and China. With freight rates dropping 98% in less than six months, Alang is expected to exceed the figure of 435 ships dismantled in 2011-12.

'Last year, over 40 million deadweight tonnage (DWT) was scrapped,' says Daniel Chopra, managing director of Doehle Danautic India. 'Nearly 55 million DWT of the global tonnage will be sold this year. This will yield approximately 15 million tons of steel.' He suspects that countries like Bangladesh will meet half their steel demand from the scrap industry. 'We expect that the demolition business will peak this year and continue to be good until 2015,' he adds.

Manish Gupta, head of industry agency Crisil Ratings, observes: 'Efficiencies of scale and strong growth opportunities will strengthen the business risk profiles of India's shipbreakers. However, the sector will remain vulnerable to key risks such as environmental concerns, economic cycles, sharp movements in scrap steel prices, and fluctuations in forex rates.'

According to Gupta, around 55 million of the 180 million gross tonnage of global shipping capacity that is over 20 years old will be scrapped in the next two years. Recent data from the Ship Recycling Industries Association reckons the Alang hub is worth some US\$ 2 billion per year in turnover terms and employs some 50 000 workers. www.doehledanautic.com

Source: The Times of India

Quote ~ Unquote

'Reality leaves a lot to the imagination.'

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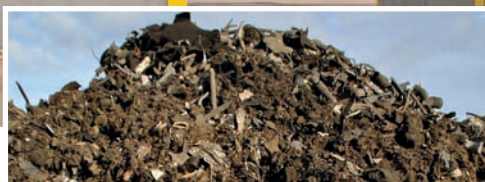
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Fifteen years of Recycling International

1998-2013: a period of change and stubborn challenges

To the many of you who have been in the recycling industry for most of your working lives, it may seem indulgent of Recycling International to focus on what has happened in the 15 short years since the magazine's launch. But sometimes the scale of change over such a relatively short period can elude us. In this scene-setting article for our 15th anniversary issue, we look back at some of the earliest editions of the magazine in 1998, signposting major changes that have taken place since then and highlighting some of the more obstinate challenges of the past decade and a half.



The year 1998 was an important one in many ways - in May, the first edition of 'Recycling International' was presented by its editor Manfred Beck (left) to then BIR president Tony Bird (R). Centre: Jean-Pierre Lehoux (†) of France.



Turkey is the world's biggest steel scrap importer. Last year, its imports totalled more than 22 million tonnes.

The year 1998 was an important one in many ways. In recycling industry terms, for example, it marked the 50th birthday of the BIR world recycling organisation. In the wider business world, the same year brought the launch of the European Central Bank with its remit to define and execute the EU's monetary policy. It also saw Mercedes-Benz buy Chrysler for US\$ 40 billion to form DaimlerChrysler - the largest industrial merger in history.

In political circles, 1998 witnessed the resignation of Indonesian dictator Suharto after a rule of 32 years, a resounding 'yes' vote in a referendum in favour of The Good Friday Agreement in Northern Ireland, and the eruption of the Monica Lewinsky scandal in the USA.

It is also worth remembering that, like today, the world was in economic turmoil 15 years ago - although, on that occasion, the pain centred on Russia and the Asian economies, with the impact spreading westwards to Europe and North America. 'Asian flu' was rampant as recession in Japan stifled growth opportunities in some of the developing Asian countries with

which it had close economic relations. Specifically with regard to the recycling industry, Indonesia, Malaysia and Thailand suffered dramatic reductions in scrap demand and steel production, and imports had all but ceased. Even in South Korea, scrap imports had improved but were still running 40% below the levels of 1997.

Engine room of growth

One of the greatest phenomena of the last decade and a half has been the meteoric growth in steel production (*see Table 1*), accompanied by a huge increase in steel scrap input. In effect, world steel output has doubled over the intervening period - from 777.33 million tonnes in 1998 to 1.548 billion tonnes last year - while the distribution of that production has changed considerably. China had already established itself in the mid-1990s as the leading global producer of crude steel ahead of Japan; by 1998, it was the only country to produce more than 100 million tonnes in that calendar year, although the total of 114.6 million tonnes



to more than 30 million tonnes - or more than double the volume of crude steel it produced in 1998 (14.1 million tonnes). As we reported in an early edition of 'Recycling International', Turkey's scrap imports totalled some 4 million tonnes in January-July 1998 - which is equivalent to less than a quarter of the 16.4 million tonnes bought in during the first half of 2012.

Clamour for scrap

So what was on the table for discussion when the leading lights of the steel scrap world met in 1998? At that year's BIR Autumn Convention, delegates to the Ferrous Division meeting were assailed with talk of 'recession' and of 'the most difficult market situation for 20 years'. Divisional president John Crabb of Australia argued that prices substantially above US\$ 100 per tonne would be required if the industry were to continue to meet the clamour for steel scrap from a burgeoning army of electric arc furnaces. In our first-ever issue of 'Recycling International' in May 1998, the fob Rotterdam prices of shredded scrap and HMS I were, respectively, US\$ 110-113 and US\$ 104-106 per tonne. And according to the US Geological Survey, the average annual composite price of HMS I for that very same year was US\$ 108.30 per tonne. Just like today, conditions for the industry and the world at large were difficult; steel scrap supply was by no means abundant and could not be taken for granted at existing price levels, with the flow of certain grades said to be perhaps 25% to 30% below the norm. And yet scrap-hungry steel capacity was set on a steadfastly upward course. Since the onset of the world financial and economic crisis in 2008, the world has become somewhat anaesthetised to low steel capacity utilisation rates. In 1998, US experts were bemoaning domestic mill operating rates below 80%; in 2012, utilisation across all 62 countries reporting their statistics to the WSA was just 78.8%.

Export restrictions

The Ferrous Division meeting also heard of the threat of export duties on scrap. On that occasion, it was the Russian government toying with such a possibility; but over the intervening 15 years, many other nations have considered a similar course of action. A recent OECD inventory identified 30 countries which impose export restrictions of some description - be it bans, taxes or licensing requirements - on iron and steel scrap. The organisation believes that 19% of the world's

Distant echoes

Here are just three sound bites extracted from the first issue of 'Recycling International' in May 1998 that still find an echo today:

'In the 1950s, BIR member companies were fighting for free trade in secondary materials, which we achieved in the 1960s. As a result of more recent adverse actions, it looks as though we have to do that fighting all over again.'

'More and more, the world becomes a global village. New markets are just around the corner nowadays.'

'Our industry can only be competitive if we produce quality material in an environmentally sound way.'



World steel output doubled from 777 million tonnes in 1998 to 1.5 billion tonnes last year.

iron and steel scrap exports in value terms are subject to a restriction of some sort, mostly either to safeguard domestic supply or to control illegal exports. At the point of writing, for example, the government of South Africa is considering guidelines for the control of scrap metal exports. Such controls are naturally of deep concern to a recycling industry which has seen monumental growth in international flows of metal scrap and other recyclables over the last decade and a half. At the BIR Autumn Convention in 1998, a leading player within the world body's Non-Ferrous Metals Division said it remained 'reasonably certain' that Asia would continue to be an important market for secondary non-ferrous metals. In the event, China has assumed a dominant position on the world markets while other developing nations - including India - have become established outlets for recyclables from the developed world. Last year, for example, Chinese imports

equated to just 16% of the volume produced by China last year (716.5 million tonnes). Indeed, Asia as a whole has built on its position as the engine room of world steel production growth: in 1998, the continent's big-hitters produced almost 298 million tonnes, but this total pales alongside the 1.013 billion tonnes churned out last year. In effect, four of the world's top six crude steel producers in volume terms are located in Asia. The only other area of the world coming close to matching such levels of growth is the Middle East, where output surged from a shade over 9 million tonnes in 1998 to 24.2 million tonnes last year, according to World Steel Association (WSA) statistics. By contrast, the EU's steel production tally declined over the same period from 191 million tonnes to a shade under 170 million tonnes while North American output fell around 8 million tonnes to just short of 122 million tonnes last year. Although Turkey was already a major factor in the international scrap market back in 1998, the speed of its usage growth has been eye-catching: last year, its steel scrap consumption amounted

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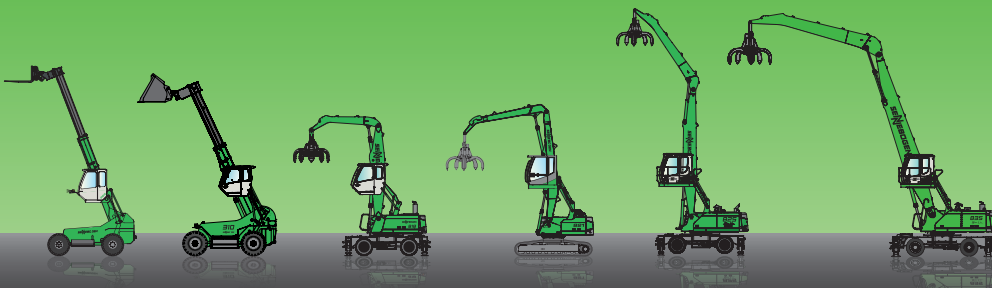
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Fifteen years ago, BIR already underlined the scale of concern surrounding radioactivity in scrap by commissioning a guide to the subject.

of copper and copper alloy scrap amounted to 1.2 million tonnes from the USA alone.

Price gymnastics

As regards comparative values, the copper market has made the most progress over the last 15 years, although the LME price of US\$ 1863 per tonne recorded in our first-ever issue represented something of a nadir even then. One commentator observed in May 1998: 'In real terms, the red metal has not plumbed such depths for 40 years.' In contrast, a number of

analysts believe the copper price average could exceed US\$ 8000 per tonne this year.

Also for comparative purposes, the aluminium price was at US\$ 1452 per tonne in mid-1998 versus around US\$ 1900 at present while zinc was threatening four-year lows at US\$ 1094 (also around US\$ 1900 at the time of writing). However, none of the main exchange-traded non-ferrous metals can match the price gymnastics performed by nickel over recent years: having fallen from US\$ 7325 per tonne to US\$ 5645 in the 12 months leading up to 'Recycling International's' inaugural issue, prices spiked well above US\$ 50 000 per tonne before a change to LME rules reversed this sharp upward trend. In recent times, prices between US\$ 15 000 and US\$ 20 000 per tonne have been the regular fare.

Plentiful flow

Closely related to nickel, the stainless steel market has also witnessed a massive shift in the last 15 years. Annual world output was around 16 million tonnes while production in China declined to 220 000 tonnes in 1998; in contrast, the same country accounted for around 40% of a world output in 2012 that amounted to more than 35 million tonnes. Asia's share of world scrap availability is expected to climb to 44% this year whereas the same continent's share of stainless steel production is likely to spiral upwards to 68%, it is believed. However, it should be recognised in this context that China's raw material of preference is nickel pig iron rather than scrap. But perhaps conditions in 1998 were even worse, with Ruurd Werner of Germany telling the BIR Stainless Steel & Special Alloys Committee in October of that year that he could not remember lower real-term prices for stainless scrap. The economic crisis in Russia had resulted in a plentiful flow of raw material at decreasing prices. And the multiple crises in South East Asia had reduced internal consumption; the Japanese stainless steel industry had embarked on production cuts that would reach 15% by the end of the year, returning output to the level of five years earlier. With steelworks elsewhere in the world facing cheap competition, they had responded by paying less for their scrap because, of all its bills, this was 'the easiest to cut'.

'Waste' complexities

Anyone who has picked up a recycling industry magazine or read a trade body press release over recent years will be familiar with 'end of waste'



A recent OECD inventory identified 30 countries which impose export restrictions of some description on iron and steel scrap.

- the concept enshrined within EU law and already in place for certain recyclables, including iron/steel, aluminium and glass. Fifteen years ago, there was no 'end of waste'; however, the waste/non-waste debate was already well entrenched. As BIR International Environment Council chairman Pat Neenan emphasised at that time, much remained to be done to 'untangle' the complexities created by the various lists and descriptions pertaining to waste and secondary materials at not only the EU but also the OECD and Basel Convention levels. Anders Jungersen, the then president of non-ferrous recycling organisation Eurometrec, welcomed signs that EU politicians and the European Commission were beginning to recognise, for example, that the existing definition of waste was an obstacle to recycling, not least through hindering cross-border movements of the industry's processed products. Indeed, it was noted, a document from the Commission signed by vice president Leon Brittan consistently referred to various grades of secondary copper as 'raw materials' or 'products' - but never 'wastes'. Winding forward 15 years to



China's raw material of preference is nickel pig iron rather than stainless steel scrap.



Table 1: Steel production comparisons (million tonnes)

	15 years ago	Today
EU-27	191	169
North America	130	122
South America	36	47
Middle East	9	24
Africa	13	16
Asia	298	1013
Oceania	10	6
Russia	44	71
Ukraine	24	33
USA	99	88
China	115	716
Japan	94	107
India	23	77
South Korea	40	69
Turkey	14	36
World total	777	1548

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In 1998, the world was consuming approaching 130 million tonnes of recovered paper on an annual basis. Last year, the total was 228 million tonnes.

2013, efforts remain ongoing at the EU level to finalise end-of-waste criteria for copper scrap, as well as for recovered paper and plastics.

This year is expected to provide an echo of 1998 in another way. Fifteen years ago, BIR underlined the scale of concern surrounding radioactivity in scrap by commissioning a guide to the subject by a leading expert, including a glossary of terms as well as national and supranational points of contact for members encountering this issue first hand. And in 2013, thanks in no small measure to the active participation of recycling industry representatives, the International Atomic Energy Agency is on course to finalise a non-binding code of conduct relating to the transboundary movement of scrap metal and semi-finished metal that may inadvertently contain radioactive material. Based on the draft, the document is expected to acknowledge the inequity of punishing recyclers who discover radioactive sources of which governments had earlier lost control.

'Desperate' conditions

Turning from metals to other recyclables, 1998 was characterised by extremely low prices for recovered paper. Towards the end of the year, the ex-works price of corrugated was below US\$ 20 per tonne while mixed papers was

attracting negative values in some quarters. 'Desperate' was the word used to describe market conditions at that time. However, this was not to be the last occasion on which recovered fibre prices would plunge: OCC was to slump below US\$ 30 per tonne shortly after the onset of the late-2008 economic crisis, only to mount a stout recovery shortly afterwards as the law of supply and demand rapidly reasserted itself. Figures revealed in 1998 showed that the world was consuming approaching 130 million tonnes of recovered paper on an annual basis, with Asia accounting for some 45 million tonnes, North America for almost 38 million tonnes and Europe just behind on 37 million tonnes; worldwide recovered fibre collection volumes were slightly in excess of 130 million tonnes per year, while global paper and board production was a shade under 300 million tonnes. As Table 2 shows, nearly all these figures have grown significantly over the intervening years - with Asia becoming an ever more dominant factor in the world marketplace.

'Extraordinarily long' procedures

In 1998, BIR Textiles Division president Klaus Löwer of Germany married two of the concerns mentioned above when he suggested that export trade was being seriously inhibited by EU legislation under which harmless secondary textiles were treated as though they were 'nuclear waste'. The talk within the sector was of 'extraordinarily long' licensing procedures entailing high costs, and of driving the distinction between secondary textiles and waste. Difficult trading conditions were compounding the pressures on the trade as low prices and poor demand put the squeeze on sorters' margins.

Since 1998, meanwhile, the numbers for plastics scrap have continued to climb: in Europe alone, for example, around 25 million tonnes is generated annually, of which approaching 30% goes for materials recycling and around a third is sent for energy recovery. For tyres too, recycling momentum has been maintained: at the BIR Autumn Convention in 1998, it was noted that the USA recovered some 75% of its old tyres for

some purpose, the remainder being landfilled although efforts were being made to reduce that proportion; nowadays, the USA, along



The USA, along with Europe and Japan, are consistently recording recovery rates well in excess of 90% for used tyres.

with Europe and Japan, are consistently recording recovery rates well in excess of 90% for used tyres which are subsequently diverted down increasingly established material or energy recovery routes.

Exponential growth

In 1998, the launch issue of 'Recycling International' carried an article from Tony Bird OBE, then president of BIR, in which he noted that the recycling industry worldwide employed more than 1.5 million people and turned over some US\$ 160 billion annually. Since then, these figures have grown exponentially: a recent survey calculated that, in the USA alone, the recycling industry employs half a million people and is worth more than US\$ 90 billion to the domestic economy on an annual basis. And from this statistical platform, one industry luminary has estimated that the global recycling industry must now be worth perhaps half a trillion dollars per year while providing livelihoods for as many as 20 million people. With governments and supranational bodies around the world becoming increasingly responsive to arguments about the scarcity of resources, one wonders what these figures will look like in 15 years from now. □



Table 2: Key global comparisons for paper (million tonnes)

	15 years ago	Today
Total consumption of recovered paper	129	227
- Asia	45	125
- North America	38	30
- Europe	37	53
Total collection of recovered paper	130	228
Total production of paper and board	299	400



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commend your achievements
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Francis Veys: 'BIR should be a reference centre'

Having joined the Bureau of International Recycling (BIR) in 1975, Francis Veys was appointed its secretary-general six years later and subsequently its director general. In this position, he has steered the world organisation through a period of massive growth and has represented the interests of the global recycling industry in its discussions with national, international and supranational bodies.



What has been the single most important recycling development of the last 15 years?

'Recycling depends on the economy and so the most important development of the last 15 years has been the emergence of China and other Asian countries. We have seen the opening-up of the Chinese economy through far more privatisation and the lifting of price controls - something which has certainly changed the recycling map at world level. This has led to a major need for scrap and other raw materials, and automatically to more exports to China and other Asian nations to support their massive industry and infrastructure growth.'

And what has been the most negative development?

'I would begin by mentioning the 2008 financial crisis which has negatively impacted the whole world and has put the recycling industry in difficulty for the moment.

However, there have been two major negative developments for our industry in particular over the last 15 years, the first of which is hyper-regulation of the scrap and recycling sector whether materials are hazardous or not. Licensing and transportation controls have made life much more complicated for the trade worldwide; at the same time, national waste management plans have had a damaging effect on traditional recycling structures. We at BIR are in favour of regulation so long as it's not hyper-regulation; sometimes, regulation kills the goose sitting on the golden egg.

Secondly, with the increased need for raw materials and with Asia getting most of them, we have seen the rise of protectionism and trade barriers. What is happening is very bad; for example, Europe has a surplus of around 7-8 million tonnes of recovered paper and yet people complain about exports out of Europe to countries that want to use this material.'

What has been the most fundamental change to the structure of recycling in the last 15 years?

'Family businesses can't always meet this hyper-regulation and so many of them have been sold, leading to more "internationalisation" of the recycling sector. At the same time, large waste management groups have got a bigger share of the market; these receive support from the

authorities and will collect any materials whether they have a worth or not, and this has changed the fundamentals of the market. Many companies, including even some scrap businesses, are increasingly run by finance directors who don't always know how the scrap industry works.'

What lessons have been learned during this period?

'Perhaps the biggest lesson learned by the recycling industry is that we need to professionalise the sector even more, to produce an ever better quality of material, and to have experts within our businesses who understand international and supranational regulations. In addition, recycling companies have learned that they must always look for new markets - not only for niche markets in terms of commodities but also for new markets geographically. The industry needs to be ready to look to the long term and on a wider scale; it needs to reinvest its profits in new equipment and research - particularly in research. The traditional recycler will find himself in trouble if he looks to do only what he has always done.'

What has inspired you most over the last 15 years?

'In some ways, the time-bomb of climate change should be very inspiring for our industry. With improvements in satellite technology, we can see exactly what's happening to our planet - for example, that the poles are melting at a frightening pace. People speak about climate change in general and we in the recycling industry need to emphasise how we help the planet by supplying statistics showing our environmental contribution. We have been making this contribution for many decades but, until recently, it has not been talked about in terms of climate change. This is very inspiring to me and I think it is something we should build on.'

Despite the recycling industry's massive environmental contribution, you have said recently that the profession remains largely unknown. How has the general public's attitude to recycling and to the industry changed in the last decade and a half?

'In developed nations and even in emerging countries, people at large understand that they

can make an environmental contribution through recycling, such as through pre-sorting their domestic recyclables. This is now happening around the world to a far greater extent than it was 15 years ago. Nevertheless, it is a pity that most people still do not see the big picture; they do not understand what is the recycling industry or what happens to the recyclables once they have been sorted. There are a number of regions in the world where the potential contribution of recycling is not understood very well at all such as parts of Latin America, Africa and even Eastern Europe. Overcoming this lack of understanding is one of the challenges for BIR.'

What about the attitudes of today's younger generation in particular?

'When I was at school, nobody spoke about recycling or about the environment. But my children were educated on environmental mat-

'Regulation kills the goose sitting on the golden egg.'

ters even when they were 12 years old. These days, there is an environmental message even on television programmes aimed at very small children.'

And to what extent have views on recycling changed among legislators?

'I'm afraid to say that attitudes haven't changed that much. There is still very little understanding of what the recycling industry is or does. Their focus goes from collection to reuse - but they forget all about the people in between, the recycling industry, even though we are the main link in the chain. Legislators see the need to encourage people to collect and for the material to go to the mill, and yet recyclers themselves are not really seen as an industry. Instead, we are seen as some sort of service sector. We need to be seen as an industry and to be respected for what we do. We have a lot to do because there is still plenty of ignorance out there.'

Specifically, what do you wish most for BIR?

'Over the last 15 years, BIR has continued to progress, attracting more members and representation in more countries. We have also continued to see the emergence of regional associations in, for example, the Middle East as well as China and India. These have become more international and so BIR needs to be of utmost relevance to all of these organisations and to remain representative of the entire world recycling industry. So, for example, we will need to improve the networking with these national and regional associations, and to develop stronger links in parts of the world where this is necessary. There is a big opportunity for BIR to grow in Latin America, for example, and that is why we are staging our 2014 Spring Convention at a convenient venue like Miami.

At the same time, we need to help European organisations like EFR, Eurometrec and ERPA to become much stronger and to co-ordinate actions with large national associations such as the Institute of Scrap Recycling Industries in the USA.

BIR also needs to have an educational role and to spread best practice in the recycling industry, such as how to handle or even avoid problems relating to radioactivity in scrap. We also need to continue helping people with business and legal advice as well as arbitration services.

Our BIR Conventions have become more professional but they take a lot of time to organise, and a lot of the meetings programme work is done on a voluntary basis by BIR elected officers. In future, I believe we will have to decide on our Convention topics at least six months or possibly one year in advance of the event and source top-quality speakers. There are a lot of recycling-related meetings being held these days and so we need to offer more than just a place for people to meet and network.

And then there is our communications programme, which I believe represents the future of our organisation. BIR must present some clear and simple messages, such as the need for free and fair trade in an environmentally sound manner and the fact that business cannot be done if a border is closed.

Overall, BIR should be a reference centre for the industry, the authorities, national/regional associations and the media.' □

Robin Wiener: barriers to free trade can damage growth

Having joined the US Institute of Scrap Recycling Industries (ISRI) in 1989, Robin Wiener has spent the last 16 years as president of the Washington DC-based organisation. In this role, she has advocated for the interests of ISRI's 1700-plus members and the recycling sector as a whole across a wide range of issues, including the role of the recycling industry in the US and global economy, scrap is not waste, appropriate environmental regulation, and the importance of free and fair trade, as well as advising on relevant US trade policy.



What has been the single most important development of the last 15 years?

'More than any other factor, the expansion of the developing economies of the world in the form of record infrastructure development and increased consumption levels has transformed the scrap recycling industry. During this time, the US-based recycling industry has grown in size from approximately US\$ 15-20 billion to more than US\$ 90 billion per year. In addition, scrap became essential to meeting the growing global demand for raw materials resulting from the industrialisation and infrastructure growth in the Middle East and throughout Asia, as well as the emergence of the middle class in these regions of the world.

An additional 150 million people will reportedly join the Chinese middle class in the next six to seven years. And while at first the growth in China was primarily export-oriented, its continued growth - as well as the growth in many other developing nations such as India - is now being fuelled by their domestic growth demands. In 2010, for example, General Motors sold more cars in China than in the USA.'

What has been the most negative development?

'No-one can underestimate the devastating impact that the global recession of 2008 had on the recycling industry. Between the severe drop in commodity prices and the wave of cancelled contracts, the industry suffered tremendous losses from which it is still recovering. A side-effect of the global recession was the re-emergence of protectionist efforts as a means of controlling the supply and price of scrap commodities for domestic consumers. Although in the USA none of the protectionist efforts relating to scrap commodities have been successful, it is a continuing threat and we, as an industry, must remain vigilant in protecting the free and fair trade of all

scrap commodities. We need to remind all governments that artificial barriers to the free trade of commodities can, unintentionally and counter-intuitively, have a detrimental effect on economic growth and that efforts to control scrap prices through export controls or excessive export duties can actually result in increases in prices as a result of the economic phenomenon known as control reversal as raw material supplies are removed from the global marketplace.'

What has been the most fundamental change to recycling structures over this 15-year period?

'While scrap recycling has long been a global industry, the extent of global trade has increased dramatically over the last 15 years - both in terms of the volume of scrap traded and the number of players engaged in international trade. The result has been that scrap is far less dependent on local supplies and markets than ever before, but is much more vulnerable to world economic conditions. In 2000, the USA exported less than US\$ 5 billion worth of scrap; in 2012, nearly US\$ 30 billion of scrap metal, plastics, rubber and paper was exported to 160 different countries. It is now typical that 30-40% of all the scrap processed within the USA will be sold into export markets.

Also affecting the market dynamic over the last 15 years is the extent to which ferrous scrap is shipped in export containers, growing from less than 10% to now almost 30% of exports. The use of containers has opened up export opportunities to many land-locked suppliers. Small exporters are able to more easily enter the market by packing containers in their yards and sending them direct, or via brokers, to overseas consumers, resulting in reduced scrap flows for dealers located at the docks. Suppliers to traditional scrap exporters have become competitors, forcing the traditional exporters to reach further inland to source scrap, in many cases purchasing feeder yards to secure their supplies, and thus driving industry consolidation.'

For you, what has been the most inspiring speech of the last decade and a half?

'One recent speech that inspired me to act was delivered by Dr Robert D. Ballard - the oceanographer and explorer who discovered the shipwreck of the "Titanic". To his surprise, he found his discovery inspired huge curiosity excitement about science among school-age children. He

decided to build on that interest by creating a non-profit organisation that connects students with scientists, engineers and researchers to provide mentored, learning experiences. The result of his efforts was The Jason Project which now, more than 20 years later, has become an organisation dedicated to creating interactive and engaging student curriculum and teaching resources. I was hooked by Dr Ballard's message. And it just happens that, at the time I heard Dr Ballard speak, ISRI was looking to create a secondary school curriculum around recycling. I was able then to connect ISRI and The Jason Project.'

How has the general public's attitude to recycling changed in the last 15 years?

'There has certainly been an increased awareness of recycling. Unfortunately, recycling is largely still seen through the lens of kerbside recycling. Glass, newspapers and cardboard recycling are seen as "good recycling" whereas our industry is perceived to be part of the problem of materials theft, despite all the efforts of the industry over the last several years to be part of the solution to this problem. This is slowly changing through the good works of many of our member companies, who are developing relationships with law enforcement, businesses and other stakeholders within their local communities. ISRI is also working on the national level to change opinions and spread the word about the positive contributions of the recycling industry from the protection of the environment and to the impact on the economy. Educating the public about our segment and working to improve the image of the industry must continue to be a priority for all of us. But we must recognise that it takes a long-term effort to affect the public's thinking.'

ISRI has been a big supporter of Design for Recycling®. To what extent would you say this concept is now embedded in the American psyche?

'ISRI continues to integrate the concept of Design for Recycling® (DfR) into all of our activities and all of our messaging but, unfortunately, our efforts have been met with mixed success. Appliance manufacturers were among those who quickly responded to ISRI's call when we first raised the issue with them more than 15 years ago; they reduced the number of different plastics used, eliminated toxics such as cadmium as a pigment for their paints and quickly supplanted

mercury switches in all applications except a very few where safety would have been compromised. Unfortunately, there are still many manufacturers that have failed to integrate DfR in their design processes. A good example is mercury convenience light switches in automobiles; auto manufacturers were made aware in 1992 that mercury was a toxic material. While a suitable substitute switch was widely available at that

'Scrap is far less dependent on local supplies and markets than ever before.'

time, and comparable in performance, auto manufacturers chose to ignore our entreaties, resulting a decade later in a very significant clash between our two industries.

Despite its slow adoption by manufacturers, ISRI is proud that many other groups have begun to recognise that DfR is the solution.'

Does legislation elsewhere in the world drive change within the USA?

'We see much less influence today than in the past of US law-makers looking to the EU or other regions of the world for policy direction. I would imagine that this is due in large part to the fact that so many companies operating in the USA are global players and thus, for the sake of manufacturing and logistics efficiencies, are accommodating EU legislation by modifying their operations and practices globally, thereby making it unnecessary for the USA to implement similar requirements.'

Do the USA and other highly-developed countries have a responsibility to spread recycling best practice to the wider world?

'I believe strongly that we do have a role to play in promoting safe and environmentally responsible recycling in developing countries and economies in transition. ISRI has participated in a number of forums over the years for the exchange of best management practices and technology in an effort to provide real opportunities for improving the health and safety conditions in developing countries.' □

Janez Potočnik: 'Recycling is essential to close the loop'

Since November 2009, Janez Potočnik has been serving as European commissioner for environment. During his working life, he has also been director at the Institute of Macroeconomic Analysis and Development in the Slovenian capital of Ljubljana, as well as minister councillor within the Slovenian Cabinet and the country's minister for European affairs.



What recycling headlines would you draw from the last 15 years?

'Recycling rates for municipal waste have increased encouragingly during this period. Overall 35% of municipal waste was recycled in Europe in 2010, which is a significant improvement on 23% in 2001. This is good news, of course, because it means that instead of being buried, an increasing amount of valuable resources embedded in our waste is made available for secondary markets. But a lot still needs to be done. A number of countries will have to take urgent action to reach the binding targets that the EU has agreed, especially the goal of recycling 50% of household waste by 2020. Europe is still wasting vast quantities of valuable resources by sending them to landfill.'

What has been the single most important recycling event of the last decade and a half?

'I wouldn't single out one event or development but rather the slow but steady progress made over the years. Recycling has advanced in the EU because many member states realise that it makes good economic sense as well as being important for the environment. They have realised that public action is needed to help create value from waste, and that is why they have agreed a number of binding obligations and targets. This has created better economic conditions for recycling, more participation in separate collection schemes, and more involvement and commitment from waste management industries, producers and public authorities, especially at regional and local level.'

And what has been the most negative development?

'There is still a big divide within the EU between the successful member states and those who are lagging behind. Recycling is generally

increasing, but at very different speeds. Six member states - Belgium, Denmark, Germany, Austria, Sweden and the Netherlands - now landfill less than 3% of their municipal waste. At the other extreme, nine member states are still landfilling more than 75% of their municipal waste. This is a very worrying situation which is bad for the economy and the environment. There is also a concern that incineration overcapacity is emerging in some member states, leading to lost opportunities for the recovery of recyclable materials.'

In a sustainable society, what role should recycling play?

'Recycling is essential to close the loop in our economy and move to a more circular model where materials become available for second use on the market. From a life-cycle perspective, changing municipal waste treatment between 2001 and 2010 has successfully cut greenhouse gas emissions by 56%, or 38 million tonnes of CO₂-equivalent in the EU, Norway and Switzerland taken together. But as I've said, Europe is still wasting vast quantities of valuable resources by sending them to landfill. We need to create the economic conditions that make recycling economically attractive and help the development of an efficient and high-standard recycling industry.'

To what extent have attitudes towards recycling changed among legislators over the years?

'As I see it, they have evolved positively, and some member states are going well beyond what the EU proposes. Around 40% of the waste produced in the EU is covered by a target. Member states have to include these minimum targets in their national legislation, but some national legislation includes more ambitious objectives, which is good news for the environment and human health.'

What is the EU's stance on material leaving Europe?

'Preventing the leakage of raw materials embedded in our waste is definitely something we need to look at. A more efficient recycling industry would help. From the point of view of waste shipments, if illegal shipments are to be effectively prevented, we need adequate controls in all member states. At the moment, some member states have thorough, well-functioning inspection systems targeting either illegal waste shipments in ports or at the sites of waste producers and col-

lectors, but others simply don't. This leads to "port hopping". The Commission is now looking to propose new legislation in order to strengthen inspection provisions by requiring member states to establish inspection plans and provide relevant training in, among other things, the EU Waste Shipment Regulation. We already have some success stories to draw experience from, including electronic waste and end-of-life vehicles.'

In 2005, with the adoption of the Thematic Strategy on Waste Prevention and Recycling, the EU set itself the goal of becoming a Recycling Society. What progress has been made?

'Since 2005, recycling rates have progressively risen for nearly all member states and for all waste streams. Municipal recycling rates, for instance, grew from 19% in 1998 to 40% in 2011. At the same time, landfilling has decreased by around 20%. It is encouraging but we can certainly do better, especially in member states where recycling rates are low and the potential gains are high. These member states often lack key measures to promote recycling like economic instruments that incentivise recycling, information campaigns, sufficient separate collection schemes, and adequate infrastructure. The Commission recently organised a tour of the 10 member states which need to make the most progress in order to discuss their difficulties and propose recommendations to move them in the right direction. These recommendations were recently published for each of these member states, and we intend to follow their implementation quite carefully.'

And in 2008, with the adoption of the revised EU Waste Framework Directive, a five-step waste hierarchy became legally binding for all EU member states. Can you update us on implementation?

'All member states have to transpose the Waste Framework Directive into national legislation; this is an obligation, not a choice, and all governments signed up to it in the Council. The Commission is currently checking the quality of the transposition and will launch infringement procedures where necessary. The Commission will also check the adequacy of National Waste Management Strategies, notably to see if they apply the waste hierarchy. In practice, significant efforts are still needed in several member states that are landfilling a

significant amount of waste. Other member states are burning too much recyclable waste, and nearly all member states should step up their efforts to prevent waste from happening in the first place. The new national prevention programmes should be finalised by the end of 2013 and I hope that this will give a new impulse to waste prevention.'

'European recycling industries have a comparative advantage.'

In your opinion, what is the influence of EU legislation on the recycling industry in Europe and worldwide?

'At the European level, waste legislation has been a major driver for the development of the recycling sector. Several new types of industry have emerged - from basic sorting facilities to more sophisticated separation methods for precious metals, for instance. Today, the recycling sector represents more than 50 000 facilities and 1.5 million jobs, most of which are hard to de-localise. European recycling industries have a comparative advantage and I hope that this will be reinforced in the coming years as the industry evolves in response to the coming resource crisis.'

To what extent do you believe highly-developed countries have a responsibility to bring recycling best practice to the rest of the world?

'Resource scarcity is a global problem, not just a problem for developed countries. Resource constraints on water, energy and raw materials will put a brake on the development of many economies, and if we don't act on them they could be a threat to stability and peace. Europe should take a lead and help developing countries avoid the mistakes we have made in the past, and not get locked into patterns of consumption and production that rely on the unsustainable use of natural resources. And we already do in fact: we have been very vocal in the international arena, pushing for a global switch towards a green economy in all the multilateral processes we have been involved in. □

Dr Mike Biddle: 'Technology developments are most important'

Having started MBA Polymers from his garage in California more than two decades ago to prove that plastics from complex waste streams could be recycled into high-quality raw material, Dr Mike Biddle's company is today a world leader in the production of post-consumer recycled plastics from end-of-life durable goods, with plants in the USA, China, the UK and Austria offering a combined annual processing capacity of up to 175 000 tonnes.

What has been the single most important recycling development of the last 15 years?

'There are several, I think. The first is rising commodity prices due to increasing global demand for "stuff" and the "stuff to make our stuff", which is the result of the rise in population but also, even more importantly, the rapid rise in affluence of developing countries. There is a growing recognition that we will eventually run out of "stuff to make our stuff" if we don't adopt a circular economy approach. Then there are the technology developments, particularly in automated sorting. And finally, there is the recognition that we are risking our future - at least for the next generations - by using too many fossil fuels and by improper management of our waste, for example ocean and air pollution. Perhaps the technology developments are the most important as they enable a big increase in recycling rates and quality.'

And what has been the most negative development over this same period?

'The fact that many people believe that "blind export" is the answer to "waste" and that it actually means recycling. I call this "environmental arbitrage" and it's not safe, and it's not fair where people don't have the knowledge or resources to treat it properly - so it ends up putting humans and local eco-systems at risk. Look at what happens to the various by-products from these operations: the organics are sometimes burned in open pits, polluting the air. And sometimes the plastics that can't be recycled using the simple technologies available - such as hand-sorting, "burn and sniff" and sink-float - often find their way into rivers and ultimately into oceans, and end up threatening sea life. In fact, some scientists in a recent article in "Nature" magazine called for some plastics to be labelled "hazardous" with the belief



that this would help reduce ocean pollution. I certainly don't think this is the answer, but it highlights how strongly some people feel about these issues. And now witness the recent rise of the "Green Fence" in China to try to stop other nations from dumping their trash there - mixed in with some recyclables. And then that waste often finds its way to other less regulated parts of the world.'

What has been the most fundamental change to the structure of the recycling markets since 1998?

'The significant rise in prices for most commodities due to the increase in demand as the developing world, notably China, demands more of the tools and toys the "developed world" takes for granted. Recycled materials are in much higher demand now, and therefore competition and growth in recycling have accelerated. The BRIC countries, especially China, have been growing so rapidly that they have created a dramatic increase in demand for resources. China has concurrently developed a strong domestic recycling infrastructure - both formal and informal - to meet this demand. And this infrastructure has created a worldwide network of brokers constantly looking for scrap and waste streams to sell to Chinese processors. This has increased the demand - and prices - for the materials produced by recyclers in domestic countries, which grew their businesses by exporting their products to China.'

What have been the biggest lessons of the last 15 years?

'Once the "pump is primed" as with e-scrap and car recycling legislation, normal market forces such as competition and economies of scale evolve and make recycling more economical. For example, companies now compete for most e-scrap streams whereas they used to be paid to take the materials. The cradle-to-cradle concept espoused by Bill McDonough and Michael Braungart - ie, design with intention and end-of-life in mind - also facilitates recycling. The reliance on the export model for recycled materials carries a number of risks. It shuts down recycling and supporting jobs in the domestic recycling sectors for the exporting countries. It reduces the availability of lower-cost and more efficient materials for domestic manufacturers. China - and other countries - can change their import regulations rather

frequently and very quickly, such as the recent "Green Fence". The local eco-systems and workers are often at risk due to lack of knowledge and resources for processing materials properly. The by-products are sometimes handled in ways that not only damage the local eco-system but also find their way to the global eco-system, so we ultimately pay the price and are not completely "exporting our problems". Likewise, products made in developing countries and sold in developed countries can contain substances of concern which are not allowed for use in domestic manufacturing because the same controls are not necessarily in place in those countries.'

'The reliance on the export model for recycled materials carries a number of risks.'

From your point of view, what has been the best or most inspiring speech or event of the last 15 years?

'You mean besides my TED talk (http://www.ted.com/talks/mike_biddle.html)? There are too many to list but here are three. The girl who silenced the world for five minutes: Severn Suzuki addressing the UN (<http://www.youtube.com/watch?v=TQmz6Rbpnu0>). I guess I have to say not so much inspiring but perhaps more enlightening for those not aware is Al Gore's: "An Inconvenient Truth". And the latest one: the movie "Trashed" (<http://www.trashedfilm.com/>) is definitely up there. This should shake things up a bit.

How have attitudes to recycling changed in the last decade and a half?

'I think most people in the world now get that recycling is not only about saving the environment from a pollution standpoint but also about harvesting resources in a more economical and environmentally sound manner. The USA is slowly changing and catching up to Europe - and the rest of the world - but landfill is very cheap and exporting is "out of sight, out of mind", so it's very easy. As Winston Church-

ill famously said: "We can always count on the Americans to do the right thing, after they have exhausted all the other possibilities."

I am hoping that we have exhausted all other possibilities. Younger generations are not happy that their precious devices might be made in ways that harm people and the environment, and they are beginning to understand that "unmaking stuff" is much riskier to people and the environment than making it. In plastics recycling, there has been a dramatic change in the way people perceive the plastics in their life; many see it as a "love-hate" relationship. Plastics provide an incredible number of benefits to us such as energy and carbon dioxide savings in most of the applications in which they are used compared to the alternative materials: food preservation and safety; product safety (think helmets and sports protective clothing); and lightweighting in cars, trucks and planes to make them more fuel-efficient. But largely due to how we manage - or don't manage - our waste, what used to be a new, space-age and "cool" material has become a concern to many people over the last 15 years or more. More recently, there is a growing concern about plastics in our oceans and this seems to have become a focus area for many people and organisations to rally around.'

Do you anticipate more consolidation in the recycling sector?

'Absolutely. And consolidation and larger scale will deliver the three main things that have held plastics recycling back and which held back steel recycling decades ago: higher-quality recycled plastics as larger companies can afford more sophisticated investments; more consistency of quality and performance of recycled plastics by simple statistics and the utilisation of better technology; and reliability of supply of recycled plastics - something that has held back many large customers from using more recycled plastics in their products.'

Specifically, what do you wish most for MBA Polymers and for yourself?

'That MBA continues to grow capacity across the world (especially back in the USA), closing the loop with electronics, automotive and packaging plastics, at a minimum. And that all of our investors, including yours truly, get a good return on the considerable financial, life and time investments they have made in MBA.' □

Prof. Dr Michael Braungart: 'We need to reinvent all our products'



Together with William McDonough, German chemist Prof. Dr Michael Braungart has been hailed as the 'spiritual father' of the cradle-to-cradle concept and is the best-selling author of 'Cradle to Cradle: Remaking the Way We Make Things'. His contentions include that footprint minimisation originates from a negative mindset and that 'we can do much better than that'.

In brief, could you describe the cradle-to-cradle concept?

'Cradle to cradle is a concept that is based on my view of humanity versus planet. Rather than minimising our impact, it underlines that, after years of blaming and shaming, we need to avoid guilt management and to pursue innovation and quality. Basically, we need to reinvent all our products to ensure they are good instead of less bad. I know that people generally think that they are protecting the environment just by destroying less - but that's not how it works.'

What is the vision behind cradle to cradle?

'To take a quote from Albert Einstein: "No problem can be solved by the same type of thinking that caused the problem." I realised that a long time ago. That is why I think we would be wise to focus on the positive rather than on the negative. Simply put, according to my theory, there is no waste any more. Everything eventually becomes a nutrient - a material we can use for something else. The things

we can consume, like food and construction materials, represent what I call “biological nutrients” and may re-enter the environment. On the other side, we have technical nutrients such as washing machines, which remain within closed-loop industrial cycles. In this sense, there is a bio-sphere and a techno-sphere.’

How have you successfully ‘marketed’ your philosophy?

‘I have to admit that I am not good at marketing at all. I’m a scientist, so that’s not my area. In a way I am lucky because I can rely on Bill McDonough, my best friend and partner on the cradle-to-cradle project. He is such a great speaker and someone who is very talented at expressing himself in exactly the right words. Bill deserves a lot of credit because he has managed to mobilise the design community as well. Over the years, both of us have seen the cradle-to-cradle idea gain in popularity. What helped was that we had a long series of talks and workshops with the Ellen MacArthur Foundation in the UK. The platform for the concept grew stronger due to McKinsey (the Swedish analyst) providing over 500 training sessions on the subject. This shows that we have also reached key management consulting companies.’

How widespread has the cradle-to-cradle concept become?

‘It has spread to many corners of the world, ranging from Europe to Taiwan. The fact that my book has thus far sold 15 million copies tells me that people have realised recycling isn’t a small problem but a global matter that concerns everyone. To me, the concept is common sense, really. I feel like the industry has finally discovered that the world is not actually flat. You can’t go back from that; you can only go forward.’

You’ve also received a lot of support from A-list celebrities, right?

‘It is true that some celebrities have picked up on the concept, like Arnold Schwarzenegger, for example. But he’s not the only one: Meryl Streep, Cameron Diaz and Brad Pitt have also stated that they admire the concept. Brad Pitt has even said that my book is one of the top three most important books he’s ever read in his life. He is using his position at the Make It Right Foundation to award US\$ 250 000 to a company that can come up with the best cradle-to-cradle innovation this year. To be honest, the

wide and eager support comes as a bit of a surprise to me. I had expected that it would take us at least a hundred years to succeed!’

Could you give a concrete example of successful implementation of the cradle-to-cradle concept?

‘The list of current applications is virtually endless. Take companies like European textiles manufacturer Desso, for example. This industry leader has gone completely cradle to cradle. This decision has allowed them to increase their market share from 16% to 24% in just two years, rendering them the most profitable carpet supplier in Europe. As a consequence, you are no longer selling the carpet; you are selling the use

‘According to my theory, there is no waste any more.’

of the carpet. Basically, the company turns into a materials bank. This means companies are using the best materials they can instead of thinking cheap. I call this smart materials use.’

And could you relate this thinking to the average household?

‘We recently found out that any modern television set includes 4360 different chemicals. Now I ask you, do you want to own 4360 types of chemical or do you want to watch television? Or I might ask, do you want to own a car or do you want the freedom to go from A to B? Most people will say the latter. This is a big shift from where we were in the 1980s when ownership was like a religion.’

Is cradle-to-cradle an economically feasible concept?

‘Sure, because pursuing such a concept only makes sense if it, in fact, makes sense for our economy, right? To put it briefly, it is extremely profitable and, more importantly, people have come to understand that quality is worth investing in. I believe our success comes from the fact that we allow the industry to create far better products. Sadly, one of the main obstacles is Germany owing to its huge role in supporting incineration. I really don’t understand why they still prefer to burn recyclables on such a big scale; it means you lose all the material forever. At

the moment, the country is producing more waste than their incinerators can burn. What’s worse, the nation has become an example for other nations in Europe. The motto nowadays seems to be “See you later, incinerator”!’

On your website, you state: ‘We do not want sustainability; we want real quality.’ What exactly do you mean by this?

‘The way I see it, industrial or commercial progress is not based on efficiency. Sure, today, more and more people try hard to be more efficient, but the word itself is misleading. Efficiency is not enough; it is the bare minimum. We should invest in effectiveness. After all, when we do everything to make the wrong things perfect, all we do is make them perfectly wrong. How does that help us? At the end of the day, I really don’t think that being alive means minimising the damage. It’s like saying “Sorry I am alive” in the first place. We recently thought of an alternative for Unilever’s ice cream packaging. What’s special about the cradle-to-cradle solution is that the packaging in question will degrade entirely two hours after being taken out of the freezer. Unilever has been trying to reduce the impact of ice cream packaging on the environment for 31 years. Although the company managed to reduce the footprint by roughly 1% a year, this didn’t have the desired effect because they were selling five times more ice cream as well. The initial mistake was that the company was essentially trying to be less bad.’

If the cradle-to-cradle concept were implemented on a global scale, what would be the most notable benefits?

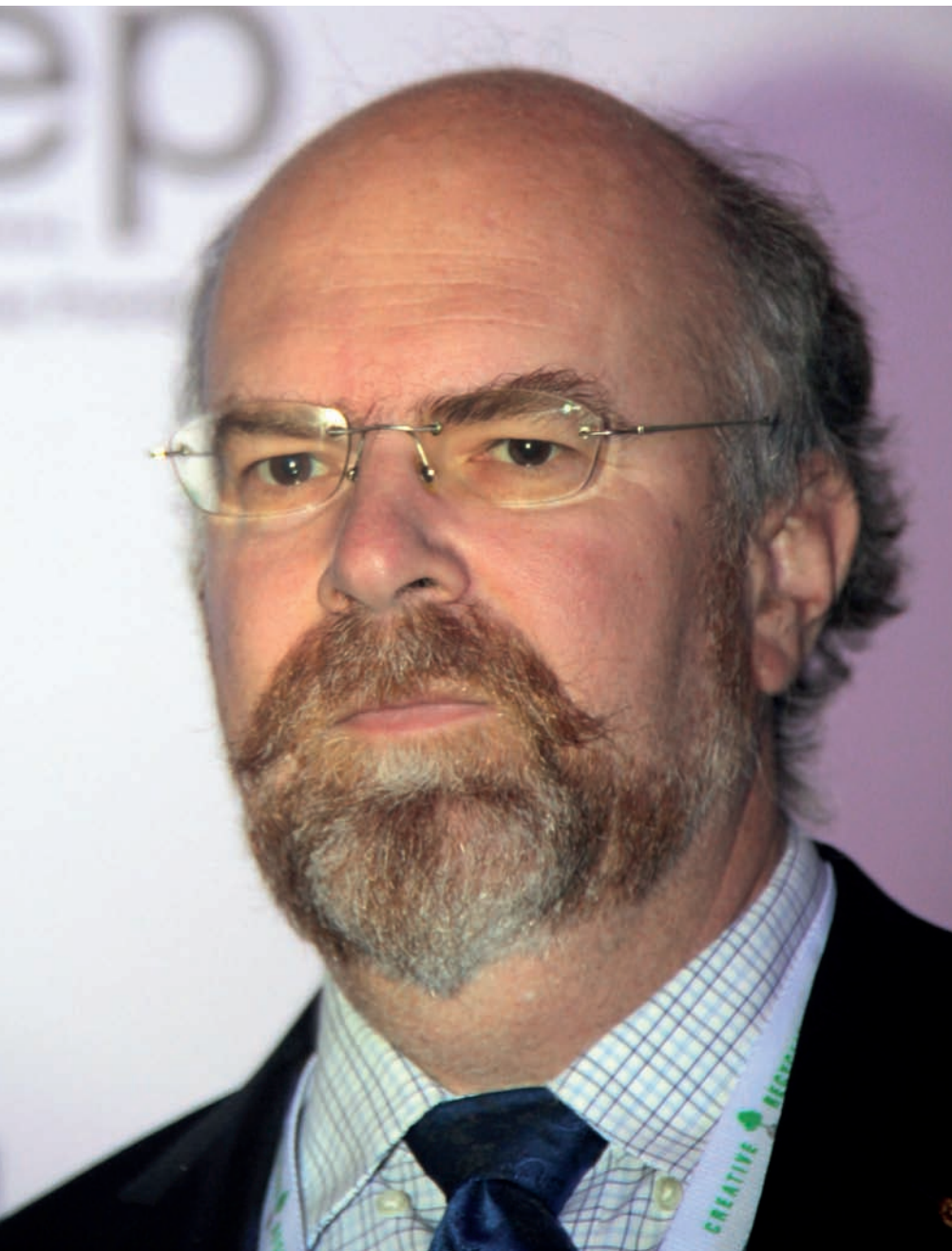
‘With this concept, even smaller companies can be extremely profitable - and they don’t have to rely on the cheapest material to do so. What makes the difference is that the success of cradle to cradle is not based on scale, like it is normally. This gives smaller players a chance to get involved with recycling too.’

What does cradle-to-cradle ultimately mean to you personally?

‘In the end, cradle-to-cradle is about upcycling, not about being green because, ironically, the green pigment that can be used to create beer cans and bottles is the most toxic pigment there is. Therefore, there is no green that is ‘green’. Also, my concept doesn’t say ‘one size fits all’. Cradle-to-cradle is a flexible concept that allows people to present their own unique interpretation.’ □

Prof. Christian Ekberg: 'There is

For the last six years, Prof. Christian Ekberg has been the holder of the Stena Chair in Industrial Materials Recycling at the world-renowned Chalmers University, located in the Swedish city of Malmö. His research work also focuses on the production and recyclability of innovative nuclear fuels.



How has recycling developed over recent years?

'In the past, recycling was a relatively small-scale industry with many smaller vendors trying to sell their material. But in the process, and due to inefficiency, much material got lost. I think the single most important recycling development of recent years has been that, as a result of better sorting and other recycling equipment improvements, much more material has been reclaimed and has been given renewed value.'

And what has been the most negative recycling-related development of recent years, and why?

'One of the most negative developments is that producers tend to make their products more complex than ever before - for instance, by using many different materials. The best example is a car. This approach makes such products much more difficult to recycle.'

So you don't think manufacturers put sufficient thought into making their products more sustainable?

'Absolutely not. My point is: if a product works well in its existing form, even if the materials it contains are rather expensive or scarce, do not always try to find alternative materials. These will in many cases make it even more difficult to recycle the product at the end of its life. If a material is scarce or expensive, you will see that recycling becomes viable and that it can yield a profit; then, industry will do everything in its power to recover these materials. As a result, a closed-loop economy will be brought much closer.'

When looking towards the target of a sustainable society, what role can or should recycling play?

'In the concept of a sustainable society, recycling is absolutely necessary - in fact, it is one of the cornerstones of this concept. If, in the future, we fail to close the loop, we will eventually run out of raw materials and the whole global economic system as we know it will collapse.'

a lack of long-term strategy'

What action can or should governments take to help boost research and development relating to new recycling technologies?

'The answer to this is twofold. Most scientists who are involved in recycling research are currently engaged in areas such as lifecycle analysis, environmental management and other theoretical models. But this does not lead to practical solutions. Then there is a smaller group of scientists which focuses on product development, often within recycling and machinery companies. But the problem there is that this research and development is usually short-lived; they have to come up with quick results. If it does not make a profit within one or two

'The recycling industry is a rather traditional industry.'

years, companies will abandon it again. By linking the research on environmental analysis with the development of actual recycling processes and technologies, you can create a long-term strategy which does not necessarily have to be profitable within a matter of a few years but which could perhaps yield a huge profit in five or 10 years. What we need is a planning span, thinking about what we want to do and where we want to be in 10 years from now. You cannot just sit back and leave things as they are. The world needs changes. I think a multi-disciplinary approach combining people working on new recycling technologies and processes with those engaged in lifecycle assessments would work best. Currently, they are not working together enough.'

What can industry do to help stimulate recycling R&D?

'Industries should co-operate with governments - for instance, by setting up joint ventures in which both parties participate on a

50/50 basis. In Sweden, my home country, the recycling industry is already investing a fair amount in the development of recycling technology and in funding research at technical universities. But again, it is usually short-term research they are funding, which I can understand because for them it's an economic necessity. But there is a lack of long-term strategy.'

How do you anticipate that new recycling technology will impact on the industry in the next few years?

'It is important for us to continue our efforts to win back ever smaller amounts of precious and scarce metals. But I realise that we are talking in that case about very small, niche markets. If we could increase the recycling rate for precious and rare earth metals to almost 100%, this would generate a huge leap in profits - although not as much as if, for instance, you increased steel recycling by 1%. The latter would yield much greater profits.'

To what extent do you believe highly-developed countries have a responsibility to bring recycling best practice to the rest of the world?

'This is a very difficult question to answer. For India, for instance, I have suggested a solution for environmental best practices in relation to the country's production processes which, in the end, wasn't accepted. I know that the developed world - notably Europe and the USA - want India to implement the same environmental requirements and specifications as they have themselves. But, unfortunately, that is way too expensive for a developing country which is facing strong competition from other countries where labour is cheap. As a result, these countries will not implement the standards seen in the developed world. I know that this is politically incorrect, but it is more important to try to achieve something workable than to try to force them to copy our Western standards. For developing countries, it is better to introduce standards which are perhaps less efficient but which will not ruin their ability to compete.'

In 2005, with the adoption of the Thematic Strategy on Waste Prevention and Recycling, the EU set itself the goal of becoming a Recycling Society. What more can be done in terms of recycling research and technology to achieve this target?

'We should co-operate much more closely with the manufacturers - for instance, in the fields of design for recycling and design for disassembly. As I said earlier, we should make products easier to recycle.'

In order to win back precious secondary raw materials, sorting processes must become simpler and more efficient. Currently, we still lose a large amount of valuable material in the sorting and shredding processes, such as when recycling e-scrap. It has become much more efficient over the years, but it is not optimal yet. We really need new ways to recover the diluted streams; otherwise, they are lost forever.

We also need to look at other technologies. The recycling industry is a rather traditional industry: to a large extent, it still uses the old methods of smashing, banging and burning. But processes such as pyro-metallurgy and hydro-metallurgy could be very promising when used in recycling processes. Some companies which focus on recovery of precious metals already use such technologies.

We should aim for a matrix in which we have, on the one hand, dedicated recycling where you have a plant which focuses on one thing only, and, on the other hand, big recycling plants which can process almost anything. We have to consider how we structure our recycling processes.'

What do you wish most for recycling research and technology?

'In the short term, I think we should be more open-minded - we need to think outside the box. Currently, we are concerning ourselves only with parts of the problem but we are forgetting to look at the whole picture. Producers and recyclers should join forces to see how products can be manufactured to make them really sustainable in all aspects. In this way, we can eventually achieve a truly circular recycling economy.' □

Tony Bird OBE: recycling industry still 'the best-kept secret'

When Recycling International first appeared in May 1998, the opening words in our launch issue were provided by Tony Bird OBE in his capacity as world president of the Bureau of International Recycling (BIR). Head of the UK-based Bird Group of Companies, he has been a prominent figure on the world recycling stage and a constant champion of the industry's cause for many decades. He has also gained widespread recognition as a technology pioneer.



In your opinion, what has been the single most important recycling development of the last 15 years?

'I would say the emergence of China as a global industrial powerhouse and the development of its steel industry to produce nearly half of the world's steel. Its economic growth has been at an average of almost 10% per annum over the last 15 years. It has seen an enormous boom in new cities, container ports and highway construction. China has needed vast amounts of raw materials to support its manufacturing and infrastructure programmes.

All this has had a major effect on the recycling industry, creating tremendous demand and increasing prices of materials. The higher prices are for scrap, the better the profit margin is for the processor or trader. I would say that the last 15 years has been the most prosperous time ever for the scrap industry, which has been kept extremely busy. These conditions have provided the industry with the money for R&D and for improving our companies as well as the quality of the products we provide.

China has been a catalyst and especially encouraged development in Asia as a whole. For example, India and South Korea have increased their steel production significantly. And there are a lot of new steelworks in the Pacific Rim and the Middle East. Turkey has gone from strength to strength as the biggest scrap buyer in the world.

Another important factor has been the EU-27's removal of certain grades of scrap from the "waste" category. This has not had a big financial impact as yet - but it's a start.'

What has been the most negative development?

'How the European recycling industry has been hampered by ill-thought-out and costly legislation emanating from Brussels. For example, the REACH chemical substances regulation will cre-

ate an enormous amount of work not only for the recycling industry but also for many other industries. It will certainly be a significant cost burden. I often wonder what Brussels does with all this information it gathers. Countries like the USA, China, India, Turkey and Russia don't have the regulations that the European industry has, and that makes EU operators less competitive. In addition, the global industry has never been so affected by so many outside forces, including currency fluctuations, availability of finance, political unrest, wars and even weather events.'

What has been the most fundamental change to the structure of the recycling markets in the last decade and a half?

'Globalisation has led to the creation of international mega-companies with massive resources; these control extremely large volumes of scrap and the flows from continent to continent. And there has also been consolidation in Europe's steel industry, led by Arcelor-Mittal which has become a price-setter for scrap and for steel products. Also, there are now a much larger number of potential markets for our material, enabling us to iron out the bottoms of cycles to some extent and to invest more money in our businesses.

Another fundamental change has been that the container industry has grown beyond all recognition. Most non-ferrous metals are shipped in containers these days, and a large proportion of ferrous too. Not only do large companies have big deep-sea port facilities and installations, but also every small company can have a container in their yard and send scrap in it to every part of the world that has a container port. This has led to the creation of thousands of new "internal ports". This means that, more than ever, companies must have expertise in international logistics and transport.'

What have been the major lessons for the industry in the last 15 years?

'Several years ago, I had a conversation on a plane with Roger Brewster, managing director of UK-based Metal Interests Ltd, which led to major research on the recycling industry's carbon footprint. This was carried out at Imperial College in London, the same body I had used for research into the eddy current concept many years earlier (see below). It was learned that the recycling of seven metals - aluminium, copper, ferrous, lead, nickel, tin and zinc - and of recov-

ered paper produced global carbon dioxide emission savings of 551 million tonnes per annum, which is equivalent to almost 2% of worldwide fossil fuel emissions. This is a conservative figure and the industry's actual contribution to emission savings could be nearer one billion tonnes. This is something we don't promote hard enough; it shows the recycling industry's tremendous environmental contribution.'

For you, what have been the most inspiring speeches of the last 15 years?

'The first was made by former US president Ronald Reagan at the Institute of Scrap Recycling Industries' Convention in Los Angeles. He had obviously done his homework and spoke lucidly about all aspects of industry and foreign policy, mentioning the importance of recycling and trade in general.

Also, there was Lord Stern's speech to the BIR General Assembly in Monte Carlo five years ago

'Globalisation has led to the creation of international mega-companies.'

in which he said that our industry has got a great story to tell because most people still do not know enough about our environmental achievements. He described the recycling industry as "the heroes of the story" and our environmental contribution as "the best-kept secret". And he's right: we are still the best-kept secret. I also thought the whole tone of the speech made by Ralph Oppenheimer (executive chairman of Stemcor) at last year's BIR Convention in Barcelona was spot on. He predicted, for example, that ferrous scrap values would be helped in the longer term by continuing investment in new electric furnaces in many countries and by scrap availability becoming ever shorter.'

Has the general public's attitude to recycling changed in the last 15 years?

'The recycling industry during its life has always had a problem with image but now recycling has become popular and the word can be used as an accolade. The public are now more interested in recycling and ask questions about it. People are

recycling in most households, so our business now gets admiration rather than derision.'

What is your opinion of recent moves in some countries to control or even ban exports of scrap and other recyclables?

'BIR and all the other founding federations came about to champion the freedom to trade processed scrap across frontiers. When economies get into difficulty, they often fall back on protectionism - but it never works because other countries adopt counter-measures. There are great dangers ahead for free trade in Europe. The copper lobby, for example, is trying to get statutory support for export controls on our industry, and yet there is not a scrap shortage of either ferrous or non-ferrous within the EU. This is a price matter and the manufacturers are really trying to reduce the price they pay for their recycled raw materials as they are not prepared to pay export prices while, ironically, prices for European scrap delivered to European foundries and mills are cheaper than the consumers in third countries pay delivered to their plants for the obvious reasons of higher freight costs.

The steelmakers are also lobbying for controls on scrap exports from Europe to third countries and yet there is as much scrap in Europe as is needed; consumers just need to pay the world market price.'

You have always been keenly interested in recycling technology. So what has been the most eye-catching technological advance over the last 15 years?

'Yes, the Bird Group of Companies developed the first eddy current to be used in scrap separation in the world and this was accredited by the Royal Institute of Mechanical and Electrical Engineers. It won the Prince of Wales Award for Industrial Innovation and Production in 1985. Eddy current separators are now used in nearly every recycling plant in the world and are also a key component these days of post-shredding technology, which is gaining increasing importance in the recovery of metals and polymers previously lost to landfill in shredder waste.

There are many new developments being offered to the recycling industry and much research money is being spent on developing new technology. One has to be careful, of course, in the in-house development of technology that one is not spending large sums of money on reinventing the wheel which I have seen happening in some instances.' □



Recycling International



Celebrating 15 years at the heart of the recycling industry

This year is, without a doubt, an important one for Recycling International, as it means we have 15 years' worth of memorable moments to look back on - years full of interesting developments and surprising innovations across the recycling industries worldwide, which we have been able to share with you on the printed page and at exhibitions and trade shows. We're also pleased to have expanded our community by way of rapidly emerging online platforms, which allow us to stay connected with you in real time.

We look forward to a bright future and will remain devoted to bringing you must-read recycling stories and essential market updates.

We thank you for your support over our first 15 years!

Recycling International team

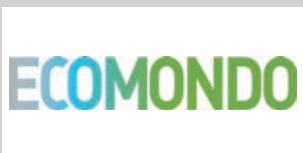


FIFTEEN YEARS ANNIVERSARY

Congratulations on your 15th anniversary!

Best wishes from....





International Conference on Ship Recycling

Europe steers away from the rocks

The European Parliament averted potential chaos in the global shipping trade when it narrowly voted on April 18 against the introduction of a levy on all cargo vessels calling at EU ports, irrespective of their flag.

The levy formed part of a proposed amendment to the EU Ship Recycling Regulation, adopted in principle by the European Commission in March 2012. This regulation, based on the Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships (HKC), will make a number of additional requirements and is subject to further amendment.

In his proposal, Carl Schlyter, a Swedish Member of the European Parliament, sought to impose a charge of Euro 0.05 per gross ton per port call which would have been paid into a central fund. Ship owners would have been reimbursed for disposing of the vessel in an EC-approved recycling yard. Owners would also have had the option of paying an annual fee or of making one upfront, lifetime payment per vessel.

Carrot rather than a stick

Speaking at the International Conference on Ship Recycling (ShipRec) in Malmö, Sweden, some 10 days ahead of the vote, Schlyter said yards within or outside Europe could qualify for the 'approved list', so the amended regulation would not specifically exclude recyclers in South Asia. However, yards would have to meet more demanding standards than those laid down in the HKC, which the International

'The vast majority of ship recycling operations are not up to scratch.'

Maritime Organization (IMO) adopted in 2009 but which, as Schlyter pointed out, was still a long way from ratification.

Even when ratified, the HKC would not be tough enough to 'stop the export of toxic waste' or to 'end dangerous beaching,' Schlyter claimed. 'The vast majority of ship recycling operations are not up to scratch. The HKC is a step in the right direction, but we can go beyond it by introducing a financial instrument that makes it financially right for the ship owner to dispose of a vessel in an environmentally sound way.'

The International Conference on Ship Recycling (ShipRec) was held in the Swedish city of Malmö, a few days ahead of a crucial European Parliament vote on a controversial recycling levy. The impending ballot provided a focus – and even an added edge – to the conference debate.

The ‘no’ vote in Strasbourg, by a slender margin of seven, ruled out penalising ship owners for simply selling their end-of-life vessels to the highest bidder without regard to recycling yards’ green credentials. The debate is not over, but the Parliament appears to favour a carrot rather than a stick approach, urging regulators to devise a more acceptable incentive-based scheme by the end of 2015.



Schlyter had support in Malmö from European Commission policy officer Thorsten Brunzema. ‘If the HKC was round the corner, we could have waited,’ he said. ‘But the current legal framework cannot effectively stop unsustainable practice. Strict legislation is in force on paper, but in practice, ship owners do what they like and nothing is enforced. Therefore we thought it was worthwhile to identify our own solution for new ships.’

The great majority of conference delegates, however, expressed concern at a unilateral EU move that, they claimed, ran counter to the industry’s aim of improving working and environmental conditions in ship recycling yards globally. Former IMO head of ship recycling Dr Nikos Mikelis said the idea of banning beaching, implicit in the proposed EU regulation, was technically flawed. ‘It’s not the problem you think it is, and dry docks are impractical,’ he claimed. ‘You will wait until 2020 for implementation of the HKC, but another 10 years for dry docking. By banning beaching, you will end your relationship with the countries that deal with 70% of recycling. These countries are natural magnets [for end-of-life ships] because the steel is used there. You’re not going to stop it by European legislation.’

No basis for ban

Henning Gramann, md of GSR (Green Ship Recycling) Services, added: ‘We talk about an EU approved list, but what are the technical requirements for a ship recycling facility? We have heard no single basis for banning beaching. Should we not be improving beaching rather than banning it outright?’ Gramann had visited four yards in India’s Alang district that were keen to invest in improved facilities, but they were concerned at the direction being taken by Europe and may delay their decisions, he said.



Carl Schlyter is afraid the HKC will not stop exports of toxic waste.



Thorsten Brunzema: current regulation is not preventing unsustainable practice.

Schlyter said it was important to cut the bottom of the vessel in a permanent built structure such as a concrete slipway or dock ‘so you can collect whatever comes out’. This also enabled rapid access for the emergency services. He accepted that dry docks were not going to appear widely across Bangladesh and India, but said: ‘We’re already seeing floating dry docks. If there’s aid money available, why can’t we help countries invest in facilities that will be comparatively more profitable? The ship owner goes to Bangladesh not because steel is needed, but because he gets paid better.’



Henning Gramann: some of Alang’s recycling yards are keen to invest in improved facilities.

How Turkey can be bigger, and better

Among major players, Turkey and China are seen as the two ship recycling countries that work to the highest standards where the environment and worker safety are concerned because their yards process end-of-life vessels out of the water. However, a presentation by Professor Gökdeniz Nesar, director of the Eylül University Boat Building Research Centre in the Turkish city of Izmir, showed in his presentation to the ShipRec conference in Sweden that there can be problems even where ships are dismantled on concrete slipways. He reported elevated concentrations of organic pollutants, including polycyclic aromatic hydrocarbons, in the waters of the Aegean Sea close to Turkey’s Aliaga recycling facilities. Studies by the university had also shown accumulation of heavy metals such as lead, copper and mercury in marine sediments. On the assumption that Europe, and Turkey in par-

ticular, will seek to increase ship recycling capacity if future regulation discourages beaching, Volkan Tunarli, a PhD student at the Norwegian University of Science & Technology in Trondheim, looked at Aliaga’s strengths and weaknesses. With all recyclers located in a single cluster, they benefited from good logistical support and had good access to Turkey’s steel plants and waste disposal facilities. There were still oil and waste spills, as Prof. Nesar had demonstrated, and accidents including fatalities still occurred. Tunarli said standards would improve under a Waste Management Centre with authority to standardise recycling procedures, train personnel and reduce reliance on subcontractors. More effective future regulation of the industry globally would see fewer and better-defined hazardous materials on board ships arriving at recycling yards, Tunarli said.

Aliaga was almost at capacity and there were limited opportunities to develop adjoining coastal areas for ship recycling. But Tunarli noted that the Turkish government was considering another area near Istanbul, closer to the country’s shipbuilding operations, for future development.

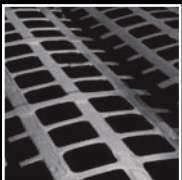


Former Royal Navy aircraft carrier ‘HMS Invincible’ at Aliaga scrapyard in the Aegean port city of Izmir, Turkey, in June 2011.

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Wouter Rozenveld from green ship recycler Sea2Cradle said a major ship owner had estimated the cost of the proposed EU levy at US\$ 500 000 per year for each of its 18 vessels, which are among the biggest in the world. 'That's a US\$ 9 million loss for a company that is already green,' Rozenveld said. 'He asked me why should he pay for the others [shipping lines that do not follow green recycling principles].'

John Stawpert, senior adviser to the International Chamber of Shipping, thought the HKC

was more likely to succeed in a global context than an undefined fund. There was no clarity on who would administer this, or how. EU member states should go back to their own parliaments and discuss whether it was in their own interests, he suggested.

It would take years to set up a list of approved facilities, Stawpert added. Inspectors would have to negotiate their way into industrial facilities and where these were rejected, explain why to hostile governments. He foresaw massive future insurance implications because of uncertain obligations on ship owners.

'The real issue is how do we make the world greener.'

Arjen Uytendaal, director of the International Ship Recycling Association (ISRA) in the Netherlands, said the Schlyter proposal was a distraction. 'The real issue is how do we make the world greener, not how to administer millions

of dollars in a fund,' he ventured.

Long road to Hong Kong

The underlying problem is that the Basel Convention on the international movement and disposal of hazardous wastes, which entered into force in 1992, does not specifically address end-of-life ships. Nor does a 1995 amendment (the Ban Amendment) prohibiting the export of hazardous wastes to non-OECD countries, which in any case still needs 15 more ratifications to enter into force.

The European Commission has calculated that more than 90% of European-flagged ships are disposed of in contravention of Basel's blanket rules on hazardous waste. It was for this reason that parties to the Basel Convention invited the IMO to develop a new, legally-binding instrument on ship recycling which was adopted in Hong Kong as the HKC.



Arjen Uytendaal doubts that administering million-dollar funds will secure a greener world.

Why developing countries dominate ship recycling

Steelmakers are very important to ship recyclers but the reverse does not apply to the same extent, ShipRec delegates were told by Dr Nikos Mikelis, former head of the International Maritime Organization's ship recycling section.

China accounts for almost half of global steel production, while two of the other big five ship recyclers - India and Turkey - were, respectively, fourth and eighth on last year's steel producer list. Countries that have invested heavily in large integrated plants for producing steel from virgin ore may be more reluctant to switch to the scrap-hungry electric arc furnace route, Dr Mikelis said. The share of EAF production in China's steelmaking is just 10% compared with 60% in India and 75% in Turkey. 'Clearly, the world's largest steel producer has a lot of room to reduce its production costs and its

carbon footprint by progressively basing more of its production on steel scrap,' he said. But the trend is heading

the other way. China's use of scrap per tonne of steel produced fell from 14% in 2007 to 13.3% in 2011. In Turkey, by contrast, the figure increased from 87.6% to 90.3% over the same period.

Record set in 2012

The five major shipbreaking nations recycled 12 million light displacement tons (LDT) in 2012, according to figures ship recycling associations and, in the case of Pakistan, shipping agents have provided to Dr Mikelis. This would have generated around 9.8 million tonnes of steel scrap.

Assuming that in India, Bangladesh and Pakistan some 50% of the recovered steel scrap is melted for the production of new steel, while in China and Turkey 90% is melted - with the remainder re-rolled or reused - shipbreaking generated 6 million tonnes of steel melting scrap last year compared with a previous record of 5 million tonnes in 2009. Globally, this represents no more than 1.5% of the steelmaking industry's melting scrap needs, though in the five main recycling countries the picture is rather different. In Bangladesh, which has only a small steel industry, the tonnage of melting steel

scrap produced from ship recycling is 71% of its imported tonnage. The 2011 figures for India, Pakistan and China were, respectively, 28%, 27% and 19%. Turkey is nearer the global norm, with scrap from ship recycling equating to just 2% of the country's imports of melting scrap.

Dr Mikelis pointed out that extensive re-rolling of ship scrap, mainly for construction, makes an additional contribution to the three South Asian economies, though less so in China and Turkey.

He added: 'For at least the last 15 years, the same five countries have dominated global ship recycling. Other countries could also become major ship recycling centres in future if they need to import ferrous scrap and if their labour costs will not make ship steel scrap more expensive than imported ferrous scrap.'

EU countries, the USA and Canada are unlikely to re-emerge as major ship recycling locations given the status of their ferrous scrap needs and their high labour costs. 'In such mature economies,' Dr Mikelis suggested, 'it would appear that ship recycling can only exist as a service for disposing of smaller or government-owned ships, or wrecks.'



Dr Nikos Mikelis: EU countries, the USA and Canada are unlikely to re-emerge as major recycling locations.

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Stefan Micallef: Hong Kong the only viable way to control ship disposal and recycling.



Claude Wohrer: vested interests are satisfied with the current Basel rules.

The case against current recycling practice

The Bangladesh Environmental Lawyers' Association (BELA) was among the NGOs to speak out against the shipping industry's current recycling practices at the recent ShipRec conference in Malmö.

'Someone else produces waste and sends it to us for recycling,' argued BELA's chief executive Syeda Rizwana Hasan. 'The burden of dealing with it has shifted to countries such as Bangladesh, India and Pakistan. Whether we have the capability to deal with it is another question.' The current situation is tantamount to 'taking advantage of weak governance systems in these developing countries', she alleged.

Hasan dismissed estimates that 3 million jobs in Bangladesh depend on ship recycling, putting the true figure at 18 000, of which only 3000 are permanent. Five ministries responsible for industry, commerce, labour, shipping and environment had failed to protect the environment; instead, a coastal forest had been 'flattened to make way for shipyards'.

She claimed that Bangladeshi shipyards were flouting 56 out of 62 environmental regulations. Patrizia Heidegger, executive director of the Belgium-based NGO Shipbreaking Platform, said dredging company Boskalis had joined Maersk this year in saying it would not allow shipbreaking on beaches. But many ship owners were still indulging in 'greenwashing' and used the word 'green' without being able to define it, she claimed.



without being able to define it, she claimed.

Syeda Rizwana Hasan: concerned at industry 'taking advantage of weak governance systems'.

However, it is already four years since the industry adopted the HKC. Stefan Micallef, director of the IMO's Marine Environment Division, told the ShipRec conference that the convention was the only viable instrument for controlling ship disposal and recycling given that it was tailored to the particular characteristics of the global shipping industry, took account of commercial practicalities and was global in scope. But no government had yet ratified it. Many jurisdictions were holding back until they knew what others were doing, and a complicating factor was that, in some countries, multiple ministries were involved - for example, in India. Claude Wohrer, head of the French delegation at the IMO Hong Kong diplomatic conference and chair of the IMO and Basel Convention working groups on ship recycling/dismantling, said the HKC did not have universal support.

'The current legal framework cannot effectively stop unsustainable practice.'

There were vested interests 'who do OK under the current rules' and who believed Hong Kong was asking too much of both recycling nations and ship owners, she said.

Tacit consent

Attempting to address the complex issues of equivalence between the rival conventions, Susan Wingfield, programme officer for the Basel Convention secretariat, said the HKC specified only that materials arising from shipbreaking should be sent to authorised parties for final disposal, whereas the Basel Convention required traceability right through to the point of disposal.

The ship recycling plan required under the HKC did not need explicit consent from the ship recycling state to accept a vessel. Consent was tacit, and there was no duty on an exporting state to re-import a vessel where its attempted shipment proved to be illegal, Wingfield said.

The Conference of the Parties to the Basel Convention (COP), which adopted a series of ship dismantling guidelines in 2002 designed to mitigate the environmental risk, has been meet-

ing annually ever since. The guidelines do not explicitly prohibit beaching, but some believe the requirement to have an impermeable processing facility in effect excludes it.

Shared despair

The 10th COP in 2011 resulted in 'a fairly polarised discussion', Wingfield said. 'We acknowledged we could not agree on equivalence. Basel is a very effective instrument in doing what it was designed to do, but it is not designed around ship recycling and there are ways of circumventing it [by owners re-flagging their vessels, for example].' She added: 'Hong Kong is a positive step because it addresses specific issues but there will never be a way of agreeing. It doesn't seem there will ever be a clear answer.'

Delegates in Malmö expressed fears that the convention may not enter into force before 2020. Wingfield believed the first ratifications were imminent, but was concerned that the industry could end up being regulated by duplicate, conflicting instruments.

She was encouraged, however, that Turkish and Pakistani shipbreakers, who she said had 'many similarities', had met together under United Nations auspices. Wingfield hoped that their sharing of knowledge could help Pakistan ultimately move away from beaching.

Although he welcomed the fact that everyone was sitting around the same table, ISRA's Uytendaal asked: 'Why can't you agree after 15 years?' It was these differences of opinion that had prompted the European Commission to come in with its own heavy-handed regulation, he said.

'I share your despair,' Wingfield responded. 'We're focusing on where we can make biggest impact and that's on environmentally sound management of waste disposal.' □



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Compiling inventories of hazardous materials (IHMs) for all ships of more than 500 gross tons is one of the main challenges facing the shipping industry as governments steam slowly towards ratification of the Hong Kong Convention (HKC).



International Conference on Ship Recycling

Hazardous inventories pose challenges

The world's largest ship classification society, Japan-based ClassNK, has carried out 60 IHM trials on existing ships and new-buildings. Junichi Hirata, manager of the practical R&D promotion division and ship recycling team at ClassNK, told the ShipRec conference in Malmö that the organisation was the first to be able to issue a 'statement of fact' on hazardous materials, as will be required to prepare a ship recycling facility under the HKC. A single ship can require 500 hazardous material declarations from 1800 suppliers, Hirata said. It would take years to compile this information manually, so ClassNK has developed a cloud-based system that requests this data - and processes it when received back from suppliers - in an automated format.

Despite the technical tools now available, he said it was vital for stakeholders to collaborate on unifying preparation of IHMs.

Excessive claims

John Stawpert from the International Chamber of Shipping, secretary of a cross-industry working group on ship



recycling, said the concept of an inventory of 'potentially' hazardous materials dated back to a code of practice published in 2001 - 'though it was thought at the time that proper handling would limit hazardousness'. The ship owner, as seller, bore responsibility for compiling an IHM but this could have no contractual force as it could leave the owner vulnerable to renegotiation on price if the reality proved different from the inventory. A market was developing among commercial providers of IHMs, but he said some were making excessive claims

about their products, and offering to go beyond HKC requirements. 'We feel we must marry to Hong Kong and not exceed the benchmark, which may unrealistically raise expectations of regulators,' Stawpert said. 'Otherwise we get further away from the IHM's purpose as a practical tool to enable owners to prepare the ship for recycling. Recyclers should be familiar with the nuances of how commercial ships are built. You don't have to go down to every last light bulb.'

Difficulties with asbestos

The presence of asbestos on supposedly asbestos-free ships meant that

inventories could only ever serve as a guide, Stawpert concluded. This will be an especially difficult issue to resolve. Sea2Cradle's Wouter Rozenveld said his company had inspected 67 vessels since the Netherlands implemented an asbestos ban, and had found it on 65 of them. GSR's Henning Gramann said: 'Asbestos is, or has been, used in 3500 products but its definition varies country by country, so makes it difficult to state whether it has been used.' Asbestos has been banned under SOLAS [the Safety of Life at Sea convention] since 2002, and

completely since 2011- but only in 70 countries. 'It depends on the country that built the ship, what size it is, what flag it's flying and where it gets spare parts and supplies,' Gramann said. 'Lack of control has led to non-conformance by quite a few players. You might purchase asbestos without even knowing it because the supplying country has not banned it so does not declare it' Decontamination is hugely expensive after a ship is fitted out, or if it is already in service. A shipyard may have to compensate an operator for loss of income unless it could accurately check



John Stawpert: IHM providers need to rein in their claims so as not to excite regulators.

incoming materials, he pointed out. A yard may tick a box saying 'we have not bought asbestos', but may not have total control over tier 2 suppliers or second-hand parts. Even a new-build could incorporate a valve from a recycled vessel, Gramann said.

Trend to accelerate

Rozenveld put the cost of preparing an IHM at around 0.3% of the selling price and suggested this would reduce in future as fewer hazardous materials would be involved. He said there was enough compliant capacity available globally for conscientious owners to specify green recycling. The price paid by a green recycler was usually only US\$ 20-50 lower per LDT than that paid in a country relying on traditional beaching. Rozenveld saw the trend towards green recycling accelerating as clients and banks became more demanding. □

Junichi Hirata: one vessel can require 500 hazardous material declarations from 1800 suppliers.



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Elizabeth Wilmot Founder of Turtle Wings

In establishing Turtle Wings/Data Killers back in 2005, Elizabeth Wilmot gladly dropped a long and successful career in marketing to pursue an idea involving e-scrap recycling and data destruction. In hindsight, her instincts have proved to be faultless given that her company has developed a considerable reputation throughout the USA.

What first made you decide to get involved in recycling?

'I grew up in a house where absolutely everything was reused and recycled, from Christmas wrapping paper and tin foil to string. So, it's always been my mindset to not throw something out that might have another purpose. Then, a couple of years ago when I was still running the international marketing division at CitiGroup, I found that it was nearly impossible to get rid of my old computer in a responsible way. I tried donating it to a local school and a church, but they didn't want it. The message was that I should either take it to landfill or wait for a regional recycling event – which would be held six months later. I remember my frustration at this and thinking to myself, "I would pay someone to take care of my PC responsibly and wipe all the data off". I immediately figured that I could not be the only one who felt this way and that is basically how my concept was born.'

What is the story behind the name 'Turtle Wings'?

'People often remark that it is an exotic name for a recycling business, but we are a Maryland-based company and the University of Maryland's mascot is a turtle. I thought picking this for our logo would be a great way to symbolise our commitment to the earth. We put yellow wings on our turtle so he could angelically swoop down and save the world from e-scrap. To promote recycling, we even have someone dressed up in full mascot costume from time to time – which has helped build a strong sense of recognition in our community. Kids love it! And, best of all, it has led them to think more actively about recycling.'

What is your impression of the US e-scrap sector?

'The market has seen a lot of changes lately. PC shipments are down and I am sure that this development will have a long-term effect on the nation's recycling industry. Also, there remains a shocking lack of education on recycling in general and especially regarding the recycling of alkaline batteries.'

What has been your most memorable recycling experience so far?

'We are often amazed by how old the equipment is that comes in sometimes and we are convinced, I am not kidding, that we have handled the first-ever

computer made that was apparently still sitting in someone's basement. In this industry, every day may hold a surprise. What I've learned is to expect the unexpected.'

What's it like being a woman in a market dominated by men?

'Sure, there are differences between the way things are at Turtle Wings compared to most recycling companies. First of all, I think that my company comes across as more friendly and customer-oriented while being accessible to everyone. Secondly, I insist that all of the guys who work for me tuck in their shirts and wear a belt, that they are patient and polite and that their trucks are really clean. Looking at many competitors, I know that we expect different things from our staff and our equipment.'

Your work must keep you very busy, but what do you like to do to relax in your spare time?

'More than anything, I am a big athlete. I have swum 4.4 miles in the Chesapeake Bay Bridge swim and also love to ski, bike, run and work out. At the same time, I am an avid reader. I try to read at least one book every ten days or so. I also cook and like to garden and grow my own vegetables.'

Do you have a personal motto?

'When I initially started the company, I told myself: "Whatever happens, try to do one thing every day - however big or small - that allows you to go forward." Apart from that, I am a strong believer in "people, planet, profit". In my case, and the same goes for Turtle Wings as a company, the people come first.' □



WorldScrap: moving at



In 2004, Mike Chen, ceo and general manager of Ningbo-based WorldScrap, launched the first edition of his ground-breaking World Recycling E-Market. Today, it is used by hundreds of thousands of scrap traders in China and elsewhere. Along the way, that scrap might very well be processed by equipment manufactured by a division of WorldScrap's parent company and then run through its yard in the Ningbo-area.

The future of the Chinese scrap business might be located on the second floor of a modernist office building in the leafy heart of the National Innovation & High Technology Zone in Ningbo, China. There, in a white room labelled 'Global



In WorldScrap's Global Monitoring Center, 16 large screens beam live images from scrap warehouses in Europe and North America to an operator, monitoring the loading of scrap metal at each location.

Monitoring Center', 16 large screens beam live images from scrap warehouses in Europe and North America to an operator sitting at one of two desks, monitoring the loading of scrap metal at each location. The scrap, however, doesn't belong to the monitor or to his employer, but rather to a buyer somewhere in China who has entrusted his transaction to Ningbo-based WorldScrap and to its ground-breaking World Recycling E-Market. And along the way, that same scrap might be processed by equipment manufactured by a division of WorldScrap's parent company - the Huilong Group - and then run through its yard in the Ningbo-area.

In Ningbo, these three businesses - scrap processing, equipment manufacturing and electronic

trading - have combined into one of Asia's most innovative scrap businesses. Indeed, the technology platform developed by WorldScrap has the opportunity to redefine how vast volumes of metal move through China and the world.

Peculiar difficulties

Of course, e-commerce is nothing new: in the USA, it has been a shopping option since the mid-1990s, and scrap dealers took advantage of its possibilities almost from the beginning, posting loads for auction on eBay. But owing to the peculiar difficulties involved in pricing scrap and the associated logistics, a one-size-fits-all e-commerce site was never going to work for scrap commodities. Many companies tried, but neither the industry, nor the technology, was quite ready for a robust e-trading site for scrap in the 1990s. Mike Chen, ceo and general manager of WorldScrap, tells me that he started thinking about a trading platform for scrap in 1999. At the time, he was nearing the end of his

the speed of e-commerce

first decade living in Italy where he had started purchasing scrap for an uncle in China. Late on a Friday morning, Chen and I are sipping espresso in a conference room down the hallway from the World Monitoring Center. 'We were trading scrap from Milano,' he explains in Italian-accented English. 'But we were having trouble finding good customers because China

'I planned this system because I have too many yards for one person to check.'

is really big. No website had the information! Chen saw some of the early efforts at e-market platforms for scrap and decided that he would be the man to build one that worked for plastic, paper and metal.

Prime source

Those were big ambitions, and Chen soon figured out that the moment wasn't right for trading scrap online. But not all was lost: the technology could definitely support a listing site where buyers and sellers posted classifieds and cleared trades on their own. So, in 2004, he launched the first edition of WorldScrap. 'No experience,' he says with a laugh and then shifts into hybrid English-Italian. 'Very brutto!' In 2005, he hired a designer and thus was born the website that hundreds of thousands of scrap traders in China and elsewhere now know. It is both simple and rich with content; industry news, regulations and thousands of listings are packed onto the home page and lead visitors and registered users into a multilingual world all its own. Since that reboot, WorldScrap has become a prime source of leads and listings for processors around the world. It is a massive undertaking: the site can be viewed in 24 languages and hosts roughly 250 000 users, around 75% of whom are in China. There are thousands of listings, with hundreds and sometimes more added every day.

WorldScrap employs 40 people to support this information infrastructure, including sales agents and 10 highly-trained technical staff. But that's not all: beginning in 2008, WorldScrap hired technical experts from IBM to build what Chen long believed was possible, necessary and lucrative - 'an eBay for scrap.'

The inspiration wasn't just eBay; it was also market conditions. The broken contracts, credit problems and mistrust that resulted from the 2008 crash suggested to Chen that a scrap eBay would have to be more robust than just a place where buyers and sellers could press a button and close a transaction. It had to be a fool-proof platform that protected buyer and seller from the problems that crop up in international scrap trading.

In particular, Chen needed solutions that assuaged the concerns of Chinese plagued by fraudulent suppliers who disappear after receiving payment, and suppliers who delay shipment or under-ship in up-markets. Specifically, he realised that if he were to host a usable online trading platform that could serve as the preferred alternative to other means of



WorldScrap also manufactures equipment such as meatball shears.



Mike Chen: 'Copper is so expensive that the insulation actually becomes our profit.'

connecting buyers and sellers, he would have to ensure four problems were solved: verification of suppliers' credit; payment safety; material quality guarantees; and up-to-date, best quotations that result in speedy delivery.

Solving these problems required more than technology. Rather, it required three years and US\$ 4.8 million. 'My wife was not very happy,' Chen concedes with a sad smile. 'She said I could buy a very nice house for that.' She may soon change her mind about whether the endeavour was worth it, though. Chen has not only built an impressive technology infrastructure, he has done so on top of a transactional infrastructure designed to place scrap traders in any country - not just China - at ease.

Brokers need not apply

Slowly and methodically, Chen lists for me how he solved the four problems he had described earlier. First, there is the matter of credit worthiness: suppliers who want to use WorldScrap's World Recycling E-Market must pass a credit check ('We'll even go and visit their yards') and have AQSIQ licences (brokers need not apply) that ensure their scale and knowledge of industry norms.

Next, there is the issue of payment safety: WorldScrap uses Letters of Credit as the sole basis for payment for those who use its online trading platform. Meanwhile, video monitoring of supplier scrap yards and loading warehouses allows additional assurances to nervous importers that they are getting what they purchased. In this way, the third issue - material quality - is

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ensured. The material quality assurance, however, doesn't end there. WorldScrap keeps track of the yields obtained from the scrap shipped by its World Recycling E-Market suppliers, and uses them as the contractual benchmark for future shipments of the same material. 'People must promise a recovery,' Chen explains. If a load diverges from past recoveries, that forms the basis for a credit hit and an easy, binding means to adjudicate a claim.



In-house wire shredding system.



The yard in Ningbo generates on average 800 tonnes of granulated copper per month.

Finally, the system solves the fourth problem by providing importers with current prices and, according to Chen, expedited delivery of documents, payment and bills of lading. 'This speeds up business a lot,' he explains. 'No need to wait for the 30% 'down-payment.' The system may even be quicker in the future, Chen tells me, because CCIC may consider allowing containers purchased via the World Recycling E-Market to bypass the CCIC inspections that slow down so many scrap shipments around the world.

Video recording

The key, he says, is that suppliers with cameras can broadcast and record the loading process, and the sealing of containers, for inspectors anywhere. 'CCIC likes this,' Chen points out. 'The government likes this.' Indeed, for a government inspector, the video recording of loading not only ensures a speedier shipment without requiring an in-person inspection, but also guarantees that a more accurate tax assessment can be levied. After all, it's far more difficult to hide valuable commodities beneath more valuable ones if the loading is recorded.

Currently, the system has 250 Chinese buyers and an additional 40 buyers in other locations. They are supplied by yards in Europe, North America and China - including yards owned by Chen in Spain, Italy and the USA. Copper honey, Chen says, is the most popular product moving through the system, with 50 000 tonnes sold in 2011 and 100 000 tonnes in 2012. The volumes, Chen tells me, should only grow.

International market

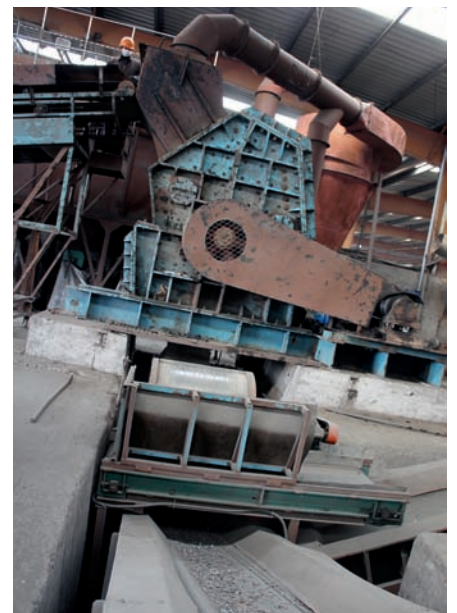
The Huilong Group owns yards in Italy, Spain and France, as well as three in North America.

Those yards grow and shrink with their respective economies, but long term the trend is towards growth. Already, Chen says, his yards each trade 25 000 tonnes - and every last scrap is sold via the World Recycling E-Market.

Meanwhile, the company is aggressively adding suppliers to its online platform. For Chen, those added suppliers aren't just a guarantee of volume, however; they also guarantee that the World Recycling E-Market can be an international market, and not just a China-oriented one. 'I want the protection so if Chinese demand is down, perhaps Indian demand is up or US demand is up,' he explains. 'We can have suppliers and buyers in both places, and the scrap will still move.' At the same time, Chen sees the trading platform as a technology solution to a problem that every growing scrap company faces: how to manage the buying and selling of scrap in more than one facility. 'I planned this system because I have too many yards for one person to check,' he adds. Although it will always be difficult to systematise scrap yard operations across a geographically-diverse industry, the monitoring systems in place as a result of the E-Market allow Chen to supervise and standardise to a degree that would otherwise be impossible.

Low-cost machines

However, that's not the only way in which he is systematising. His group also owns and operates Huilong Technology Developing Co. - a technology development, manufacturing and

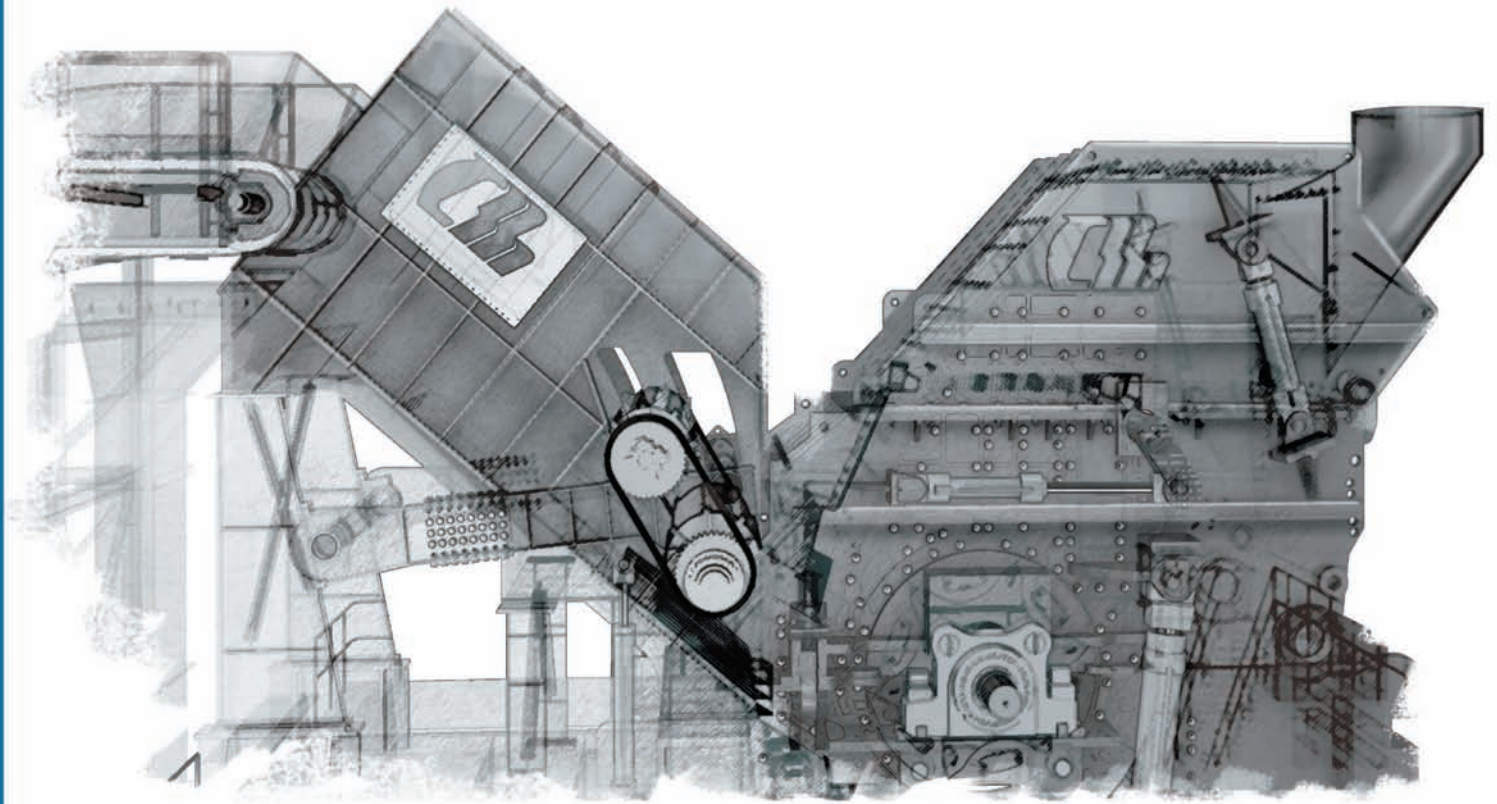


WorldScrap also owns and operates Huilong Technology Developing Co., a technology development, manufacturing and retailing company focused on scrap equipment for developing countries.



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retailing company focused on scrap equipment for developing countries. Chen, ever the marketer, offers me the sales pitch as we climb into his car to visit his Ningbo yard: ‘Low-cost machines for high-quality scrap.’ Shredders, granulators and simple separation technologies are marketed by Huilong across China. However, machines are also given away to companies which agree to join the E-Market to sell

‘Copper is so expensive that the insulation actually becomes our profit.’

their copper. ‘Then we get more volume and we get a standard product,’ Chen explains. Chen’s Italia partner handles design and the 40% of a shredder that Chen characterises as requiring precision manufacturing. In some cases, the manufacturing can’t be done in China, and in other cases it’s simply cheaper to do it in Italy. ‘A hand-made gasket from Italy is 20% cheaper to import from Italy than to make in China,’ he says.



Stacks of imported motors.



WorldScrap's yard in Ningbo, China.

At the yard, I’m struck by the diversity of the operations. Stacks of imported motors are arranged at one end; piles of shredded motors are across from them. At the far end, a roofed processing area is home to an array of techniques that represent the modern history of Chinese scrap processing. Near the front, for example, workers labour with hammers, chisels and simple cutting tools over motors, pulling copper from contaminants.

A little further into the warehouse, more workers pull apart the tangle of partially-shredded meatballs, removing contaminants from the woolly tangle. At the other end of the warehouse, groups of women strip wire using small stripping machines prior to carefully segregating the insulation.

‘The insulation is very important these days,’ Chen tells me. ‘Copper is so expensive that the insulation actually becomes our profit.’ According to him, stripped, segregated insulation is worth as much as RMB 2000 per tonne (US\$ 320) in the Ningbo markets. Mixed, shredded insulation, such as what emerges from a granulator, is worth around RMB 600 (US\$ 96) per tonne.

Long beyond water tables

At that, he walks me around the wire stripping area to a pile of fine wires that a worker gathers by the armful and places onto a conveyor that feeds into one of the company’s granulators. At one end, pure copper comes out; at the other, a dark mix of insulation emerges. Nearby are other granulators of various sizes. ‘We use those for different types of wire,’ Chen tells me. ‘We’re still learning the most efficient way.’

I notice a water table over in a corner. In recent years, as the price of insulation has risen, water tables have become the most common means of segregating granulated insulation from granulated copper. Chen’s company, however, is long beyond water tables. ‘We haven’t done much of that in two or three years,’ he tells me. ‘It takes too long. Better to use the granulator and an eddy current. Also, you don’t need to dry the copper if you use the eddy current.’

At the opposite end of the warehouse are two shredders, one devoted to radiators and the other to meatballs. The former is capable of running 4 tonnes of metal per hour. A steel drum magnet separates the ferrous, and sizing separates most of the copper from the aluminium. What isn’t separated is sent for clean-up



Workers pull apart the tangle of partially-shredded meatballs, removing contaminants from the woolly tangle.



In the wire stripping area, a worker gathers a pile of fine wires by the armful and places it onto a conveyor that feeds into one of the company’s granulators.

by hand-sorters. Meatballs are shredded at a rate of 5 tonnes per hour, but rather than send the fragments to hand-sorters, they are sent through an eddy current. Copper honey is sometimes run through the meatball system and at a rate of 10 tonnes per hour.

Impressive capability

Later, in a warehouse where clean metal is stored for shipment to clients, Chen runs his hands through a sack of pure granulated copper. The yard generates on average 800 tonnes of marketable copper per month, comprising roughly 80% of the monthly metal totals. ‘Whatever somebody wants, we can do it,’ he says. ‘It’s just a matter of what they want to pay. If they want 90% pure, we can do it. If they want 99%, we have the equipment and process for that too.’ It’s an impressive capability, but especially in China where mechanised processing was unknown even seven years ago. Now, businesses like Chen’s are actively experimenting with it as a means to increase their efficiencies and margins for a market that, Chen hopes, will move at the speed of e-commerce. □

Adam Minter is a Shanghai-based journalist who writes about business and culture for US and European publications. He also maintains a blog at: www.shanghaiscrap.com

Battle lines drawn

A kaleidoscopic view of paper

The paper market has experienced tumultuous times across the globe, but particularly in Germany where new legislation has meant that traditional recyclers are now confronted by an army of 'extremely hostile' competitors, it was suggested to nearly 600 delegates attending the bvse's 16th International Recovered Paper Conference in Düsseldorf. However, they were also assured of at least one 'reason to rejoice'.

'Since the last meeting a year ago, framework conditions for the German recovered paper industry have deteriorated significantly,' announced Reinhold Schmidt, vice president of the Federal Association for Secondary Raw Materials and Waste Management (bvse) at its latest congress in Düsseldorf. His main complaint was that the recently-implemented Closed Substance Cycle Act has 'unnecessarily laced our commercial paper collection into a tight corset'.

The audience applauded Schmidt's statement that this new legislation does more than give municipalities a larger role in recycling; it renders them 'extremely hostile' competitors to Germany's existing recycling players. 'Many municipalities are even trying to prevent the acceptance of recovered paper at our operating locations - and in many cases, they have already succeeded,' he observed.



The bvse members have been forced 'into a tight corset', urged Reinhold Schmidt.

'The change in legislation has pushed bvse members out of the market owing to the now-dramatic influence of municipalities,' added Lars Kossack, managing director of Thüringen Recycling in Erfurt. Following enforcement of the Act, he said, there no longer seemed to be any understanding of the needs of the industry. Dr Ulrich Höke, managing director of Stora Enso Sachsen, agreed: 'Paper recycling has never been a cause for concern for Germany. Before the interruption by the counties, it was a well-organised sector. This goes to show that outside parties should not be allowed to meddle so much.' Germany is essentially taking recycling out of citizens' hands, claimed Dr Höke. 'Suddenly, they cannot take their material where they want; instead, there are all kinds of obligations and expectations,' he said.

Cheers of support

These allegations were refuted by Dr Ralf Bleicher, councillor of the German County Association (DLT). 'It is too soon to reach a final verdict - only time will tell whether the industry can learn to live with it or not,' he said. 'I really doubt that the bvse can say how this is going to end.' 'Actually we can,' interjected Kossack. 'We cannot learn to "live with it", as you say. Our economy was built by industry and the strenuous efforts made by many businesses, not by county representatives who dictate what should happen although they know nothing about the market whatsoever.' Again, cheers of support filled the room.

The required response is 'evident', argued Schmidt, who advocated that the Act 'must be corrected urgently and soon'.

'Fatally wrong'

At the same time, there was plenty of criticism directed at the paper industry's efforts to secure its own supply of raw materials by influencing the wider movement of goods. Schmidt commented that the paper sector had opted for a 'fatally wrong' approach, born out of 'a glaring short-sightedness' as it 'completely disregards' the fact that EU recovered paper collection volumes exceed the quantity that can be used in European paper mills by some 9 million tonnes per year.

Without the 'valve function' of exports, this 'gigantic permanent paper overhang' in Europe would lead to a collapse in paper proceeds, predicted Schmidt. In turn, this would undermine investments in separate collection and sorting systems while discrediting recovered paper altogether, thus 'playing into the hands of combustion schemes'.

'We can rise to the occasion'

According to keynote speaker Wolfgang Bosbach, a member of the German Bundestag and representative of the nation's Christian Democratic Union, Germans are 'usually sceptical in the face of innovation - wary more of the possible risks than the potential success'. However, he added: 'We should not be afraid of the



future as we have proven time and time again that we can rise to the occasion and tackle the issues thrown at us - despite rapid globalisation.' He continued: 'The truth is, in a global market, the big ones do not hit the small ones; no, the fast ones hit the slow ones.'



Wolfgang Bosbach: 'The big ones do not hit the small ones; no, the fast ones hit the slow ones.'

To illustrate his point, he took his audience back in time. 'When the first train was invented, it was able to move passengers at the breathtaking speed of almost 30 km per hour,' he said. 'But before locomotives were officially allowed to leave the stations, scientists revolted, claiming that such a speed would be too much for any human to take and that our brains would be pressed against our skulls as a consequence. As you can all confirm, we got on board anyway and somehow managed to survive.'

To stay on top of worldwide competition, the politician contended that the lack of synergy

between economy and community would have to be addressed and that the country had better invest in new opportunities and technologies instead of holding back progress.

Slow recovery

Per-Ove Nordström, analyst at Swedish research firm McKinsey & Company, suggested that the worst of the recession may well be over but that 'the billion dollar question remains' - namely, 'will the economy go up or down?' Unsurprisingly, said Nordström, recent numbers indicate 'a slow recovery throughout Europe', with the biggest problem for the European paper industry remaining graphic paper production.

Last year's numbers paint a grim picture, with declines of 3.3% for coated woodfree paper and of 3.2% for newsprint. Many European companies have been battling against low margins and high debts, leading to 'the loss of a lot of household names'. Nordström expects this gloomy scenario to last for an 'incredibly long' time unless 'drastic measures' are taken.

Meanwhile, a significant share of European production is currently exported overseas, predominantly to the 'exploding' Chinese market. 'But we think that, over time, most of the export activities will disappear,' stated Nordström. 'Instead, paper will be produced close to its end market.'

Market longevity

Although printing and writing grades might not be doing so well, packaging grades are actu-

ally 'fairly stable', the speaker pointed out, while newspapers, magazines and commercial printing in general all have 'a natural place in our lives' and so can expect longevity. McKinsey is confident that global paper sector growth will average around 3% in the coming years, with Nordström promising delegates that the long-term outlook is 'a reason to rejoice'.

The firm's latest data indicate that, in the longer term, paper industry growth will be concentrated in regions and on grades that use recovered paper 'most intensively'. The highest annual growth rate average of 3.7% is forecast for tissue paper, followed by 2.9% for packaging. Worldwide paper and board demand is expected to be around 460 million tonnes by the year 2020, with consumption forecast to surge 3.5% in emerging countries and to decline 1.1% in developed countries.

But to capture the benefits of this growth, European companies will have to 'restructure as well as re-focus', stated Nordström. He expects many of them to expand beyond their regional market.

'It won't be long before an end-of-waste status for paper follows.'

Altered composition

Dr Johannes Kappen, divisional manager of resource management at German research and consultancy firm PTS, underlined that the 'steep decrease' witnessed in the newsprint and magazine markets and the parallel rise in pack-





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aging have substantially altered the composition of recyclable paper. 'Soon we will witness a 50-50 result, representing paper with a higher degree of ash or non-paper elements, as well as more paper that is not eligible for recycling and complex types of cardboard,' he said.

The result is a requirement for further refinement of paper given that the incoming material stream is 'hardly recognisable'. According to Dr Kappen, the industry must prepare itself for a lower value of sorted material as well as a lower yield. He added: 'We need to realise that we cannot carry on as usual and we need to ask ourselves the following: "Is our sorting equipment in line with time and demand?" I believe many recyclers can do much better. Higher levels of automation will not only enable optimal productivity, it will also allow us to raise the bar on paper quality.'

A potential game-changer could be the monitoring of paper in line, which is currently being tested in the German SortOptAP project. Launched last September, the initiative revolves around an analysis of the parameters of a single piece of paper as it moves along the conveyor belt. 'The near-infrared system is a good example of an advanced sensor-based method that can quite accurately characterise the material, giving us a detailed profile of how much and what type of paper comes in,' explained Dr Kappen.

He continued: 'Naturally, at this stage, we still have to deal with overlapping material. So we have to accept that we can only gauge the surface. But we are only at the dawn of this particular technology. It is likely that it will be further specialised.'

End-of-waste status

Delegates received mixed news from Dr Andreas Jaron, ministerial counsellor at Germany's Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, who was invited to

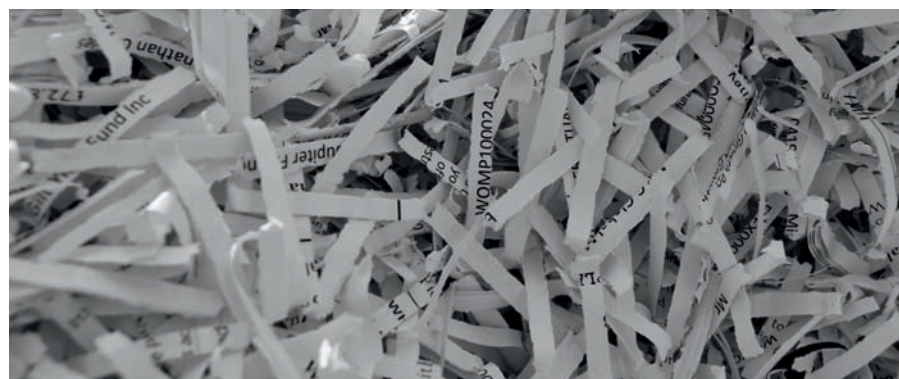
the bvse conference to discuss the widely-anticipated end-of-waste status for recovered paper. Dr Jaron claimed he was initially surprised to find that recovered paper remained stuck in the 'waste category' whereas iron/steel, aluminium, glass and compost have all been 'upgraded' over recent years. 'It was relatively easy to come to those decisions,' recalled the ministerial counsellor. 'But with paper, the case was a little more complicated.'

The speaker alluded to 'heated discussion' at the European Commission, which had been sparked by the fact that various types of paper packaging contain a high degree of other materials. The 'badly written' proposal stated, for example, that up to 30% of other materials such as plastic could be incorporated in the product. 'Many of us did not think this was acceptable and so we had to say "no"; our verdict is that the removal of co-mingled materials is required,' Dr Jaron noted.

But he also offered delegates some grounds for optimism in saying: 'Despite all the negative signals that might reach you today, I want to underline that the matter will be revisited - that it won't be long before an end-of-waste status for paper follows.' He hailed this prospect as 'a good and useful development'.

More expensive

Although there is no 'crystal ball' to tell the exact future of paper, it was obvious that recycled fibres would become significantly more expensive, declared Otavio Pontes, vice president of business development at the Brazilian pulp grade company Stora Enso Biomaterials. But citing data from Finnish consultancy Pöyry, he also asserted: 'We don't need a crystal ball; the general trend for the price of a tonne of paper pulp points down.' Whereas last year prices averaged approximately US\$ 765 per tonne, it is forecast that values will drop to US\$ 680 by 2025.



Pontes also highlighted the fact that the proportion of recycled fibre used by the global paper industry increased from 25% of roughly 250 million tonnes in 1990 to 45% of some 320 million tonnes in the year 2000, and then to 55% of around 400 million tonnes in 2010.

'In the future, cost and availability will be king.'



Otavio Pontes, vice president of Stora Enso Biomaterials.

'Plantation-based pulp production in Brazil is much cheaper than producing pulp in Europe,' the speaker went on to explain. 'This is because wood is produced at a much lower cost, considering Brazil is 100% self-sufficient in forest and land ownership.' However, the nation's financial advantages are 'slowly diminishing' because of land scarcity as well as high labour and transportation costs, he observed.

'The winners'

Another change taking place at present concerns the size of modern plants, according to Pontes. 'Ten years ago, we used to build plants with a capacity of 1 million tonnes per year,' he recalled. 'Nowadays, there are already facilities under construction that will add 50% more capacity. By the end of this decade, we will undoubtedly see most mills producing up to 2 million tonnes per year.'

The Brazilian paper specialist argued that such large operations will achieve a 15% return on investment compared to 9% for older facilities. The 'new guys' will affect an 'already-volatile' market 'tremendously', Pontes said. 'Basically, the winners will be determined by whoever has the lowest costs. Or better put, in the future, cost and availability will be king.' □



Asia's domestic collections of recovered paper in 2011 totalled approximately 96.5 million tonnes.

No let-up in Asia's fibre imports

Under the heading 'BIR global facts and figures', the world organisation is furthering its standing as a source of recycling statistics with the publication of a document entitled 'Recovered Paper Market in 2011', which was authored by paper recycling industry stalwart and BIR Paper Division past president Giampiero Magnaghi of Italy. Recycling International picks out some of the highlights of a report whose coverage includes both secondary and virgin fibres.

Asia continued to grow its domestic collections of recovered paper in 2011, with its volumes jumping more than 4% from 92.41 million tonnes in 2010 to approximately 96.5 million tonnes the following year - well ahead of global average growth of 2.8% (to 228.18 million tonnes). Nevertheless, Asia remained a staunch importer of fibre as it looked to satisfy increasing mill capacities, buying in 39.8 million tonnes in 2011 compared to around 33.4 million tonnes in the previous year.

These were among the key findings to emerge from the latest recovered paper/paper and board market analysis prepared by Italy's Giampiero Magnaghi, a past president of the BIR Paper Division.

At the late-2012 Paper Recycling Conference Europe in London, the managing director of Dutch recyclables trader Ciparo, Joris de Caluwe, predicted that China would need to import 35 million tonnes of recovered fibre in 2014 in order to feed anticipated annual paper and board production capacity of 125 million tonnes.

According to Magnaghi's figures, substantial growth in Chinese imports was visible in 2011, with the total rising to 27.65 million tonnes from 25.56 million tonnes in the previous year. 'China's leading supplier continued to be the USA with 13 million tonnes provided in 2011, followed in second place by Europe on 8 million tonnes and by Japan in third position on 3.4 million tonnes,' it was noted in the report entitled 'Recovered Paper Market in 2011'.

Meanwhile, domestic collections of recovered fibre in China advanced around 5% in 2011, rising from 41.3 million tonnes in 2010 to 43.3 million tonnes.

'Nearing the limits'

At the same London conference, P. R. Ray - an advisor on international business to trading house Esskay Impex - projected that India's imports of recovered fibre would approach 6.5 million tonnes by the year 2020. In 2011, stated Magnaghi in his report, the country's overseas purchases jumped to 2.32 million tonnes from 1.97 million

tonnes in the previous year. Indeed, India effectively joined Indonesia as the world's second largest importer of recovered fibre as a result of a decline in the latter's overseas purchases from 2.41 million tonnes in 2010 to 2.32 million tonnes the following year.

Magnaghi's report also reveals that world apparent recovered paper consumption increased by 2.5% in 2011, and that some countries/regions 'are now nearing the limits of what can reasonably be recovered'. He also drew attention to notable year-on-year recovered paper collection increases for Vietnam (+15%), Poland (+9.2%) and Turkey (+9%) in 2011, while South Africa and Australia suffered declines of, respectively, 7.7% and 1.2%.

In a brief look to the future, Magnaghi identified a 'generally cloudy horizon' for the paper recycling sector, not least because of the global impact of economic uncertainty. But on the upside, he suggested that figures in his report underlined 'the importance of recovered paper as a key component for a major industry'. He elaborated: 'Demand is expected to remain steady as capacity in the Far East continued to grow in 2012 and will remain an attractive source of investment over the coming period, in line with the plans announced by China and also by some of her neighbours.'

Contraction in the West

Paper and board production growth in Asia and Latin America compensated for declines elsewhere in the world to yield a global total of 399.97 million tonnes for 2011 compared to

394.3 million tonnes in the previous year. Magnaghi observed: 'The 1.3% increase in global production represents modest progress compared to previous years, resulting from a contraction among Western countries owing to the economic troubles triggered by a stormy financial situation. The same cannot be said for Asia where outputs generally increased, most notably in China.' In 2011, China's production of paper and board continued to be absorbed by the domestic market and per-capita consumption improved to 72.5 kg, he went on to note.

In 2011, world production of packaging and board was more than 4 million tonnes higher than in 2010 at just over 210 million tonnes. The global graphic and printing production total edged marginally lower to slightly more than 142 million tonnes, while tissue output climbed from 28.64 million tonnes to 30.32 million tonnes.

Potential for increases

Standing at 56.8 kg in 2011, average per-capita consumption of paper and board around the world was still lower than the 59.2 kg recorded in 2007. Consumption figures for Asia and Latin America - at 44 and 46 kg per person, respec-

tively - were still well below the three-figure totals of North America (225 kg), Europe (118 kg) and Australasia (136 kg), thus highlighting the potential for increased usage in the developing world. China reinforced its position as the world's largest producer and user of paper and board in 2011: its output jumped 7.1% to 99.3 million tonnes while apparent consumption (production plus imports minus exports) leapt 7.3% to 97.3 million tonnes. Its nearest challenger, the USA, saw its production fall 1% to a little over 75 million tonnes while apparent consumption slid 2.7% to 72.37 million tonnes.



Global paper and board production yielded a total of 399.97 million tonnes in 2011.

The world's leading exporters of recovered fibre in 2011 (million tonnes)

USA	29.93
UK	4.45
Japan	4.435
Germany	3.385
The Netherlands	3.32
France	2.9
Belgium	2.12
Italy	1.72

Source: BIR's 'Recovered Paper Market in 2011'

Recovered paper collections by region (million tonnes)

	2010	2011
Asia	92.41	96.50
Europe	61.27	61.76
North America	51.12	52.39
Latin America	10.92	11.46
Australasia	3.65	3.61
Africa	2.45	2.46
Total	221.82	228.18

Source: BIR's 'Recovered Paper Market in 2011'

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Duesmann & Hensel Recycling

Always seeking out new frontiers

In search of new markets, Duesmann & Hensel Recycling, one of the leading companies in precious metals recycling from spent automotive catalytic converters, has rapidly built up a global network of subsidiaries and sales offices. Most recently, the company has established plants in South Korea and the UK. Recycling International talks here with Duesmann & Hensel's managing director Markus Theile about a range of issues, including opportunities arising from spectacular car sales in Asia, the power of German quality and 'bad guys' who replace valuable ceramics with fake material.

To the inexperienced, the oversized cylinder looks rather uninteresting. To a thief, to scrap dealers and to the catalyst recycling industry, it is a source of precious metals such as platinum, palladium and rhodium. Recovery of these metals is a complex process that requires modern facilities and large capacities. They know all about this at Duesmann & Hensel Recycling's headquarters in Aschaffenburg, south Germany, as well as in its subsidiaries. Worldwide, in 2012 the company processed

more than 4 million catalytic converters including metal foil catalysts, claims managing director Markus Theile, who has been with Duesmann & Hensel since 2005. Together with Dr Friedhelm Schöne and Oliver Krestin, Theile leads this highly-innovative and rapidly-expanding recycling company.

During the past 15 years Duesmann & Hensel has evolved from a local collector to a global expert in the field of catalytic converter recycling. Founded in 1998 by Alexandra Duesmann, it originally started by purchasing catalytic converters. In 2003, the company developed a processing line for ceramic catalytic converters, by which time Ralf Duesmann and Clemens Hensel had each become a ceo. Another year and an economic revival later, the commissioning of a second processing line - for recycling metal foil converters - expanded the business range in Aschaffenburg. Furthermore, the US subsidiary was established.

Best people available

Today, Duesmann & Hensel Recycling is one of the world's largest processors of spent catalytic converters. From being a collector and processor, the company has transformed itself into a supplier of a number of services directly related to the collection and processing of



catalysts, such as: purchasing; processing; analysis and value determination; precious metal management and recycling as well as financing. The company operates plants and sales offices in 10 countries on five continents. Markus Theile claims to lead the world's biggest recycler of metal catalysts (which make up 5% of the market). 'Among processors worldwide of ceramic catalysts (which account for the other 95% of the market), I would say we have a top 10 position,' he states.

How does Theile explain this success? 'In the first place, it takes the best people available,' he responds. 'We are lucky to work with top experts in the precious metals industry.' Another factor is what is commonly called *Deutsche Gründlichkeit*: worldwide, German quality and technical standards are high on the popularity



Markus Theile: 'We do keep a close look at all markets.'

Duesmann & Hensel Recycling: facts & figures

Formed: 1998

Headquarters: Aschaffenburg, Germany

Employees: 130 in Germany, 200 worldwide

Subsidiaries: Australia, China, France, the UK, South Korea, Malaysia, Austria, the USA

Sales offices: Czech Republic, South Africa

Services: purchasing, processing, analysis & value determination, logistics, precious metal management & recycling, financing

Materials: any type of catalytic converter, oxygen sensors, diesel particulate filters, stationary catalysts from industrial and off-road application

Organisation membership: BIR, IPMI, FVEM, BVSE



Catalytic converters waiting to be recycled.

list. In Asia, for instance, these are the main drivers of co-operation with European and particularly German companies.

Crisis-proof

Over the past 10 years, Duesmann & Hensel has made giant steps towards globalisation. In search of new markets, the company has rap-

'We are lucky to work with the best people available'

idly built up a worldwide network of subsidiaries and sales offices. According to Theile, the saturation of the European market was one reason why the company chose a more global approach for the business. 'We figured the rise of new markets would compensate for the decline in existing markets. Besides, we wanted to be closer to our customers', he says.

Theile underlines the opportunities for the company arising from spectacular car sales in Asia, with its 4 billion people - 60% of the world's population - offering the largest automotive market in the world. Asians are buying twice as many cars as they did four years ago. He states: 'Last

year, China had an increase in car sales of 30%. Thailand saw an increase of 80%. These are spectacular figures. Given the growing significance of the automotive industry and the high demand for raw materials in Asia, the reason for our commitment to China and also Malaysia is clear.'

Saving time and transport costs

For Duesmann & Hensel, another interesting Asian market is South Korea where, last year, it set up a subsidiary in the capital, Seoul. With an average lifespan of only seven years per vehicle, some 800 000 cars are being recycled in this country every year. Until now, catalytic converters collected in South Korea were sent to Europe. In future, only the monolith will be exported, leaving the heavy steel cover to be recycled domestically and thus allowing Duesmann & Hensel to save transport costs.

It is not only Asia that has captured Duesmann & Hensel's attention. In 2009, the company established a recycling plant in Melbourne which has the capacity to process all spent ceramic catalytic converters arising in Australia and New Zealand. The US operation in West-Berlin, New Jersey, is the largest processing plant for metal foil converters in the country with 35 employees. Besides Germany, the company operates eight plants worldwide - in Australia, China, France, the UK, South Korea, Malaysia, Austria and the USA. Furthermore, it runs sales offices in South Africa and the Czech Republic.

Right-hand drive

A recent milestone for Duesmann & Hensel has been the start-up of a recycling plant at Slinfold in the south of England. As vehicles in the UK are right-hand drive, they are rarely exported and almost all used cars are scrapped. 'The catalytic converters are entering the recycling process a lot sooner,' notes Theile. 'So even though there are fewer cars on the market, the number of catalysts in the recycling process is a lot higher.' Although there are no concrete plans to start up more plants in the near future, the company is constantly seeking business opportunities. It tries to keep the path to and from its customers short. 'We do keep a close look at all markets, always ensuring to gain flexible and best practice solutions for our customers,' Theile says.

Market challenges

Theile is positive about the future. Of course, no one can predict what happens to precious

Oh precious thing....

The average catalytic converter contains around 2 grams of platinum group metals (PGMs) with a total value averaging Euro 65. The PGM content and therefore the value varies depending on engine size and design (diesel/gasoline); it can be as high as Euro 450 but as low as Euro 5 per converter. Extracting the precious metals is a complex process for which modern facilities and large capacities are required. More than 8700 square metres of space is available at Duesmann & Hensel's headquarters in Aschaffenburg. Here, several catalyst decanning stations separate the steel scrap from the elements containing precious metals. Large selection stations ensure the rapid and clean processing of the materials, resulting in a homogeneous powder. A small sample of 100 grams is sent to an independent, external laboratory for the value to be determined.



Duesmann & Hensel Recycling's headquarters at Aschaffenburg, south Germany.

metal prices, but sharp declines or rises as back in 2008 are not expected. In that year, and over a single month, prices of both platinum and rhodium dropped dramatically, the former from US\$ 2200 to US\$ 800 and the latter from US\$ 10 000 to US\$ 1100 per troy ounce. Recycling adds a sustainable inflow of material to the market and thus stabilises the supply side. Also, news like for instance a mine workers strike in South Africa does not have that big impact as it had previously.

Another issue is converter theft, although this has always been a problem. Currently, a more pressing threat is coming from fake converters, Theile says. 'Bad guys remove the valuable ceramic and replace it with material of low or no value. The product looks very professional and scrap dealers have to be careful when buying material from unknown sources or traders. Due to our long experience we are aware of those manipulations and know how to handle them.' □

Agents welcome

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R. Debaere, CEO
Group Galloo Recycling
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Czech tyre plant underlines Pallmann's ambitions

The building and operation of complete tyre recycling plants has become a serious business for machine manufacturer Pallmann. Just recently, the company has started up a 'state-of-the-art' facility in the Czech Republic. And there is 'more to come' in Eastern Europe, Pallmann's vice president Uwe Wicht confirms.

Germany's Pallmann Group, one of the world's largest developers of innovative size-reduction technologies, is not wasting any time in exploring business opportunities in what vice president Uwe Wicht calls 'one of the company's main target regions', namely Eastern Europe.

In March, Pallmann unveiled a brand new tyre recycling plant in the Czech Republic, near the small town of Zatec some 80 km north west of the capital Prague in a sparsely-populated rural area. The plant was completed in concert with Czech recycling company Hargo which has invested Euro 7.8 million in the project. It is employing around 60 people in the initial stage but the figure is expected to rise to 120 within three years.



The brand new recycling plant at Zatec in the Czech Republic.



Shredding produces 'tyre chips'.

Its main product will be rubber granulate for use as a semi-manufactured material for impact-absorbent surfaces such as safety tiles under playground equipment and at sports facilities. The steel and textiles derived from the recycled tyres will be sold on for further processing. Although the recycling of used tyres is not new in the Czech Republic and several companies are involved in this field, most end up as fuel at cement plants.

Complete solutions

For Pallmann, this is not its first step into Czech territory, having previously installed shredder and separation machines at two separate tyre plants. 'Now is the first time we have built a complete tyre recycling facility in which we are also responsible for the day-to-day operation,' Wicht points out.

It was only three years ago that the company started to focus on providing complete solutions for the shredding and reprocessing of vehicle tyres. The first serious move in that direction was taken in 2011 when Pallmann introduced a new tyre processing concept in co-operation with Spanish company GMN.

The recently-opened plant on the small industrial zone near Zatec is based largely on the same concept. 'We had a smooth start-up,' Wicht says. 'I realise I may not be the most objective person to say this, but I truly believe that when it comes to tyre recycling this is the most efficient, state-of-the-art plant you will find anywhere in the world at this moment.'



Pallmann's Czech pride and joy: a tyre processing line in operation since March.

The facility has three cleaning sections, for shredding and separating rubber, steel wire and fibres. It can process truck tyres of up to 1.2 metres in diameter, tractor tyres of up to 1.8 metres and car tyres of up to 0.75 metres. The plant has the capacity to handle 1.5 million tyres per year, of which approximately 70% are coming from trucks and the other 30% from cars.

The Czech facility draws in used tyres from all over the European mainland, but principally from Italy, Germany and, unsurprisingly, the Czech Republic.

Fast connections

So why build a plant in a rural area with limited infrastructure? 'The facility is built in a small industrial area which has high potential for growth in the near future,' Wicht explains. 'Good infrastructure is on its way. Thanks to a new highway still under construction, transport to and from the plant will be more efficient in the future.' The new highway will create fast connections to Prague and Chemnitz in Germany within two or three years. But Pallmann's clients in the recycling industry are not prepared to wait that long to see for themselves what the

plant has to offer, with visitors converging on the facility from all over the world. 'Recently, a group of representatives from a Chinese recycling company visited the site,' Wicht notes by way of example.

Pallmann intends to expand its tyre recycling presence across Eastern Europe. 'Our Czech operation is a first and giant step, but there is more to come,' Wicht insists. Without giving too many details ('all our competitors read this magazine'), he estimates four to six new tyre recycling plants will be started up in Eastern Europe within the next five years. Wicht sees big opportunities in Poland, Slovakia, Ukraine and Belarus, as well as in countries of the former Yugoslavia such as Croatia and Serbia. □



Uwe Wicht: 'We had a smooth start-up'.

From left to right: Alexander Torneberg of electronics recycler Torco in France, and Shannon Branner and David Loewenthal of Universal Recycling in South Africa.



ISRI 2013
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Lifetime Achievement Award for Arnold Gachman

In Orlando, ISRI presented Arnold Gene Gachman, president of Gachman Metals and Recycling Company of Fort Worth, Texas, with its Lifetime Achievement Award for his dedication and leadership in the field, as well as for his commitment to the institute itself.

In 1969, at the age of 27, Gachman became general manager of the family business, then called Gachman Metals, and five years later he was appointed the company's president. He took on leadership roles with ISRI's predecessors - the Institute of Scrap Iron and Steel and the National Association of Recycling Industries - and also served as ISRI's third president.

'I was fortunate enough to have the influence of many people that helped guide me and make me a better person and professional,' he said. 'That is one of the many benefits of ISRI. It is the relationships that are formed, from large operations with great business practices to those that are just starting out and learning the industry; and from those of us who have spent decades learning to those just starting out.'

He continued: 'It is up to those who are more experienced to mentor and build future leaders, and to encourage all levels of involvement, from serving as national officers to outreach in local

communities. The work of today's young leaders and those to come will be the most critical in moving ISRI forward, and increasing its visibility and effectiveness in handling the issues it will face.'



ISRI chair Jerry Simms (left) presents Arnold Gachman with the Lifetime Achievement Award.

Recyclers meet in

In early April, the international recycling industry gathered in the US city of Orlando for the annual Convention and Expo of the Institute of Scrap Recycling Industries (ISRI). The event was attended by more than 5200 people, making it ISRI's largest-ever convention outside of Las Vegas. Recycling International was also present and, in a series of articles, brings you comprehensive feedback from this huge event, including a round-up from the exhibition floor and from meetings dedicated to ferrous scrap, nickel/stainless steel, aluminium, copper, recovered paper, plastics and electronics.

It is obvious that the current economic climate continues to weigh down consumer, processor, and broker sentiment. It's not that business is outright awful, but for the majority of the delegates in Orlando, it's only plodding along and thus seemed devoid of enthusiasm.

When asked about the current recycling market, delegates described it basically as 'not good, not bad'. One US manufacturer elaborated: 'We are still selling machines, but as long as the financial and economic crisis is unresolved, sales will be at a low level. Our customers are very cautious about making new investments.' Many traders present in Orlando pointed to another problem in the international markets: the shortage of scrap. 'We just don't know where we can get enough scrap to satisfy our

customers' needs,' one German trader complained. 'It is currently very hard to source enough material.'

The least optimistic comments, came from the iron side that is currently dominated by weakening prices for scrap and finished steel, shorter lead times, and a diminished scrap flow that is somewhat uncharacteristic for this time of the year.

What does concern many - or perhaps most - in the recycling industry as well as on Wall Street, is what happens in China. News that China's first quarter GDP growth disappointed, coupled with lingering problems in Cyprus and economic uncertainty in the USA, prompted a wave of equity selling in the USA. Adding to this uncertainty is the fact that the International Monetary Fund revised its 2013 global



Many ISRI delegates enjoyed a drink at the open bar of the Tung Tai Group.

To the left, Adriano Assi, publisher of the Brazilian recycling magazine *Reciclagem Moderna* and managing director of Brazil's recycling exhibition *Exposucata*, which will be held this year from 8-10 October in Sao Paulo. To his right, Leandro and Carlos Alberto Azevedo of metals recycling company TR Brasil.



Martin Todd of for the Aircraft Fleet Recycling Association (AFRA).



the Fun Capital of the World

growth estimate lower to 3.3% year-on-year from 3.5% previously. The IMF also lowered its outlook on China's economic growth to 8.0% from 8.1%.

'China, China and China'

During a Spotlight on the Economy session, experts provided some insights into where they think the economy is heading over the coming months. 'It's probably going to get a bit uglier, at least in the short term,' said Bart Melek of TD Securities. 'With China - whose economy has a direct impact on many commodity prices and much of the world's economic activity - trying to slow down its overheated housing market, the global metals trade has not kept pace with analysts' projections, and it's occurring at a time when the European zone is weakening as well.' He went on to say that China is growing at an annual rate of 8% with a significant downside risk, and that metals prices have three main drivers: 'China, China and China.'

Timothy Kneen of US Institutional Consulting agreed that China has an enormous impact on the global economic outlook. 'If we see the economy right now, it basically looks like a tricycle to us,' he explained. 'The front wheel, the engine that is driving the world right now, is the United States. It's the engine that will pull everything along behind it. We would argue the back two wheels of the tricycle are China and Europe, and they're looking awfully wobbly to us right now.'

Aircraft recycling

Martin Todd, communications manager for the Aircraft Fleet Recycling Association (AFRA), provided an update in Orlando on the organisation's development. AFRA (www.AFRAassociation.org) is the leading global industry association dedicated to pursuing and promoting environmental best practice, regulatory excellence and sustainable developments in aircraft disassembly, as well as the salvaging and recycling of aircraft parts and materials. It was formed in 2005 by 11 organisations from various sections of the aircraft industry with the aim of driving and motivating industry towards solutions for the safe and environmentally most responsible way of managing end-of-life aircraft. These founding members were: Air Salvage International; Adherent Technologies; Bartin Group; Boeing Commercial Aircraft; Chateauroux Air Centre; Europe Aviation; Huron Valley; Fritz; Milled Carbon; Rolls Royce; and WINGNet. Now, AFRA has 71 members from 11 countries, including many key players in the aircraft end-of-life community.

'In 2012, we launched the latest Best Management Practice (BMP) Guide on aircraft materials recycling at the ISRI Convention in Las Vegas,' Todd said. 'Since then, six companies in the aircraft materials recycling sector have been accredited by AFRA: Aircraft End-of-Life Solutions (AELS), Aircraft Demolition, ELG Metals, HVF West, Robert Gibbs Company and Universal Recycling Company of South Africa.'

AFRA members recycle more than 650 airplanes a year, which together yield more than 30 000 tonnes of aluminium and 600 tonnes of used aircraft parts. Since AFRA's formation, its members have dismantled more than 7000 aircraft, comprising 6000 from the commercial sector and 1000 from the military. It has been calculated that the market for aircraft parts is worth approximately US\$ 2 billion per year but AFRA's belief is that even greater financial value can be extracted from end-of-life activity. According to the association's estimates, 12 000 to 15 000 aircraft will reach their end-of-life phase in the next 20 years. Disposal of these aircraft is a major problem, which is why many companies have launched environmental programmes to address the matter. AFRA - with companies from Africa, Europe and North America - provides an international perspective to assist the industry on the legal, regulatory and technical aspects of aircraft recycling, while also promoting greater co-operation among governments and industries. □



ISRI returns to Las Vegas

In 2014, the ISRI Convention and Expo will return to 'Sin City', taking place on April 6-10 at the Mandalay Bay Resort & Casino in Las Vegas, Nevada.

The ISRI Expo: the biggest recycling show on earth

Every year, hundreds of companies take advantage of the opportunity to exhibit at the US Institute of Scrap Recycling Industries' Expo. At the 2013 event in Orlando, the products and services of 330 exhibitors were showcased across more than 350 000 gross square feet of floor space. Many of those companies that were present have been coming back to the show year after year; there is even an elite group of 14 exhibitors which hold the distinction of having taken space at every ISRI Expo since the show began 25 years ago. In this article, Recycling International rounds up some of the key news from the show floor.



From left to right: Alexander and Henri Jegerings of Bronneberg Recycling Machinery and Rich Hood of Mid-Atlantic Waste Systems, the North American dealer of Bronneberg.

— Bronneberg Recycling Machines —

After the ISRI Expo, Dutch recycling machinery manufacturer Bronneberg was very satisfied with its debut at the show. 'We actually sold several of our small and medium-size cable strippers and some alligator shears,' said managing director Henri Jegerings. 'We will certainly be back next year.'



Bronneberg's Forflex 400 alligator shear.

Bronneberg showcased its Forflex 400 alligator shear, which is fitted with a mechanically-adjustable hold-down, a protected spear head operated by a foot pedal for single or continuous cutting, and an adjustable blade opening. With a blade size of 15.74 inches and a blade opening of 9.84 inches, the shear has a 10.2 HP motor and a maximum cutting capacity of 1.73 inches. Also on display was the new KAB-X cable stripper with a three-way stripping mechanism and a transparent polycarbonate hood to enable monitoring of the stripping process. The 4.08

HP machine caters for a wire size input of between 0.39 and 3.54 inches and for a production capacity of 164 feet per minute.

In North America, Bronneberg machines are sold through Mid-Atlantic Waste Systems.

www.bronneberg.nl

— Eldan Recycling —

A new generation of Eldan Raspsers was unveiled to the masses in Orlando. The Eldan Multi-Purpose Rasper - MPR200 HD is an upgraded unit based on the Eldan Heavy Rasper, but with new features for increased capacity and reduced maintenance downtime, the firm says.

The machine is equipped with 220 kW (295 HP) of main drive power and more than double inertia in the two belt/flywheels. The increase to 144 rpm is said to extend capacity by up to 20%. The machine also boasts a new cover that is capable of protecting the bearing from steel and dirt. Moreover, the screen system



The Eldan Multi-Purpose Rasper - MPR200 HD.



Ignacio Rivero, export sales manager of the ZB Group (left) and Bill Padula of ZB's North American dealer Peninsula Equipment.



now consists of three segments, each of which can be turned.

www.eldan-recycling.com

Genesis

According to their developer, Genesis XT mobile shears represent 'the industry's next-generation shears, designed to process scrap more efficiently'. The shears fit on smaller carriers, reducing initial outlay on the equipment as well as energy consumption, Genesis says. The Genesis XTs come in four model types: the



David Palvere of Genesis (left) explains the advantages of the new XT mobile shear to a potential customer.

555, 555R, 665 and 665R. Shorter in length/height and lighter in weight, their centre of gravity is closer to the excavator, enabling the 555 and 665 models to be mounted on excavators of 20 to 30 tonnes which, previously, could accommodate only smaller, less powerful shears, Genesis explains. The apex, where most of the cutting is done, is closer to the back of the jaws, thus improving

material gathering while increasing cutting performance and efficiency, the developer claims. In addition, the Genesis XTs offer improved visibility through lower shear height, the firm says.

www.genesisattachments.com

Granutech Saturn Systems



The new Super 80 (S-80) of Granutech Saturn Systems.

Granutech Saturn Systems, the Texas-based manufacturer of recycling equipment, formally launched its next-generation Saturn Grizzly grinder series at the ISRI Expo. The new Super 80 (S-80) model features several design and performance enhancements, including a higher horsepower, slower speed and the production of four times more torque than the original Model 80, while delivering a capacity of 10 tonnes per hour in rubber scrap recycling applications. The grinder can handle a variety of materials, including tyres, non-ferrous metals, plastics and e-scrap. Aimed at customers who need to process at higher volumes while making a smaller product, the S-80 boasts a new knife and rotor design that is said to work exceptionally well on tyres. Other features include larger shafts and bearings, a solid one-piece forged rotor, and a higher capacity gearbox. All this supports the grinder's ability to produce nearly four times more torque than the standard M-80 model while doubling the machine's production. A single-line tyre processing system can now achieve an hourly capacity of 8 tonnes - 'an amount previously unattainable before the Super-80', according to the company.

www.granutech.com

Holmatro

Based in the Netherlands, Holmatro designs, develops, produces and supplies hydraulic products and systems for industrial applications as well as technical rescue services. In Orlando, the company showcased its new double-acting aluminium cylinders which allow workers to lift 100 tonnes on their own.

The cylinders are more than 50% lighter than steel ones but just as strong, the company says. They are made of 7075-T6 black anodised aluminium and are fitted with the Duo Power Ring concept - a combination of a superior seal and an extremely strong composite bearing. In addition, the XL Saddle protects the plunger of the cylinder and guides the load as effectively as possible.

The new range of double-acting aluminium cylinders consists of 24 models with different capacities and stroke lengths.

www.holmatro.com



Holmatro's new double-acting aluminium cylinder allows workers to lift 100 tonnes on their own.

Oxford Instruments

The X-MET7000 eXpress hand-held XRF analyser from Oxford Instruments verifies and screens material up to four times faster than the X-MET7000 quickSort, the company states. The unit features the firm's 40 kV X-ray tube and high-resolution, high-count-rate silicon drift detector. Part of the X-MET7000 series, it boasts the largest touchscreen in the hand-held XRF market (4.3 inches) as well as the largest alloy grades library at more than 1600 entries, the company claims. Large, functional icons are designed to assist users while the 'bright, high-contrast' LCD touchscreen allows outdoor viewing even in direct sunlight. Up to 12 hours' life is offered on a single battery charge.



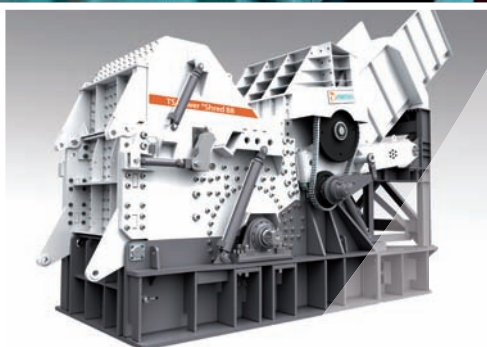
The X-MET7000 eXpress hand-held XRF analyser from Oxford Instruments.

www.oxford-instruments.com

Recy Systems

Recycling management software specialist Recy Systems of Germany demonstrated its Fleet and Container Cost Control system which is targeted

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Bernd Klarmann (left) and Manfred Aniol of Recy Systems demonstrate their new Mobile Grading app.

at companies which operate their own fleet of trucks and provide containers to customers. The GPS-based control system can be easily installed in a truck. Modules include further functionality such as: navigation, geocoding, location of trucks, truck routes and truck driver-operated scales. Completely new is 'Mobile Grading', a native app which allows a scrap yard master to control the trucks in the yard and to grade the material which is unloaded. The application runs on a touchscreen device which is linked to the database by WiFi or GPRS. As soon as the weight has been registered, the yard master can see the truck on his device and can select commodities using a tableau which can be easily set up by the customer. It is possible to split the load into multiple commodities by percentage, and also to add deductions for the whole load or by commodity. As soon as the yard master releases the truck through a touch on his device, the data are available at the scale. The device is also capable of taking pictures and linking them directly to the commodities on the ticket - described by Recy Systems as another feature designed to reduce risk.

www.recy-systems.com

RMG Technology

'Our new hand-held metals analyser compares to no other analyser on the market and I am sure it will set new standards,' says Mitchell Smith, director of UK company RMG Technology. The mPulse hand-held portable analyser uses laser-induced breakdown spectroscopy (LIBS) technology instead of analytical X-ray fluorescence (XRF) or optical emission spectroscopy (OES) to analyse the alloys in metals. A powerful micro-laser beam causes high-temperature plasma to be formed on the surface of the test piece and the light generated indicates the chemical composition of the sample. Tests take just over one second to complete; the chemical analysis and alloy name are provided on a large, touchscreen display.

LIBS can be considered a 'virtually' non-destructive technique, with less than 1 billionth of a gram of material consumed during a typical test, according to the company. The mPulse's operation is completely 'point and shoot'; there are no program selections to be made or electrodes to clean. Furthermore, it does not discriminate between metal types; light elements are analysed as easily as heavier elements. The only button on the mPulse is the trigger which is used to power-up the instrument and to fire the laser. There are single and multi-test



Mitchel Smith of RMG Technology shows his mPulse metals analyser.

operations with statistical precision data, while the pre-loaded alloy table is extensive and can be amended by the user. The mPulse can test large or small samples including turnings and granules. Analytical concentration ranges are appropriate for the type of metal being tested, according to RMG Technology.

www.rmgtechnology.com

Sicon/SMS Siemag

Custom-tailored Eco Shred shredder plants from Sicon and SMS Siemag recover virtually all metal from scrap, creating a ferrous product suitable for continuous casting flat steel products in an electric arc furnace, the companies maintain.



The custom-tailored Eco Shred shredder plant from Sicon and SMS Siemag.

The plant produces ferrous shred of a uniform size and density with a low copper content. The optional Volkswagen-Sicon process recovers all non-metallic residues too. Intelligent control of the process is said to produce higher throughput rates given the power input level, resulting in lower production costs, Sicon claims. Also in Orlando, Sicon promoted its Polyfloat technology for density separation of plastics from shredder residue as well as electrical and electronic scrap.

www.sicontechnology.com

Terex Fuchs

The MHL 360 E material handler from industrial cranes supplier Terex Fuchs features a six-cylinder, 254 HP turbo-charged engine and a reach of up to 18 metres. Compared with previous models, the handler is more responsive to operator commands even when handling heavy loads, Terex claims.



The MHL 360 E material handler from industrial cranes supplier Terex Fuchs.

The handler's engine and hydraulic system work together to create fluid load cycles for faster, more efficient operating cycles, it explains. With the hydraulic system's separate slewing circuit, machine swivelling can be started and stopped quickly; the handler can also swivel and lift simultaneously. An energy recovery feature feeds braking energy back into the main hydraulic pump as the operator slows the slewing of the upper structure to reduce the load on the engine. The new hydraulic system delivers up to 20% faster load cycles than the company's D series, Terex says. The handler's hydraulically height-adjustable cab offers eye-level elevation of up to 6.1 metres above ground level and independent forward movement up to 2.2 metres. Inverted hydraulic boom cylinder mounting is said to offer superior protection from debris.



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The crane is equipped with rigid hydraulic pipes located on the stick, boom and undercarriage to help protect against damage. Bearing points on the boom and lift cylinders are reinforced with full-length metal.

www.terex.com

— US Shredder and Castings Group —



AFL-4 system from US shredder and Castings Group.

The US Shredder and Castings Group has introduced the AFL-4 system which, through use of a heavy-duty gantry, conveyors and sensors, automatically loads automotive shredder residue (ASR) in four 20-foot open-top con-

tainers or two 40-foot trucks after being processed through a shredder downstream.

This approach eliminates the need for a front-end loader and therefore reduces operating costs, according to the company. Furthermore, it eliminates dust and dirt from the repeated handling of the shredded material, it claims.

www.usshredder.com

— ZB Group —

In a booth shared with its major US dealer Peninsula Equipment, Spain's ZB Group presented its new THOR 1519 mobile shredder unit for the processing of scrap metal and construction & demolition waste.

The group has specialised in the design, manufacturing and installation of metal and scrap processing equipment for more than 30 years, including mobile shredder units for ferrous and non-ferrous metals with production capacities of up to 30 tonnes per hour. Input materials can include end-of-life vehicles, white goods, aluminium and rods, among others.

The THOR 1519 weighs 83 tonnes and is fitted with a SHZB-1519 hammer mill with 1500 x

1000 mm entrance, 150 kg hammers and 130 x 90 mm grids. The rotor can be lifted with the upper frame of the shredder. It features mechanical locking latches and an ejection gate for non-crushables.

Other important features of the THOR 1519 include: a fixed ramp between the feeding system and the shredder, combined with a tilting ramp which is operated by hydraulic cylinders; an outgoing vibrating feeder of 100 mm width and 2900 mm in length, driven by two electric vibrating motors; a permanent magnetic overband system for the conveyor-to-stock belt; a hydraulic hammer extractor; radio-frequency control to operate the mobile unit; and a Caterpillar 775 BHP engine.

www.zbgroup.es



The THOR 1519 weighs 83 tonnes.

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'This is an industry under siege'

The 2013 Spotlight on the Economy turned its focus on China and also on the massive amounts of debt that developed world economies have accumulated over the last decade. The resulting consensus was short-term optimism over the effects of stimulus, but medium- and long-term concern over how developed economies will de-leverage and what negative consequences will accrue when they do.

Jason Schenker, president and ceo of Prestige Economics in Texas, opened the forum with a harrowing perspective on the current state of the scrap industry, and how the global economy is likely to impact it in coming years. 'This is an industry under siege,' he announced: 'Tight supplies, thin margins and excess capacity for processing.' Other negative factors pose even greater risks, challenges and threats. Of these, he gave particular attention to sovereign debt issues. 'There is 17 trillion dollars in US debt, 10 trillion dollars in USA state debt, and a 100 trillion entitlement obligation,' he said. 'And that's not even mentioning pension obligations for

states, local governments and the military. These are daunting, significant risks.' Bert Melek, head commodity strategist at TD Securities, wasn't very optimistic either. He told the substantial audience that the healthy first quarter had given a 'false sense of security', and he expected fundamentals to turn uglier in the second quarter. He felt that much of the drag would come from slowing conditions in China. On the topic of metal demand going forward, he noted that there were three drivers to watch: 'China, China, China.'

Melek expects India and China to grow over the next several quarters. 'For every unit of GDP growth in those locations,' he added, 'there is a disproportionate demand for metal.' He also pointed to resource shortages as a bullish trend for scrap markets.

'Wobbly traction'

Timothy Kneen, senior vice president for wealth management and a senior institutional consultant at UBS Wealth Management, described a US-centric global economy thus: 'We view the US as the front wheel of a global tricycle, while China and the Eurozone provide somewhat wobbly traction on the sides.' He described Chinese loan growth, and a Chinese middle class, as 'pushing things along', all the while expressing considerable caution about the viability of continued, strong Chinese growth. But his biggest concern echoed Schenker's: sovereign debt.



'How do we deal with the massive amount of de-leveraging that must happen out there?' Kneen asked delegates. 'We are in uncharted territories. We've never seen this much leverage in the

'Chinese irrationality creates fear and higher prices.'

system, or anyone try to unwind it.' And he predicted: 'We will stimulate growth through more stimulus programmes in hope that we'll grow our way out of the leveraged problem. We'll keep punting.' Kneen wasn't completely negative. He said that there is 'incredible' upside in the US housing market, with recent 18% growth. And housing, he noted, brings along other benefits. 'For every dollar added to personal wealth,' he said, citing an unnamed study, 'consumers spend 1.6 cents more.'

Commodity accumulation

Douglas Hepworth, director of research at Gresham Investment Management, pinned recent volatility in global commodity markets on China. 'They will

accumulate commodities,' he said. 'Why copper? Well, it's kind of copper's turn. They did the same thing with soybeans and aluminum.' Hepworth described this buying pattern as 'irrational', claiming that Chinese irrationality creates fear and higher prices. Schenker, in his role as moderator, asked the panel whether the USA needs to become accustomed to an economy that grows slowly, rarely exceeding 3%. Kneen answered in the affirmative: 'The reason behind this is the global de-leveraging. When governments pay off debts, they stop building roads, bridges, etc. That stops a huge input into the economy that's a driver of GDP.' Kneen also noted that - due to the increasing reliance of national governments on stimulus programmes - he fully expects inflation to rise. At the same time, he believes stimulus programmes work, and that the newly-announced Japanese programme will help to revive the country's economy. 'But the question is not whether or not running up the balance sheet gets you out of problems,' he concluded. 'The question is how do you get yourself out of it. The more countries that do it, the harder it becomes to get out of it.' □



Jason Schenker: 'Tight supplies, thin margins and excess capacity for processing.'



Timothy Kneen: 'We view the USA as the front wheel of a global tricycle.'

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Steel market expands faster than demand

The stability of the ferrous markets in recent months was reflected in the generally confident tone of the 2013 Spotlight on Ferrous. However, the session also highlighted a number of industry concerns, among them the unsustainability of China's over-production of steel and excess shredder capacity in the USA.



Sachin Shivram: 'It's time to overcome the stigma that if you buy mid-month you're desperate for scrap.'

Philip Hoffman, vice president of ferrous scrap trading at MedTrade, provided a comprehensive overview of a global steel market that continues to expand faster than demand. Global scrap usage was 570 million tonnes last year, of which electric arc furnace consumption was 440 million tonnes; meanwhile, the international scrap trade bought and sold 103.648 million tonnes, with the USA emerging as the leading exporter given its 21.08% share of the globally-traded material. The US market was heavily consolidated, with a mere 10 companies controlling 66% of the 72 million tons of scrap produced in 2012. According to Hoffman, roughly 40% of the global sea-borne scrap trade is controlled by four exporters.

Of the 103 million tonnes of scrap traded globally in 2012, Turkey was the leading importer with a 22% share. Turkey was likely to continue in this role as it builds additional steelmaking capacity 'despite global overcapacity'. The country's government is investing in infrastructure subsidies, and demand is strong. Longer-term, he noted, that demand will remain 'reasonably good'. China, however, is a more difficult market to predict, in part because it is running a large steel surplus. On that point, Hoffman noted that recent Chinese dumping of finished product had had a negative effect on the markets. 'The unsustainability of Chinese over-production has me concerned,' he concluded.

Break from tradition

Spencer Johnson of INTL-FC Stone agreed that the continuing importance of the Chinese and Turkish markets make it increasingly difficult to correlate scrap prices with US market fundamentals. He pointed out that China is creating 'massive' iron ore mining capacity at present. 'If that significant iron ore comes on market, with less demand in the market, low iron ore prices will have a negative impact,' he concluded.

Sachin Shivram, general manager, metals purchasing at Severstal North America, noted that some European countries have been offering prime grades of scrap, thereby depressing prices in North America. 'If things pick up, you won't see



those exports and US mills will need to find alternatives,' he said.

As to the tradition among consumers of buying only occasionally each month, Shivram said: 'We think it's archaic that you buy only one or two days per month. It's time ... to overcome the stigma that if you buy mid-month you're desperate for scrap.' Shivram noted that his company has been able to break from tradition with a few 'partner' scrap suppliers, and that

The session's most controversial subject may well have been whether or not the USA has shredder overcapacity. Nobody was willing to claim that there are too many shredders, but all seemed to agree that overcapacity is having a negative effect on operators.

'You have more scrap yards fighting for the same amount of scrap, therefore margins are squeezed,' explained Hoffman. He suggested that the traditional hub-and-spoke system of shredder operators accepting feed from smaller yards was giving way to an era where smaller, portable shredders are common in mid-sized yards.

Shivram and Hoffman were asked to assess whether backward integration of scrap companies into steel companies would be a successful strategy going forward. 'I think every steel mill thinks it's a good idea, us included, to get into every business,' the former noted. 'But everything has a price. And I think the price paid between 2006 and 2008 was too high.' Hoffman, speaking for his company, said that he didn't necessarily want to be in the scrap business, noting the difficulty of competing against smaller entrepreneurs on the scrap side. □

'We think it's archaic that you buy only one or two days per month.'

they've found the mid-month market to be vibrant and worthwhile.

On the topic of scrap substitutes, and DRI in particular, Shivram was cautious, explaining that DRI is valuable to developing countries with scrap shortages. But he was highly sceptical of claims that mills might improve their costs if they substitute DRI. 'If it does rain substitutes in this country, it'll be a good opportunity to buy primes,' he suggests.



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Experts upbeat about market prospects



The 2013 Nickel & Stainless Spotlight was unabashedly bullish, with much of the enthusiasm coming from panellists who see growing demand in the developing world and a more modest upside in North America. 'No doubt about it, stainless steel is a growth market,' delegates were assured.

A picture of ever-increasing stainless domination by the developing world and of demand in sectors other than household appliances was painted by Andy Goenka, president of Steelboro. In fact, he noted: 'The common notion that stainless steel is primarily used in appliances is wrong.' According to his data, appliances account for only 6% of stainless usage. Meanwhile, 16% goes into construction; 21% into the transport sector; 31% into industrial machinery; 6% into electronic goods; and 20% into various metal goods. All of these, he emphasised, are growth sectors in the developing world.

ute to an ongoing, decade-long trend of China capturing more of the world's stainless steel production market. Between 2005 and 2010, Goenka added, China went from producing 13% of the world's stainless steel to producing 35%. During the same period, the Americas' share dipped from 11% to 9% and the EU's fell from 37% to 24%. But owing to China's preference for nickel pig iron in its furnaces (demand grew from 5000 tonnes in 2005 to 300 000 tonnes in 2010), its production surge has not

export of raw material ores. That could have a big impact on China's ability to get ores.' Under that scenario, he suggested, scrap may become an attractive alternative.

Already, it appears to be an alternative with growing importance in India; Goenka's data showed that stainless scrap consumption was 470 000 tonnes in 2010 and 480 000 tonnes in 2011. Then, in 2012, it took a big jump to 585 000 tonnes. In 2013, Goenka expects it to reach a stunning 840 000 tonnes. But he says that, owing to high freight costs from the USA to India, he isn't able to supply US stainless to India; rather, he supplies the country from South East Asia.

a big driver of current and future stainless growth. 'We are a country on a six-, seven-year infrastructure cycle, and we're right on the cusp of turning it over again,' he said. The speaker also highlighted aerospace and batteries as good and growing consumers of 'higher alloys of nickel'.

Goenka didn't expect much movement on prices over the short and medium term. 'There is more nickel coming online,' he noted. 'There are new mines.' At the same time, there is new demand within the US market, including a new mill in Alabama, and Chinese manufacturers are undercutting competitors. As a result, there is an overall lack of upward pressure in the markets. 'So I believe prices will trend lower or go sideways,' he concluded.

Friedman argued that an excess of available nickel units will set a price ceiling of US\$ 19 000 per tonne in the short term. □



Michael Friedman: 'Next year, Indonesia will ban the export of raw material ores.'



Andy Goenka: 'I believe prices will trend lower or go sideways.'

'The common notion that stainless steel is primarily used in appliances is wrong.'

According to Goenka's data, 13 of the world's top 20 stainless mills are in Asia, with China now producing one-third of the world's stainless steel. Production is increasing across the region. As an example, he pointed to China's Baosteel which currently produces 1.5 million tonnes per year; by 2015, he projects the company will produce 5.5 million tonnes based upon capacity upgrades now under way. This upgrade programme and others should contrib-

translated into big export growth for stainless scrap suppliers.

Exports may pick up

But the session's moderator, Michael Friedman of Sustainable Management, believes the stainless export market to China may soon change for the better. 'A lot of the nickel ore that goes into nickel pig iron comes from Indonesia and the Philippines,' he pointed out. 'Next year, Indonesia will ban the

US infrastructure cycle

Regarding North American markets, Mike Schroeder, president of Designed Alloys in Illinois, was similarly bullish despite shrinking US market share as compared to China. He noted that his company had added a furnace 'because we wanted to be a manufacturer, not just a trader.' He cited infrastructure, in particular, as

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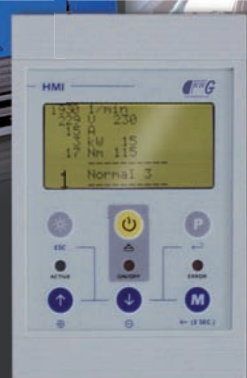
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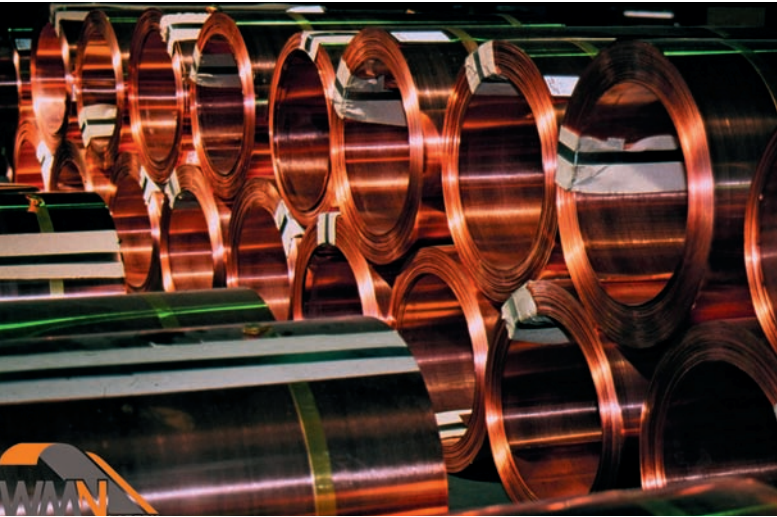
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Recession-busting China



The Spotlight on Copper session focused once again on China, which moderator Chris Greenfield of the Federal Metal Company labelled the only major country in the world 'whose copper consumption is greater today than it was prior to the beginning of the Great Recession in 2007'.

Spotlight panellist Carlos Risopatron, head of the environment and economics section of the International Copper Study Group, began with the observation that, except during a period of global shortages around 2006, the relationship between copper demand and prices remained fairly consistent between 1974 and 2012. Between 2007 and 2012, he observed, China was one of the few countries using a lot more copper, with Iran, Saudi Arabia, the United Arab Emirates and Indonesia the only others to be consuming larger quantities.

companies and refineries making up for the rest. 'Many expect to see more vertical integration between this huge number of companies, and maybe fewer fabricators in the future,' he said. In 2012, when the price of refined scrap fell 10%, China imported more scrap but paid less for it, he noted.

Appetite at zenith

Robert Stein, senior vice president of non-ferrous marketing at Alter Trading Company and president of the BIR world recycling organisation's Non-Ferrous Metals Division, voiced a belief

'The scrap copper industry misconstrues and misunderstands the Chinese economy.'

Risopatron noted that China's copper industry consists mainly of fabricators, which account for 48% of its 1312 plants; 27% of the plants process copper alloy, with cement and mining

that 'the enormous appetite China has had for (US) copper scrap over the past 20 years or so has reached its zenith, and its importance as a market option for us is going to decline over time to

the point that it will join other importers as a mature and steady customer for our scrap'. Stein based his conclusion on China's growing refinery capacity, its increasing use of copper concentrates, and the larger role played by domestic recycling.

Copper in China, like every commodity, finds its way to points of consumption via the path of least resistance, according to Stein. 'Each obstacle to that flow, each impediment adds a cost, inhibits efficiencies, and provides incentives for scrap to be shipped elsewhere, unless those extra costs are somehow recouped by us, the sellers,' he said. He pointed to CCIC inspections and AQSIO licensing as some of the costs 'that shipping to other countries doesn't always attract'.

Consequently, Stein believes copper scrap exporters will - and should - consider alternative destinations. 'China will continue to be a strong force, but the sea-change brought about by its recent policy, under the banner of "Green Fence", will, together with the other issues I've addressed, cause exporters to seek more efficient business elsewhere,' he said.

Consolidation in China

A somewhat more optimistic picture of China was painted by Adam Minter, a Shanghai-based recycling industry journalist and regular contributor to Recycling International. Author of the forthcoming book 'Junkyard Planet', he believes that 'the scrap copper industry misconstrues and misunderstands the Chinese economy'.

The decline in prices for copper and other metals, for example, he characterised as 'a temporary slowdown that has more to do with politics than with anything fundamental in the market'. Because of China's leadership transition, there had been little infrastructure spending by the national government over the previous nine months, 'but it's going to change come late summer'. The

government has already announced plans for a US\$ 6 trillion stimulus package that would move China from a 51% to a 60% urban society.

Crackdowns on licensing

The entire Chinese scrap industry is consolidating, Minter continued. 'There are no longer the mom-and-pop yards that buy imported scrap,' he said. 'There have been crackdowns on licensing, and if you want to import scrap you need a licence and a paper trail.' As a result, the yards are getting bigger and paying their employees better, so much so that that scrapyards labourers are making more than college graduates moving into the office jobs.

Other trends include mechanisation at the scrap yards, which increases efficiency of both the yards and the markets, reduces the number of facilities, and tightens margins. 'Everybody in China is complaining that scrap is too expensive,' said Minter, who declines to take China's 'Green Fence' too seriously. 'I think it's a worst case of something we've heard before. It is nothing more than a cosmetic Band-Aid.'



Carlos Risopatron: China's copper industry consists mainly of fabricators.



Adam Minter: 'The "Green Fence" is nothing more than a cosmetic band-aid.'

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Uncertainties in the aluminium markets

An atmosphere of caution pervaded the 2013 Spotlight on Aluminum. Discussion of low scrap generation, high inventories in bonded warehouses and widespread uncertainty about the direction of the global economy generally – and of the Chinese economy specifically – dominated the session.

Joe Pickard, chief economist at the US Institute of Scrap Recycling Industries (ISRI), offered a statistical portrait of the industry that showed strong growth over the last two decades, with most of the momentum driven by Chinese markets. Citing the International Aluminium Institute, Pickard noted that global primary aluminium production grew from 22 million tonnes in 1997 to 45 million tonnes in 2012. Between 2010 and 2012 alone, US aluminium production fell 20% while China's climbed almost 25% to 20 million tonnes. US scrap exports have



Joe Pickard: 'The Middle East has some of the fastest aluminium production growth in the world today.'



Alan Dick: 'The North American Special Aluminum Alloy Contract (NASAAC) will not die off.'

played a key role in China's growth: the USA exported a mere 5000 tonnes to China in 1990; in 2012, it exported 1.414 million tonnes. This growth in exports has occurred during a period of slowing US aluminium consumption, with its scrap usage peaking in 2007 at 4.5 million tonnes.

Finance deals have driven up prices, and since 2008 LME inventories have remained unusually high. According to Pickard, there is 5.2 million tonnes of metal in warehouses at the moment, 'and you can't have so much metal come out of the warehouses due to economic conditions'. Still, the mere existence of the warehoused material contributes to a sense of unease about current pricing levels.

'No frothing bull'

Jason Schenker, president of Prestige Economics, agreed that aluminium inventories are likely to remain high. In the short to medium term, he sees modest growth in both the US and Chinese economy, with US GDP growth remaining close to 2012 levels. He was particularly optimistic about a warming US housing market, and its potential to spur aluminium demand. Likewise, he cited an ageing US light vehicle fleet as a reason to be bullish on aluminium demand.

But Schenker insisted he's 'no frothing aluminum bull'. He sees significant



medium- and long-term risk in the Eurozone and in American fiscal policy, as well as multiple geopolitical risks. Austerity and readjustments could have a profound negative impact on aluminium demand, he added. Finally, Schenker suggested that the

'Things look good, but hey dude, where's my scrap?'

development of additional capacity has brought a new dynamic to the aluminium market that he compared to the boom-bust dynamics resident in agricultural commodities. When the price of pork rises, more pigs are raised, he noted; then the price falls and fewer pigs are raised.

Lot of headroom

Pickard noted that the boom-bust cycle might be moderated by growing demand in developing countries. Specifically, he observed that India and Pakistan are among the fastest growing of US export destinations, while also citing growth potential in South East Asia. The Middle East, he also pointed out, 'has some of the fastest aluminium production growth in the world today'. Schenker responded to Pickard's comments by suggesting 'there's a lot of headroom for commodity consumption

in emerging markets, but it's not as large for metals'.

The panel spent considerable time contemplating the recent shortage of scrap in the US and global markets. Schenker was troubled by the apparent decoupling of the traditional relationship between economic growth and scrap generation. 'Things look good,' he said. 'But hey dude, where's my scrap?' He views the trend as a possible result of the slow growth environment in the US economy.

Contract loyalty

Pickard agreed with Schenker, and then highlighted a different decoupling in the marketplace: that between manufacturing output and scrap prices. He noted that the ISRI scrap price index 'hasn't moved closely with manufacturing output in recent months'. By way of explanation, he cited the globalised market in aluminium scrap and the declining role of the US economy in aluminium demand. Alan Dick, recently named president of Alpert & Alpert Iron & Metal, argued that 'the North American Special Aluminum Alloy Contract (NASAAC) will not die off despite its increasing divergence from scrap prices, and its subsequent decline as a benchmark for aluminum scrap prices'. Loyalty to the contract comes from manufacturers, he said, with many still seeing benefits from it as a pricing mechanism. □



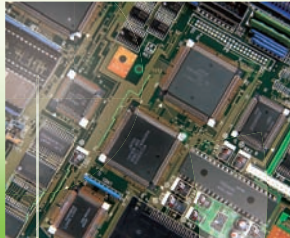
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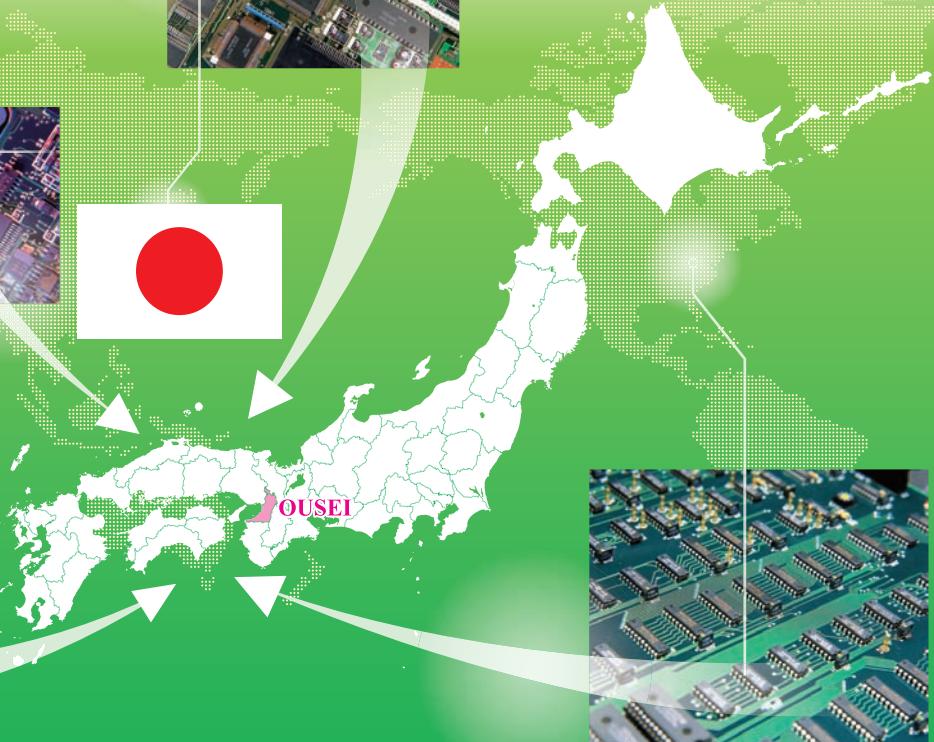
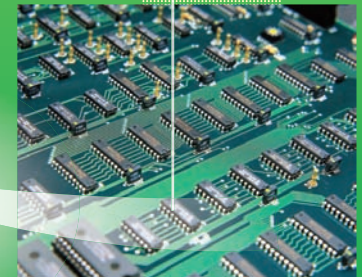
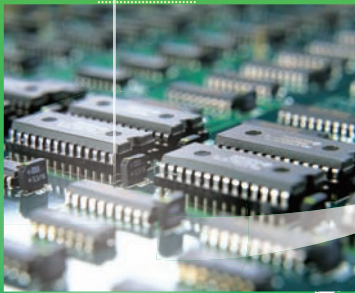
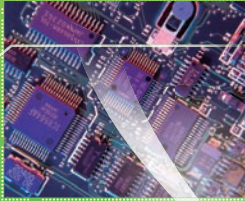
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Venture capitalists ride the e-scrap bandwagon

The boom in the electronics recycling industry over recent years has been accompanied by consolidation and a need for capital. For venture capitalists, this has become a new and profitable business into which to step. At the Institute of Scrap Recycling Industries' latest convention in Orlando, a panel of experts addressed the question of what makes the industry an attractive target for capital investment.



Jake Player: immense amounts of capital have flowed into the market.



Martiza Liaw: exponential growth in e-scrap volumes.

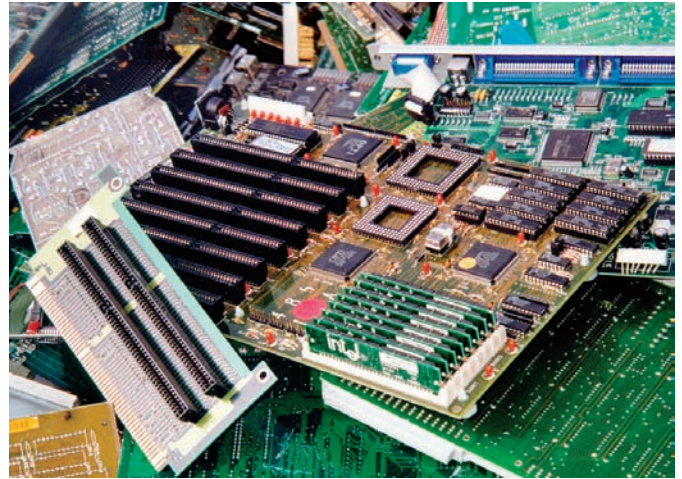
The Spotlight on Electronics session began with an observation from its moderator Jake Player, chair of the US Institute of Scrap Recycling Industries' electronics division and vice president of Arrow Electronics, that the industry has undergone tremendous consolidation in recent years, with immense amounts of capital flowing into the market. 'The goal of this session is to understand why we're seeing this consolidation, why we're seeing capital deployed in this sector, will it continue, and how companies

can participate, if they're interested in participating,' he explained.

The stage was set by Rob Schafer, research director at Gartner, an information technology research and advisory company that covers the global IT asset disposition market. He wondered how the industry would dispose of the estimated 2 billion electronic devices that will need to be recycled this year alone. 'There are increasingly high risks for getting asset disposition wrong,' he said. 'It's no longer "What's it going to cost me to do this?" but more "How do I minimise the risk that my company's name will not be in the headlines?" But there are also increasingly high rewards for getting it right.'

Insatiable back-end demand

Michael Farello, a partner at equity capital provider Catterton Partners, cited three reasons why he began investing in e-recycling seven years ago: one was the insatiable back-end demand that has more or less persisted; second was that, whether driven by regulation, legislation or corporate responsibility, 'there's a growing sense that these assets need to be disposed of in an environmentally responsible manner'; and, lastly, 'seven years ago, we thought a few high-profile leaks of data from computers, notebooks and desktops would bring a sense of the



cost of getting things wrong - and that has only grown in the last seven years'. One of the two reasons Martiza Liaw, a partner at venture capital firm Kleiner Perkins Caulfield Byers, has invested in e-recyclers is the exponential growth in the volumes of e-scrap. 'Mobile subscriptions surpassed landlines in 2002, tablet sales surpassed PCs in 2010, and the installed base of smartphones and tablets will surpass PCs this year,' said Liaw. 'That kind of volume and growth creates new business opportunities.' She also anticipates considerable value in assets that are retired because they lack consumer appeal but nevertheless retain technical capabilities.

'Winner-take-all market'

The nature of the market represents its other appealing aspect. 'The continuing interest for us is to explore more opportunities in downstream processing and distribution, which continue to be highly fragmented with opportunities for more efficiency,' said Liaw. Ben Gordon, founder and managing director of BG Strategic Advisors, outlined strategic options for e-recyclers operating in 'a winner-take-all market where, increasingly, a small number of

companies will reap a disproportionate share of the benefits'. With competitors coming from four different directions - electronics distributors, reverse logistics companies, waste management companies and electronics manufactur-

'Pick a strategy, decide where you want to go.'

ers - small companies have five distinct options: they can do nothing 'and wind up competing for a smaller space'; they can aggressively pursue organic growth; they can bring in new capital via self-financing, from family and friends, or venture capitalists ('which tend to go after businesses with proprietary ideas and great technologies'); they can merge with one or two other companies; or they can sell the business.

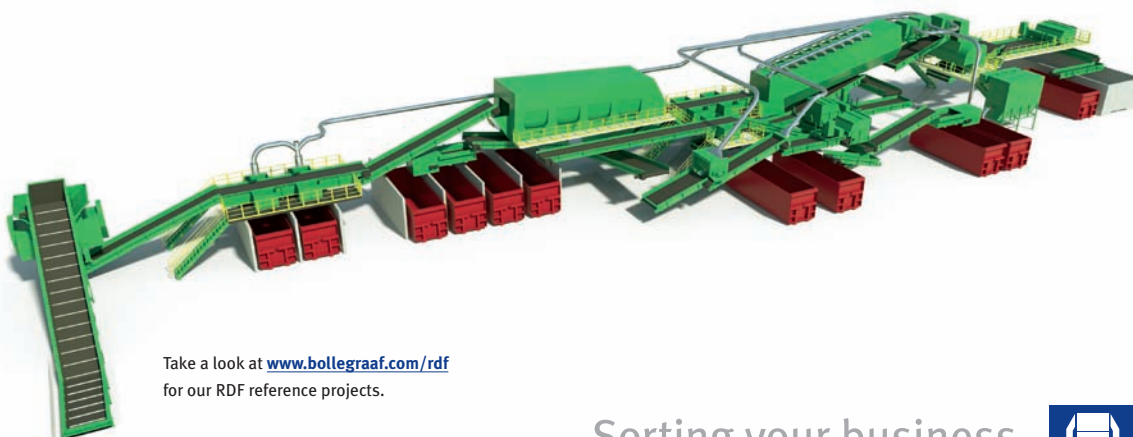
'But don't just sit back while the market goes by,' Gordon urged delegates. 'Pick a strategy, decide where you want to go, and put yourself in a position where you can be one of the winners in what we believe will ultimately be a winner-take-all market.' □



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Tissue-making 'the business to be in'

In a stand-alone presentation entitled 'The supply and demand dynamics of the deinking high grades market', Bill Moore, principal of Atlanta-based Moore & Associates, a consulting firm specialising in strategic analysis, pricing and market research for the paper recycling industry, focused on the dwindling supply to the market.



In 2012, 56% of world recovered paper consumption by product grade consisted of corrugated, followed by newsprint (9%), tissue (7%), printing and writing paper (5%), and other grades (23%). In terms of US usage of deinking high grades, tissue predominates (65%), with 7% each for printing and writing. Another 21% of consumption is exported, with India (23%) the principal destination, followed by Canada (14%), and China and Mexico on 13% each. 'Global tissue capacity production is growing; it grows with income and it grows with population,' said Bill Moore.

In terms of trends in tissue sector grade use, Moore foresees less consumption of coated bookstock and more coated material in sorted office papers (SOP). He anticipates some increase in the mechanical fibre grades' old magazines and coated groundwood sections, pri-

marily due to higher SOP prices at the top of the cycle. 'Tissue-making technology improvements have allowed use of more mechanical fibre,' he said. Tissue, the largest market for office papers, remains one of the strongest-growing paper grade sectors in all regions of the world.

'This is one business to be in,' said Moore. 'That's why you see so many new machines and why a lot of people who used to be in the newspaper business are now in the tissue business.' The main markets for recycled fibre-based tissue are North America, Europe, the Middle East and developed Asian countries such as Japan and South Korea, with China's tissue business largely growing with virgin fibre.

Shredded boosts share

Where is the SOP coming from? Until 1998, shredded office papers comprised less than 10% of all office papers generated, according to Moore, but from 1998 to 2005 the growth in supply from this source kept market pricing down. Moore & Associates estimates that shredded material now represents more than 75% of the US market, and conventional office paper recycling programmes have all but vanished. 'The growth in supply of office papers in the USA from docu-

ment destruction is slowing after five years of rapid increase,' he said.

Another factor in the diminished supply of deinking papers is that generation of printer recovered paper grades (many of which are in tissue production) has

'The world printing industry is stagnant at best and probably declining.'

declined due to the overall downturn in printing. 'The world printing industry is stagnant at best and probably declining,' said Moore. Also, while the world recession had an impact on the printing business, it is suffering from the structural trend of printing fewer hard-copy documents: old magazines and coated groundwood sections are declining because fewer magazines are printed. Given the declining use of printing/writing papers in the office workplace and by printers, Moore wondered where new sources of recovered paper for the tissue industry would be found. Use of paper in US offices peaked in 1999, but since then real estate, insurance, legal and medical organisations,

and even the government, have been getting out of paper. 'One possible hope is that the collection of poly-coated bleached paperboard packaging from residences will add some small part of the supply of the deinking high grades market and be good for tissue-making,' said Moore. However, mechanical fibre grades are not the answer because of their limited possibilities for use and declining volumes.

Alternative pulps

In their search for recycled fibre for tissue production, Moore believes producers will have to turn to other grades, such as poly-coated post-consumer packaging and wood pulp. Bleached tropical hardwoods processed in vast pulp mills in Brazil and Indonesia are other possibilities, as are bamboo, wheat straw and other agricultural residues which have so far been difficult to pulp economically. 'Kimberly-Clark made a big splash announcement about using more bamboo and wheat straw in their tissue,' said Moore, 'but most of us who are close to the industry look at the economics and say "It looks like a little public relations, because the economics versus virgin or sorted office papers don't look too good".'



Bill Moore: Tissue is the largest market for office papers and remains one of the strongest paper grade sectors in all regions of the world.



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Chinese policy could be 'blessing in disguise'

During the Spotlight on Plastics, the focus was directly on China – the largest importer of scrap plastics from the USA. Panellists took turns to examine the potential consequences and also the opportunities presented by the new Chinese administration's recently-introduced green policy initiative.

In a presentation intriguingly entitled 'The Future Ain't What It Used To Be', Xavier Cronin looked at changes in US practices and also at the implications of a hardening in China's environmental stance.

Recent changes in the US resin markets have increased transparency in what had traditionally been an extremely opaque sector, with upstream visibility enhanced when a new ethylene hub increased spot market liquidity and when the CME-Nymex group launched ethylene futures in 2009. As a result, 'a hub mentality developed around US resin markets, so there's more demand for a lot of these resins, both for the primary level and the recyclables', said Cronin, who is editor of PetroChem Wire's 'Repro/Regrind Report', a bi-

monthly publication that provides price assessments, news and market analysis. To emphasise the importance of China, Cronin noted that six of the world's eight largest container ports are located on its territory, and that the recent value of America's monthly waste and

'More scrutiny'

Chinese premier Li Keqiang introduced a green policy initiative last October following a widely-reported story from the previous March when the discovery of thousands of dead pigs in a river in Shanghai underscored the urgent need to crack down on all forms of pollution. 'There's going to be more scrutiny,' said Cronin, who also predicted major changes in payment terms. 'A lot of the exports going to China you'd get paid cash for, when the normal payment is 30 to 45 days. That's another dynamic that may change.'

'Europe is considering legal status for plastic scrap as a raw material.'

How should sellers and producers of recycled plastics respond to this green policy? Cronin advised them to make sure their loads were completely clean because 'ratty loads are likely to get turned back'. They also needed to make loads available for inspection before they

were delivered, to communicate closely to find out when new quality/environmental standards had been put in place, and to monitor regulatory developments at Chinese ports. 'The nitty-gritty of this is the bureaucracy of filling out forms and more scrutiny, so you have to keep on top of that,' said Cronin. 'And staying updated on developments and regulations at Chinese ports is a full-time job. It's a fluid situation.'

Pointed questions

Surendra Borad, chair of Gemini Corporation in Belgium and of the BIR world recycling organisation's Plastics Committee, began his contribution with a series of pointed questions: 'Are you aware that plastic scrap demand worldwide is estimated at around US\$ 17 billion? Are you aware that the current demand of 40 million tonnes will double in seven years, and that in Europe prices for reprocessed plastics are sometimes higher than for prime plastics? And are you aware that the extremely low recycling rate in the USA (12-15%) and Europe (39%) compared to China (60%), India (60%) and Japan (77%) offers plenty of growth options in the recycling business?'

Although China is aiming at a 70% plastics recycling rate by 2014, Borad noted that 'most recovered plastic winds up in the packaging or construction sectors'. He added: 'But in a real sense, what they are doing is down-cycling - when the quality of the output material after recycling is of lower quality and reduced functionality than

what went into it. Real recycling will take place when the quality of output is almost similar to the quality of input.' Borad advised US recyclers to turn away from China and instead focus on Europe, where the EU is applying pressure to keep scrap within the continent and where a 50% reuse and recycling rate has been targeted for 2020. 'Europe has been a pioneer in developing new parameters, new frameworks for the recycling industry,' he said. 'Europe is also considering legal status for plastic scrap as a raw material.' If China's green policy forced recyclers to look for other markets, 'it's a blessing in disguise for the recycled plastics industry'. □



Xavier Cronin: 'Staying updated on developments and regulations at Chinese ports is a full-time job.'



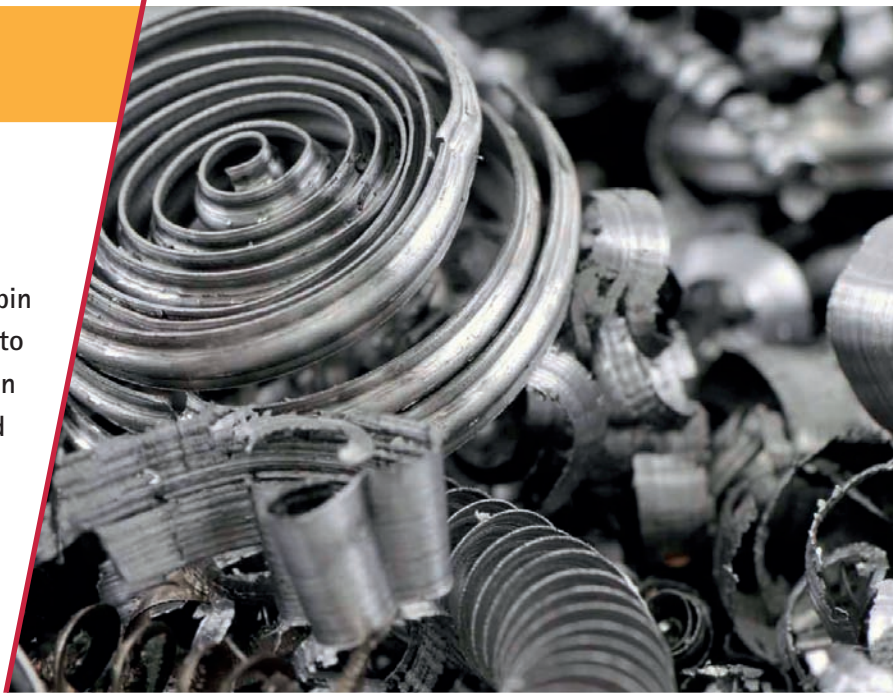
Surendra Borad: 'Europe has been a pioneer in developing new parameters, new frameworks for the recycling industry.'

Ferrous

Closed: May 2 2013

Buyers intensify downward price pressure

Hopes that rampant Turkish buying would underpin ferrous scrap prices at March levels have proved to be unfounded. With purchasing activity muted in many parts of the world, scrap values have headed lower in recent weeks. Latest cfr indications for shipments from Europe to Turkey are: US\$ 365-370 per tonne for standard quality HMS I/II 80/20 scrap; US\$ 370-375 per tonne for shredded; and US\$ 345-350 per tonne for the HMS I/II 70/30 mix.



Our previous ferrous scrap report of early April reflected expectations that Turkish buyers would be making a substantial foray into the international marketplace within a matter of days. In the event, the country's mills spent most of the month on the sidelines, from which vantage point they were able to watch the steady decline in scrap values. Rather than the 30 cargo bookings that would have been the norm for the time of year, Turkey purchased only around half that number in April; European suppliers made most of the sales,

albeit at ever-dwindling prices. Of course, optimists are now anticipating that, after a month of relative purchasing inertia, mills will need to return to the market in the near term to replenish stocks; the pessimists, by contrast, point out that the finished product sales outlook for Turkish mills is discouraging, not least because of more intense competition in some of their key export markets. Indeed, some Turkish steelmakers have suggested that they would prefer to curtail production rather than pay above US\$ 380 per tonne for HMS.

Few and far between

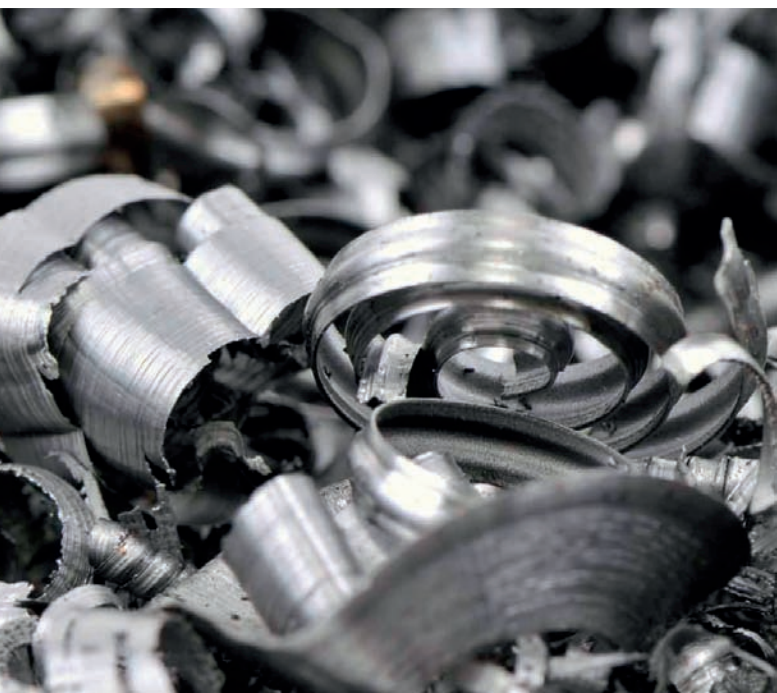
US domestic ferrous scrap prices fell by, typically, US\$ 20 per gross ton in April and a similar sum was wiped off the value of shipments to Turkey during the course of last month. Towards the middle of April, a US cargo attracted US\$ 389 per tonne cfr Turkey for HMS I/II 80/20 and US\$ 394 for shredded scrap. By the end of the month, US suppliers could expect nearer US\$ 375 per tonne for their HMS I/II 80/20 and US\$ 380 for shredded while Europe's exporters to Turkey were likely to receive around US\$ 10 less on average than their American counterparts. A3 scrap from across the Black Sea was commanding between US\$ 360 and US\$ 365 per tonne on a cfr basis at the end of April. Long-haul sales of scrap into South East Asia were also few and far between in April, resulting in US\$ 15-20 price reductions to, for example, US\$ 355-360 per tonne cfr for HMS I/II 80/20 sent in containers from the USA to Taiwan. Price tags attached to containerised shredded scrap imports into India have fallen by some US\$ 20 per tonne since earlier in the year, with current levels now typi-

cally US\$ 405-410 per tonne cfr Nhava Sheva. In China, meanwhile, high inventory levels have helped apply downward pressure to domestic scrap prices.

'Tight band'

Market sentiment 'is not overly pessimistic', according to the European report submitted to the BIR world recycling organisation's latest Ferrous Mirror by Tom Bird, president of the European Ferrous Recovery and Recycling Federation (EFR). Although ferrous scrap, billet and rebar prices have softened, demand for scrap 'remains healthy', with Spain active in the market and Turkey in need of buying 'a considerable quantity' for May. His forecast for the near term is that the scrap market will 'move within a tight band'. In his Pacific Rim report to the Ferrous Mirror, Blake Kelley of Sims Group Global Trade Corp. highlights record rates of crude steel production in China even though the country's 'unsold steel inventories are high and steel prices are generally falling'. Official figures, meanwhile, point to the fact that the trend in Chinese scrap imports remained downwards in March: incom-





ing volumes totalled 379 640 tonnes - a figure 6.6% below that for February and 23% shy of that for the same month last year. A substantial proportion was supplied by Japan with 267 486 tonnes whereas the USA contributed just 63 453 tonnes.

Record imports likely

By extrapolating World Steel Association (WSA) data from the first quarter of 2013, Mr Kelley suggests in his BIR Ferrous Mirror report that steelmakers globally are on course to produce 47 million tonnes more raw steel this year when compared to 2012; however, apparent consumption of purchased scrap is in line to fall 13 million tonnes, he adds.

And in the Japanese report to the same Mirror, Hisatoshi Kojo of Metz Corp. notes that scrap price-setter Tokyo Steel lowered its buying price four times in the first three weeks of April by a combined sum of Yen 2500 per tonne (US\$ 26). 'Unless the yen depreciates dramatically, it is anticipated that the Japanese scrap market will continue to soften in the coming months, reflecting the weak tone of the international scrap market and the

improvement in collection volumes since the end of winter,' he states.

India, meanwhile, is likely to report record ferrous scrap imports for the financial year ended March 31 - even though there has been a slowing of the earlier 'blistering' pace of overseas purchases. Zain Nathani of the Nathani Group of Companies notes in the Mirror that the country imported around 5.47 million tonnes in the last nine months of 2012 compared to around 6 million tonnes in the whole of the 2011/12 financial year. India's importers are said to be 'cautiously optimistic' about an improvement in demand over the coming months although concerns persist over the volatility of the Indian rupee in relation to the US dollar and high domestic interest rates.

Also in the BIR Ferrous Mirror, Andrey Moiseenko of Ukrmet points to recent rumours that new export quotas will be issued shortly in Ukraine - a move which would end what is tantamount to an unofficial export ban.

No seasonal improvement

Feedback from leading mill groups in the USA is cautiously optimistic. For the

second quarter of 2013, leading US steelmaker Nucor anticipates some improvement in earnings, driven by better performance at, among others, its raw materials businesses. In the first quarter, metal margins at its mills remained 'flat' compared to the final three months of 2012; overall, the mills did not experience 'the seasonal improvement in volume and pricing that is typical in the first quarter of the year' while weather-related issues were 'negatively impacting the flow of scrap'. Nucor's average scrap and scrap substitute cost per ton used during the first quarter was US\$ 379 - equivalent to an increase of 2% over the US\$ 372 of fourth-quarter 2012 but 15% lower than the US\$ 445 of last year's January-March period. Overall steel mill operating rates climbed to 72% from 71% in the final three months of 2012, although both figures were well short of the 79% of the first quarter of last year.

Steel Dynamics, Inc. confirmed a 'challenging' first quarter from a market perspective. Income from its metals recycling operations fell 3% to US\$ 25 million when compared to the fourth quarter 'as increased volumes were more than offset by decreased ferrous and non-ferrous margins', notes president and ceo Mark Millett. 'Due to ongoing slow US growth and inclement weather, the availability of unprocessed scrap was limited, particularly in the

Midwest and along the north-eastern corridor, resulting in increased costs to purchase unprocessed material.'

The company's steel mill utilisation rate improved to 89% in the first quarter from 80% in the fourth quarter of 2012. The average selling price per ton shipped increased US\$ 5 to US\$ 789 in the first quarter, and the average ferrous scrap cost per ton melted increased US\$ 8 per ton. 'Demand for high-quality steel products has not abated,' Millett concludes. 'We remain optimistic.'

Competing commodities

Iron ore prices have moved within a relatively narrow band over recent weeks, with 63.5% Fe content Indian fines exceeding US\$ 140 per tonne in the early part of April before returning to around the US\$ 135 mark in the second half of the month on the back of the below-expectation economic figures emerging from China and of falling commodity markets in general. Meanwhile, latest customs data reveal that Chinese iron ore imports surged to 64.55 million tonnes in March for increases of more than 14% over the previous month and of over 2% compared to the same month last year. This haul brought overall imports for the first quarter to 186.48 million tonnes, broadly similar to the figure for the corresponding period last year.



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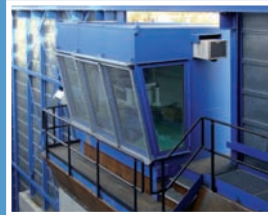
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Iron ore production by major player Vale fell to 67.53 million tonnes in the first quarter of 2013. 'Despite the 3.5% year-on-year drop, we maintain the production guidance of 306 million tonnes of iron ore for 2013,' it insists. Compared with the fourth quarter of last year, the output figure for January-March this year represented a decline of more than 20% - partly because of the effects of the rainy season on mining activity.

The commissioning of additional iron ore production capacities, mainly in Australia, is expected to put pressure on iron ore prices in the second half of 2013, reckons Vale's executive director for iron ore and strategy José Carlos Martins. According to a report in Metal Bulletin, he believes that 30-40 million tonnes of additional iron ore capacity coming on stream in the latter half of this year will push prices down - but not below US\$ 110 per tonne.

Steel

In the first quarter of 2013, major steelmaking countries in Asia followed



a different course to most of the rest of the world as their crude steel production jumped 6.4% year on year to just short of 260 million tonnes. In contrast, declines were recorded in the EU-27 (-5.4% to 41.468 million tonnes), the USA (-7.6% to 21.458 million tonnes), Russia (-4.8% to 17.223 million tonnes), Brazil (-4.4% to 8.345 million tonnes) and Turkey (-5.9% to 8.493 million tonnes).

The overall impact was that total production for all 63 countries reporting their figures to the WSA climbed 2.3%

to 388.696 million tonnes year on year in the January-March period.

Although South Korea's crude steel production slid 5.4% in January-March 2013 to 16.381 million tonnes, Chinese output was 9.1% higher at 191.891 million tonnes while India (+2.9% to 19.826 million tonnes) and Japan (+0.2% to 26.63 million tonnes) also bolstered the Asian production total. Among the world's leading steel producers, the only other nation to record higher output in the first quarter was Ukraine with a 0.4% upturn to 8.379 million tonnes.

From a regional perspective, crude steel production fell in both South America (-5.7% to 11.13 million tonnes) and in Africa/Middle East (-3.4% to 9.085 million tonnes) but edged slightly higher in Oceania (+0.5% to 1.414 million tonnes), according to the WSA's figures.

Pick of the crop

In March itself, China and India were again the pick of the crop of leading steelmakers, with the former upping its production by 6.6% year on year to a mammoth 66.293 million tonnes while the latter's estimated output of 6.86 million tonnes represented a year-on-year increase of 6.5%. In contrast, production in the EU-27 slid 6.6% to 14.597 million tonnes, the USA recorded a decline of 8.4% to 7.291 million tonnes and Turkey's output dipped just below 3 million tonnes for a year-on-year loss of 4.6%.

For the WSA's 63 reporting countries as a whole, crude steel production amounted to 134.883 million tonnes in March for an increase of 1% over that for the third month last year. The global capacity utilisation average in March was 79.4% compared to 80.5% in February and 81.5% in March 2012.

Record output

The China Iron & Steel Association (CISA) reckons that domestic crude steel production averaged more than 2 million tonnes per day in March; the figure of 2.07 million tonnes represented an increase of more than 3% over the previous month. Steel prices in China were dented in mid-April by news that domestic crude steel production had posted yet another all-time high in the early part of the month: daily output surged to 2.124 million tonnes during the first 10 days of the month, according to CISA.

Meanwhile, US crude steel output in the second week of April achieved its highest mark since August last year, according to the American Iron & Steel Institute. Production amounted to 1.88 million net tons compared to a

Global scrap usage static in 2012

World crude steel output climbed 1.2% last year and yet the amount of scrap used in its production remained unchanged from 2011 - largely because of developments in China. So says Rolf Willeke, statistics advisor for the BIR world recycling organisation's Ferrous Division, in his latest update of 'World Steel Recycling in Figures'.

Despite increasing its crude steel production by 3.7% last year, China reduced its steel scrap consumption by 12.3% to 79.8 million tonnes owing to the availability of more attractive iron ore prices during a large part of the year; its scrap imports, meanwhile, were slashed 26.5% to 4.974 million tonnes. Similarly in Russia, steel scrap consumption fell 4.4% to 20.1 million tonnes in 2012 whereas the coun-

try's crude steel production increased around 2.3%.

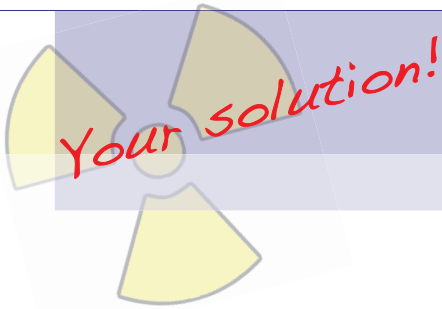
Also in 2012, there was a 6% decline in the EU-27's steel scrap usage to 94.1 million tonnes while consumption in Japan fell 4.6% to 35.5 million tonnes even though domestic crude steel output was only 0.3% lower than in 2011.

US and Turkish upside

On the upside, growth in US steel scrap use (+9.4% to 61.7 million tonnes) outstripped the improvement in domestic crude steel production (+2.7%) last year. Turkey's scrap consumption jumped a further 5.1% to 32.4 million tonnes while its overseas purchases gained 4.5% to reach 22.415 million tonnes, enabling the country once again to lay claim to the title of 'the world's

foremost importer of steel scrap'. South Korea's steel scrap imports leapt 17.4% last year to 10.126 million tonnes while India posted an even steeper increase of 32.4% to 8.18 million tonnes.

The world's leading steel scrap exporter, the USA, actually saw its overseas shipments fall 12.2% last year to 21.397 million tonnes despite Turkey buying 13.8% more for a total of 6.398 million tonnes. US shipments to China plummeted 54% to 1.945 million tonnes. Total steel scrap exports from the EU-27 climbed 2.1% to 19.214 million tonnes in 2012 while, 'after a difficult 2011', Japan's export volumes surged 57.9% to 8.459 million tonnes. Globally, total steel scrap exports reached 106.6 million tonnes last year (-1.9%).



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fraction under 1.86 million net tons the previous week, and capacity utilisation was 78.5%. In the same week last year, however, US output was slightly more than 2 million tons and capacity utilisation was at almost 81%. On a year-to-date basis, the utilisation rate in the USA has been around 76% compared to just short of 80% in the early months of 2012.

Highest for two years

In March, China's monthly finished steel exports broke through the 5 million tonnes barrier for the first time this year, surging to 5.28 million

tonnes, according to Chinese customs data. This total compares to 4.92 million tonnes in January and 4.24 million tonnes in February. Cumulative exports for the first three months of 2013 thus approached 14.44 million tonnes - equivalent to almost 19% more than for the same period in 2012. However, order files and latest indications suggest China's overseas shipments may have lost some impetus in April.

Japan's total exports of iron and steel jumped 9.6% to 43.41 million tonnes in the financial year ending March 31, with overseas shipments in the final

month reaching their highest level for two years at 4.04 million tonnes. Statistics from the Japanese Ministry of Finance reveal that deliveries to fellow Asian nations also climbed 9.6% in the most recently-completed financial year to 34.59 million tonnes. Shipments to members of the Association of South East Asian Nations (ASEAN) leapt almost 23% to 13.61 million tonnes whereas exports to China slid 7% to 5.93 million tonnes.

Outlook

Following a month of sporadic scrap sales at increasingly disappointing

price levels, the pessimists in the market certainly appear to outnumber the optimists at present. Talk in some quarters has been of prices testing levels as low as US\$ 320 per tonne in the coming weeks although the majority view is that any softening in May will be more limited in nature.

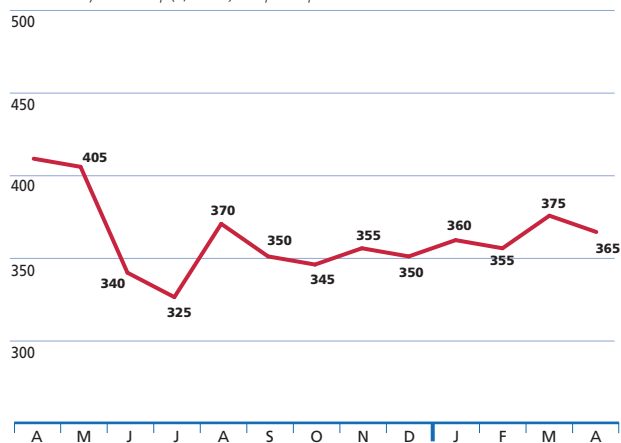
Among all the ferrous scrap price predictions for the month currently in circulation, a decline of US\$ 15-25 per tonne appears the most common. This is based on unspectacular demand from mills as well as a weather-related improvement in collection volumes in key supplier regions of the world. □

Ferrous Scrap Prices

Reference date: May 2, 2013

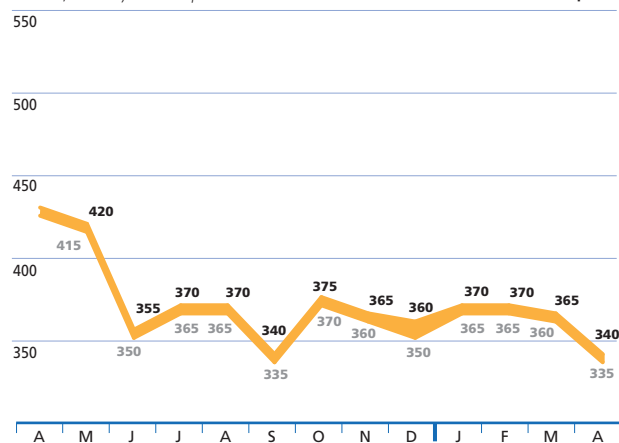
USA Domestic Scrap Prices (US\$/GRT)

HMS 1 heavy steel scrap (1/4 Inch) composite price delivered at mills



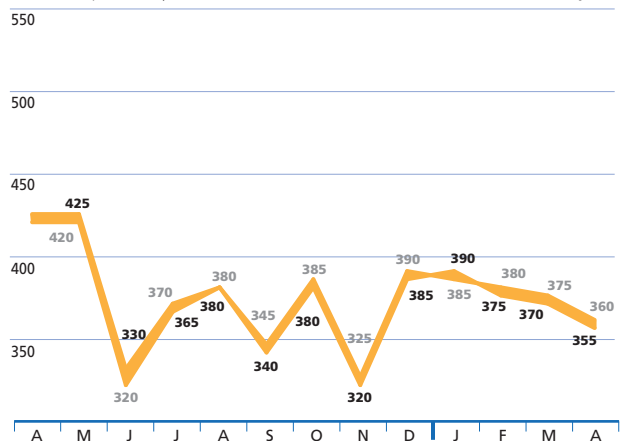
Fob Rotterdam Export Prices (US\$/t)

HMS 80/20 heavy steel scrap



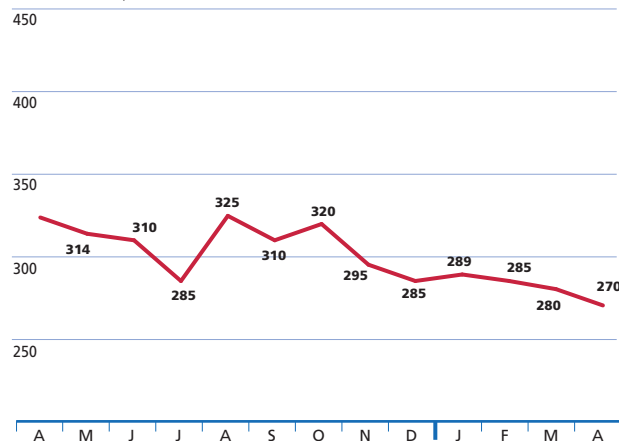
USA Export Prices (US\$/GRT)

HMS 1, heavy steel scrap (1/4 Inch)



Average German Scrap Prices (€/t)

S2 / E2, steel scrap (3 mm) Delivered at mills

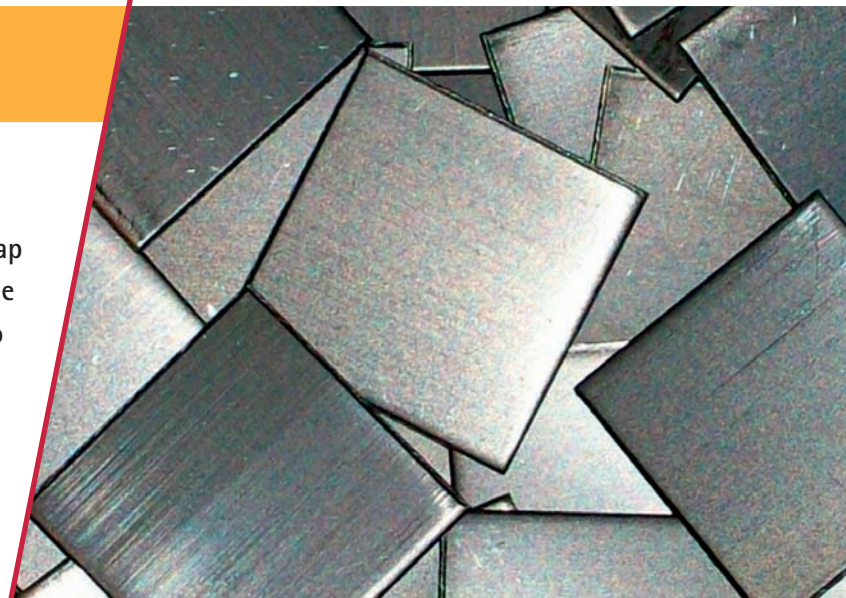


Nickel & Stainless

Closed: May 1 2013

A gathering of dark clouds

Over the course of the last month, stainless steel scrap has fallen victim to price erosion: the range for the 304 quality has declined from US\$ 1600-1650 to US\$ 1500-1550 per tonne, while that for the 316 grade has slid from US\$ 2260-2310 to US\$ 2150-2200. As for chrome scrap, 409 material has dipped from US\$ 430-470 to US\$ 400-440 per tonne while the 430 quality has dropped by a similar amount to US\$ 480-520.



Stainless steel scrap values have experienced a further bout of depreciation since the beginning of April. Prices for 304 scrap have fallen by some US\$ 100 per tonne and stood recently at US\$ 1500-1550, while prices of the 316 grade have dropped to US\$ 2150-2200. And chrome scrap prices have also headed lower, with the 409 quality losing some US\$ 30 per tonne over the course of the month to trade at US\$ 400-440 while the 430 grade has weakened to US\$ 480-520 (The US dollar/Euro exchange rate was around the 1.30 mark at the time of writing.) Gloomy weather conditions attended the start of the 36th stainless steel seminar run by Heinz H. Pariser's Alloy Metals & Steel Market Research; during the day, however, the sky cleared and the sun began to shine. But the dark clouds persisted over the seminar itself following confirmation of last year's large gap between primary nickel production and consumption and of an unexpectedly substantial nickel unit surplus originating from stainless steel scrap. The figures below, confirmed by the International Nickel Study Group, came as a shock to many delegates: One key factor to emerge from the seminar was that Chinese nickel pig iron is flooding the nickel market. In spite of these negative figures, the mood during the seminar was not too

depressed; perhaps delegates had come to the conclusion that market conditions could hardly get any worse than they currently are.

Other interesting figures presented during the seminar showed developments in global stainless steel production last year alongside expectations for 2013 and 2014. In effect, the belief is that, as early as next year, China will account for more than half of a world stainless steel production that will exceed 40 million tonnes for the first time.

Chrome

No clear picture has emerged in the chrome market and prices are relatively stable at present. European charge chrome prices have been higher on scarce availability but spot sales have been marginal. European mills have

been complaining about the strong US dollar. A weaker Euro has raised ferro-chrome costs by at least 7% even though the benchmark was not increased. And with Europe's growth prospects close to zero, the Euro should continue to fall against the US dollar. South Africa's ferro-chrome production fell 4.4% from 3.354 million tonnes in 2011 to 3.207 million tonnes last year.

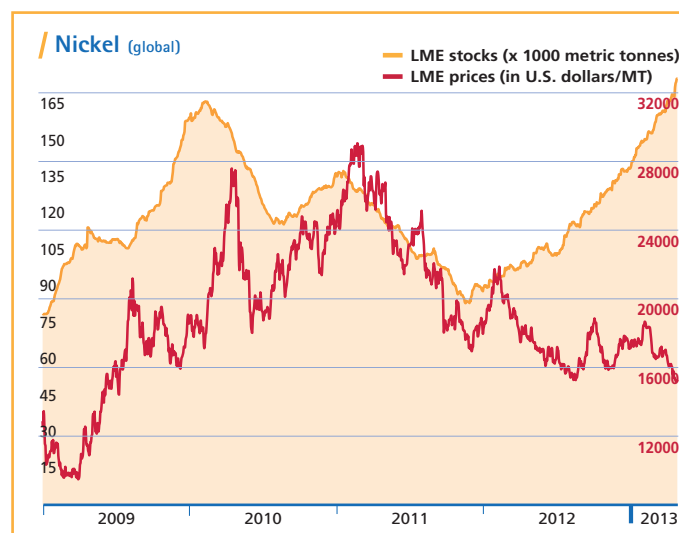
Europe

The European nickel market is currently suffering from a lack of orders for the stainless steel industry. In addition, many hedge funds - the activities of which have held the nickel price at high levels in the past - have pulled out of the market to a large extent. LME three-month prices have fallen of late and demand remains very slow. In

Germany, meanwhile, nickel cathodes have been yielding US\$ 15 010 per tonne. Alloyed scrap prices have dropped in line with primary nickel values, with V2A (304) trading recently at US\$ 1539 per tonne and V4A (316) fetching US\$ 2193.

China and elsewhere in Asia

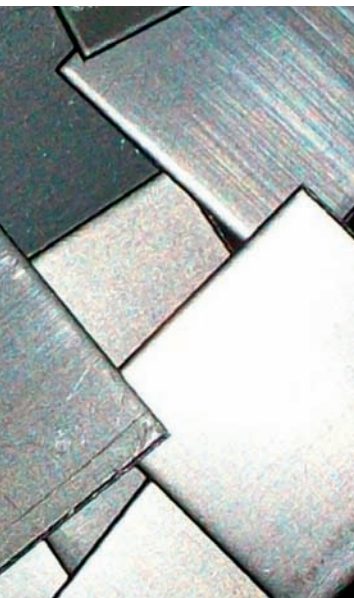
According to data from China's Customs Office, the country's imports of refined nickel and its alloys declined some 6% to 13 877 tonnes in March, while overseas purchases throughout the first quarter jumped 23% year on year to 48 824 tonnes. Chinese exports fell 18.5% to 3162 tonnes in March and 20% during the first three months of 2013 to 7403 tonnes. In early April, the nickel price on the



Closed: May 12 2013

Who is moving first? Nickel is testing the support line at 7 \$/lb. It will take some strong action from Ni producers demonstrating their willingness to curtail production before this price slide can be revised. But so far nobody seems to be ready to 'bite the bullet' and move first.





Minor metals

LME cobalt prices have climbed to US\$ 26 500-27 500 per tonne at the time of writing as buyers have returned to the market at a time of tightening producer supplies. Ferro-molybdenum is moving sideways at US\$ 23 500-24 500 per tonne because of a lack of demand from the stainless steel industry.

Ferro-titanium prices have retreated sharply to a long-time low of US\$ 6.00-6.20 per kg Ti (maximum 4.5% Al) while slower ferro-vanadium activity has resulted in a price range of US\$ 28.00-28.50 per kg V. Under relatively tight supply and despite flat demand, ferro-tungsten prices have surged to US\$ 41.65-43.65 per kg W in warehouse Rotterdam duty unpaid.

Shanghai spot market was at Yuan 114 800 per tonne (US\$ 18 222), but the mood among traders and smelters was generally quite cautious. Prices fluctuated slightly until the middle of April but then plummeted to Yuan 108 500 per tonne (US\$ 17 222)

towards the end of the month, mainly owing to flat fundamental demand in China's domestic market.

North America

The trend in US stainless steel prices was generally downwards for most of

Primary nickel figures (x tonnes)		
	2012	Forecasts 2013
Primary nickel production	1.76 million	1.86 million
Primary nickel consumption	1.65 million	1.77 million
Surplus	110 000	90 000
Stainless scrap availability (in nickel units)	8.5 million 697 000	9 million 738 000
Stainless steel consumption (in nickel units)	8.1 million 664 000	8.2 million 672 000
Surplus in nickel units	33 000	66 000
Total primary and secondary nickel surplus	143 000	156 000

Stainless steel production (x million tonnes)			
	2012	2013	2014
Global production	35.75	38.4*	40.50*
Chinese production	16.35	18.43*	20.34*
China's share	45.74%	48%*	50.23%*

* denotes forecasts

April owing to lacklustre demand, thus prompting further drops in mills' raw material orders and so lower prices on offer from scrap processors.

That said, US imports of stainless steel products surged from just over 70 000 tons in the opening month of 2012

to more than 93 300 tons in January this year, the Specialty Steel Industry of North America has revealed. Furthermore, domestic consumption of stainless steel products climbed 4.3% year on year in January to 224 651 tons. □

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Non-Ferrous

Closed: May 1 2013

Struggling prices and scrap supply

April was characterised by a combination of lower non-ferrous prices and generally slower trade. Partly as a result of a lack of industrial dynamism, scrap is said to remain in short supply within Europe in particular, with some grades reportedly 'almost impossible to purchase'. As per April 30, LME cash prices were at the following per-tonne levels (the corresponding figures from Recycling International's previous non-ferrous metals report of early April are given in brackets): aluminium US\$ 1846.50 (US\$ 1881.50); copper US\$ 7079 (US\$ 7582.50); lead US\$ 2021 (US\$ 2094); zinc US\$ 1862 (US\$ 1870.50); and tin US\$ 20 775 (US\$ 23 150).



Aluminium

The European aluminium industry is reporting fairly good sales but hardly any long-term contracts. Scrap supply, meanwhile, remains very difficult and many grades are proving hard to obtain. In Germany, aluminium wire scrap (Achse) has been quoted of late at US\$ 2846 per tonne while aluminium turnings (Autor) have been fetching some US\$ 1362. In the UK, commercial pure cuttings have been commanding US\$ 1681-1758 per tonne, mixed alloy/

old rolled cuttings US\$ 1300-1376 and commercial turnings US\$ 1270-1284. Despite current conditions, Europe's aluminium processors remain confident about the longer-term outlook for the metal given the increasing appeal of its light weight and other positive properties to the packaging and automotive sectors in particular. Elevated electricity costs have continued to impact primary aluminium production in Brazil, with a decline of almost 7% to 339 300 tonnes record-

ed for the first quarter of 2013 compared to the 364 100 tonnes of the first three months of last year, according to domestic association Abal. Meanwhile, figures from the Aluminum Association indicate that US light metal production slid more than 5% to 498 445 tonnes. During April, meanwhile, secondary aluminium prices in the USA were generally in the low to mid-70 cents per lb range for old sheet and for MLC, with old cast commanding mid-70 cents and higher. US aluminium scrap exports to China dropped 8% in the first two months of this year to a shade below 205 000 tonnes, Census Bureau figures have revealed.

According to customs data in China, the country's imports of aluminium scrap from all international sources amounted to 197 355 tonnes in March for a decline of more than 10% compared to the same month last year. The aluminium price on the Shanghai spot market started April at around Yuan 14 390 per tonne (US\$ 2284), improved some US\$ 30 by the middle of the month and then dropped back to around Yuan 14 490 (US\$ 2300) by

its close. Ever-stricter government controls over the real estate sector are seen as one of the reasons behind the decline in aluminium prices.

Few participants appear optimistic about light metal prospects given the fact that the domestic market is facing a substantial oversupply and cost factors are seen as the only barrier to drastic price falls.

According to data from China's Customs Office, the country's imports of primary aluminium plunged 70% in March this year to 19 032 tonnes, while the total for the first quarter plummeted 76% to 45 220 tonnes. With April normally considered to be part of the high-consumption season, imports in March are normally quite strong; however, the slow-down in demand coupled with pressure from high stocks brought about an altogether different result this year. Chinese exports of primary aluminium fell 31% to 8422 tonnes in March and 25% to 25 737 tonnes in the first quarter of this year as a whole.

The China Nonferrous Metals Association indicates that domestic primary



aluminium production totalled approximately 1.7 million tonnes in March, while output across the first quarter was 5.2 million tonnes - equivalent to an increase of 9% over the same period last year.

Copper

LME copper struggled to maintain its position above US\$ 7000 per tonne throughout most of April, ending the month just the right side of this threshold amid an atmosphere of caution and also concern about the robustness of downstream demand in key parts of the world.

This was particularly true in China, where traders and smelters have failed to inject any significant enthusiasm into the marketplace. In Shanghai, red metal prices fluctuated around Yuan 54 400 per tonne (US\$ 8634) in early April but increasing worries about high stock levels, among other factors, precipitated a plunge to Yuan 50 450 (US\$ 8007) on April 22. The copper price is expected to remain relatively flat for the short and medium term because of slow downstream consumption.

Latest Chinese customs data reveal that the country's imports of copper scrap tumbled more than 19% year on year in March to 347 598 tonnes. Chinese imports of US copper and copper alloy scrap fell 7% to just over 140 000 tonnes in the first two months of this year, according to figures from the Census Bureau in the USA.

And statistics from the China Nonferrous Metals Association indicate that domestic refined copper production totalled 560 481 tonnes in March while output across the first three months of 2013 was around 1.5 million tonnes - equivalent to an increase of 11% over the same period last year. Also in March, China imported 218 800 tonnes of refined copper, down 37% from the same month last year but slightly up on the 214 900 tonnes of February 2013. According to data from China's Customs Office, total imports in the first quarter tumbled

36% year on year to 676 900 tonnes. Exports, meanwhile, climbed to 60 642 tonnes in March.

Across Europe, the sizeable drop in LME copper has provoked a large measure of irritation among market participants, with one of the major reasons for the decline appearing to be the hit taken recently by the gold market. Copper scrap remains in short supply in Europe and many traders are complaining that it is proving very difficult to purchase sufficient volumes. In Germany, bright wire scrap (Kabul) has slipped below the US\$ 7000 mark to US\$ 6941 per tonne while copper granules 1A (Kasus) have been fetching US\$ 6981 and non-alloyed bright wire (Kader) nearer US\$ 6784.

Meanwhile, German giant Aurubis has downgraded its copper surplus expectations for this year to take account of mine outages and planned maintenance shutdowns. It argues that 'the market surplus of refined copper anticipated worldwide in 2013 will be much lower' than the widely-estimated 340 000 tonnes-plus.

Lead

The International Lead & Zinc Study Group (ILZSG) is predicting that global lead usage will rise 4.8% to 11.09 million tonnes this year, buoyed by a 6.7% increase in China 'driven primarily by a further rise in automotive and e-bike production as well as the ongoing development of the mobile phone network'. After declining in both 2011 and 2012, European demand is forecast to rise by 1.9% while further growth of 1.2% is anticipated for the USA, alongside gains in Brazil, India, Indonesia, South Korea, Mexico, Thailand and Turkey.

The ILZSG also believes global refined lead production will climb 4.8% this year to 11.13 million tonnes, again influenced primarily by a jump of 6.2% in China. Overall, therefore, the refined lead market is thought likely to return a surplus of 42 000 tonnes in 2013 - less than that anticipated at the group's previous meeting.

Statistics from China's Customs Office reveal that refined lead imports were slashed by 76% to a mere 276 tonnes in the first quarter of this year. In contrast, China's exports soared 578% to 3342 tonnes when compared to the same period last year because international prices have been stronger than those prevailing in the domestic market, even though exported commodities carry a 10% tax.

The lead price on the Shanghai spot market climbed from Yuan 14 150 per tonne (US\$ 2246) in early April to Yuan 14 500 (US\$ 2300) towards the middle of the month. Most traders were willing to sell at this point but opportunities proved to be restricted by slow consumption among the smelters. Amid generally weak demand from downstream industry, lead prices dropped sharply to Yuan 13 700 per tonne (US\$ 2175) by April 26.

Based on data from the China Nonferrous Metals Industry Association, domestic refined lead production climbed around 16% year on year in the first quarter to more than 1 million tonnes.

Against a backdrop of stable demand at low levels from Europe's lead processors, supply of primary lead is currently more than sufficient to meet consumer requirements whereas scrap availability has suffered a decline. In Germany, spot prices of new soft lead

stood recently at around US\$ 2239 per tonne while soft lead scrap (Paket) has been yielding some US\$ 1676.

Zinc

In Germany, high-grade zinc prices have been around US\$ 2025 per tonne of late, while old zinc scrap (Zebra) has been fetching some US\$ 1300. In line with the other base metals, zinc prices headed lower during the course of April although traders in Europe are suggesting the zinc processing industry has been using this opportunity to restock against a background of good demand for the metal. Therefore, traders are eyeing the coming months with cautious optimism.

Although zinc stocks in LME warehouses remain at a high level of around 1.1 million tonnes, these volumes have fallen slightly in recent times. In addition, the zinc market surplus has been considerably lower in the early months of 2013 when compared to the same period last year.

According to the International Lead & Zinc Study Group (ILZSG), global supply of refined zinc will exceed demand once again in 2013 - this time by an estimated 273 000 tonnes. A production gain of 5.2% to 13.25 million tonnes will be bolstered by an anticipated 9.7% increase in China. Output is also expected to be higher in Europe, Australia, Brazil, India, Japan, South Korea and Peru. After falling 3.3% in 2012,



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global demand for refined zinc is also forecast to rise 5.2% this year, reaching 12.98 million tonnes. A 6.8% upturn is foreseen for China on the back of 'infrastructure investment in central and western provinces and further growth in demand in the automotive, machinery and white goods sectors'. Demand is also forecast to increase in India, Indonesia, Taiwan, Thailand and Turkey. 'Continued economic difficulties are expected to restrict growth in Europe to 1.7%,' adds the ILZSG. And in the USA, 'where there are signs of an upturn in construction activity', demand is forecast to rise 2.9%.

In March, China's refined zinc imports witnessed a steep increase of 264% compared to February as well as a 62% jump from the same month last year to 73 472 tonnes. This outcome was the result of an upturn in downstream consumption within the domestic market. Total imports for the first quarter of this year climbed almost 10% to 143 733 tonnes. In contrast, China's refined zinc exports tumbled 84% year on year in March, while cumulative exports in the first three months of 2013 were a full 60% lower at 1157 tonnes. Zinc prices on the Shanghai spot market opened April on Yuan 14 500 per

tonne (US\$ 2301) but fell to Yuan 14 200 (US\$ 2253) shortly after the month's mid-point. Most downstream smelters adopted a wait-and-see approach to the market and duly restricted their purchases to what was required to satisfy existing orders. But partly as a result of some reported relaxation in the efforts by the Chinese government to eliminate backward capacities, the zinc price resumed its upward trajectory later in April to reach Yuan 14 600 per tonne (US\$ 2317). Based on statistics from the China Non-ferrous Metals Industry Association, zinc production in the first quarter of the year

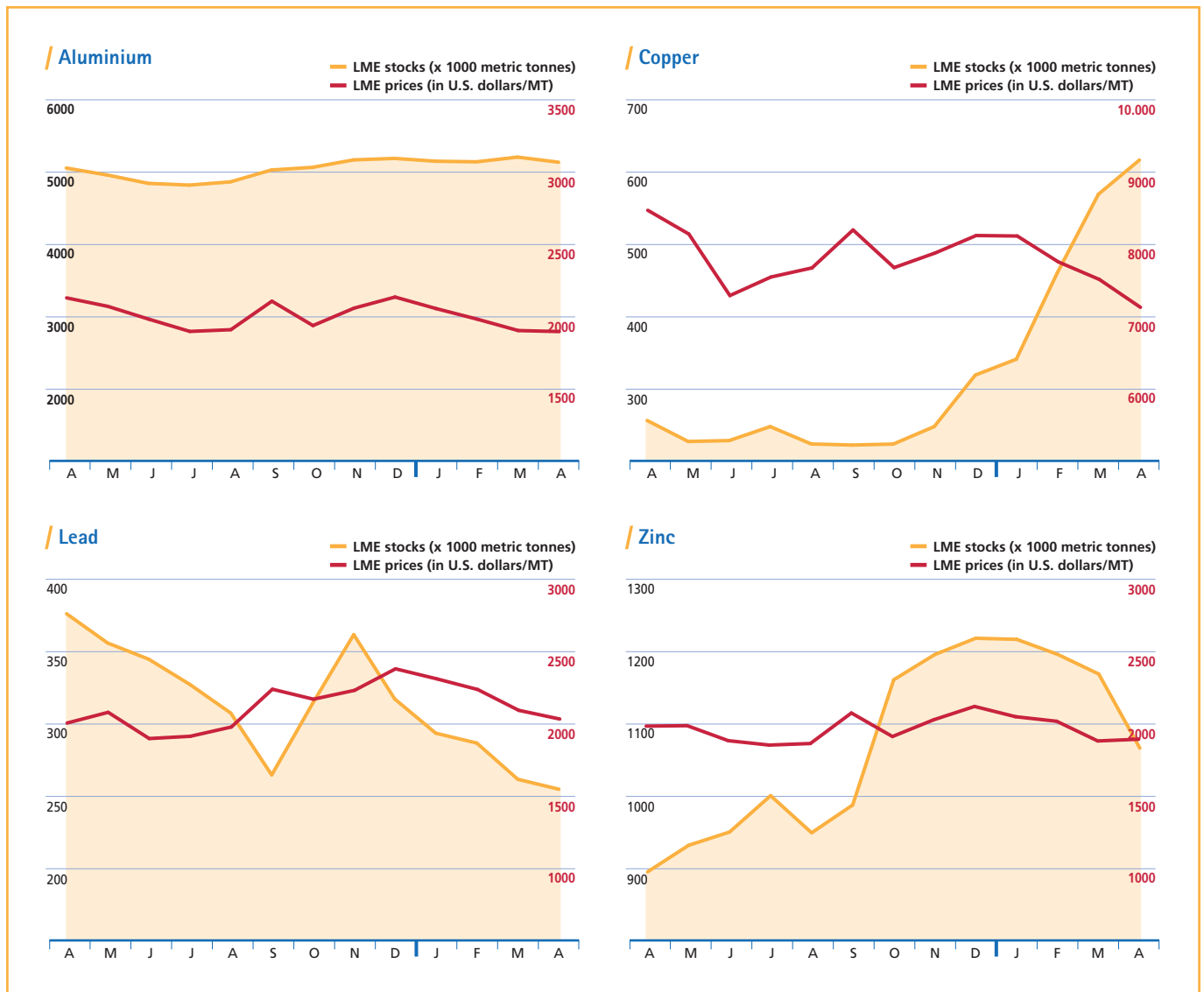
amounted to 1.18 million tonnes - equivalent to a decline of almost 4% from January-March 2012. Capacity utilisation among the major operators exceeded 60% in March, a figure which was slightly higher than that for February owing mainly to a recovery in zinc concentrate supplies. □

Contributing to the Non-Ferrous Metals Market Analysis:

- Ralf Schmitz, German non-ferrous trade association VDM, Europe
- Lili Shi, journalist and consultant, China

Non-Ferrous Scrap Prices

Reference date: May 1, 2013



Paper

Closed: May 4 2013

Inspection crackdown hits international trade

According to RISI, Chinese imports of recovered paper from all countries climbed 6.5% to almost 4.6 million tons in the first two months of the year. However, the Asian giant's more recent quality crackdown has convinced many exporters to steer a course around this market for fear of high-cost rejections.



Europe

Freight rates fall

At a time of year when collection volumes are usually quite healthy, volumes entering merchant processors' facilities are relatively low - partly as a result of the general drop-off in economic activity.

There is still not much OCC available and stocks are not very high in Europe, whereas demand is reasonable. Most European mills kept their prices stable in April; those producers who declined to follow the March increase actually implemented the addition the following month. However, this increase will probably be removed again for May business. OCC and mixed paper prices for exports to the Far East have fallen sharply. Orders from China have come to a vir-

tual standstill owing to the country's severe quality inspection regime. In certain Chinese ports, these strict quality checks are resulting in additional costs and waiting times. In Rotterdam too, the controls are very strict, and many traders have stopped shipping to China for fear of delays and even rejections.

Shipping freight rates have fallen again because of the reduction in demand from China, although orders from other Far East destinations are quite good. Last month brought some shipping problems because of a lack of vessel and/or container space.

For the deinking grades too, incoming volumes are rather low at a time of good demand in Europe; Asia is also active in the market - but at relatively low prices. For most of the middle grades, demand

is reasonable to good in Europe at stable to slightly higher prices against a backdrop of relatively slow collection activity. Meanwhile, order levels from India and other Asian countries have been reasonable, but at slightly lower prices. The higher grades of recovered paper are not abundant, demand is healthy and prices have tended to rise slightly over recent weeks.

North America

More visits from inspectors

In late April and early May, there was a slight decrease in corrugated and DLK prices. However, there appears to have been a levelling-off as a lack of generation is preventing a further, more substantial decline in values. It is possible this trend will continue throughout May. The woodfree deinking grades and pulp substitutes have also been fairly stable in both the domestic and export markets.

Some suppliers have remarked that China's 'Green Fence' regulations are causing additional and generally time-related problems. Suppliers are being required to take more photos and to field more visits from inspectors checking on the material to be loaded into containers. Reports suggest 'Green

Fence' is a 10-month project imposed by the Chinese government.

According to latest Census Bureau figures, the value of US recovered paper exports dropped 9% to US\$ 547 million in January-February 2013, with revenues from China sliding 15% to US\$ 342 million and sales to India falling 14% to US\$ 43 million. On the upside, Mexico increased the worth of its orders by 17% to nearly US\$ 41 million while revenues from South Korea leapt 26% to US\$ 34 million. Overall, US recovered paper exports dipped 5% in volume terms when comparing the first two months of this year with January-February 2012.

Asia

Unwilling to take risk

Prices for the brown grades have started to slide, with OCC values having fallen US\$ 25 per tonne since the end of March.

Traders and packers are trying to sell their volumes wherever they can - with the exception of China, in many cases. The quality checks imposed in China are considered by many to be ridiculous. Mills in desperate need of OCC are struggling to obtain required tonnages because many suppliers are





unwilling to take the risk presented by these stringent checks. Inspectors who know little or nothing about recovered paper are looking for any fragment of non-fibre so that containers can be rejected. All parties involved in the paper industry believe that quality checks are important but that the severity of the actions taken by the Chinese authorities makes no sense. With material bypassing China, mills in other countries are obtaining their fibre needs more easily and so have dropped their buying prices. The decline for most grades has been between US\$ 10 and US\$ 25 per tonne, with expectations that further reductions of up to US\$ 10-15 could be seen. Prices are deemed unlikely to go any lower given that collection volumes are worsening by the day. On average, latest freight rates are lower by US\$ 100 per container for all destinations. □

Contributing to the Recovered Paper Market Analysis:

- Melvin de Groot (Van Gelder Recycling, the Netherlands)
- Mariëlle Gommans (Bel Fibres, Belgium)
- Steve Vento (Vipa Lausanne SA, Switzerland)

Entries sought for European Paper Recycling Awards

Managers of paper recycling projects, initiatives and campaigns that contribute to Europe's sustainability are being invited to stake their claim to a European Paper Recycling Award.

The two award categories are Information/Education and Technology Improvement/R&D. Eligible initiatives will be evaluated by an independent jury according to: relevance and originality; achievements; possibilities for reproducing the project; and cost-effectiveness. The initiatives may be ongoing or completed, and they must already have started (but not before January 2009). Winners will receive not only valuable recognition but also an original piece of paper artwork, which will be officially handed over in an award ceremony at the European Parliament in Brussels. 'NGOs, educational institutes, local authorities and industry have implemented many innovative projects to enhance paper recycling all over Europe but these initiatives are generally not well known,' state organisers at the European Recovered Paper Council (ERPC). By raising their profile with an award, the organisation hopes to 'inspire others to copy good practices'.

All entries must be submitted by midday on June 28 (Brussels time). For more information, visit www.paperforrecycling.eu/recycling-awards or contact Jori Ringman-Beck at the ERPC secretariat (Tel: +32 2 627 49 19, Email: erpc@cepi.org)

Textiles

Closed: May 2 2013



By Olaf Rintsch, Textil-Recycling K & A Wenkhaus GmbH, Germany

Decent demand meets tight supply

In Europe, the market for used textiles remains really tight. Some voices have been heard to talk about stagnating prices in Africa but demand from this quarter remains strong. The lengthy winter in Northern Europe - with its unusually low temperatures and plentiful snow - served to reduce available quantities of original clothing. It remains to be seen whether the more recent increase in temperatures will boost collection volumes and whether this will have an impact on future price developments. In the foreseeable future, there is no reason to expect a significant change in prices.

Demand from Eastern Europe is growing steadily, especially for the better qualities. Prices have barely changed for feathers and shoes, and the same applies to wipers and the recycling grades.

The illegal placement of collection bins continues unabated and is increasingly irking the authorities. Almost every day, new press reports appear on this topic but unlicensed collectors nevertheless continue with their activities, taking advantage of legal loopholes and the inability of the authorities to identify them. □



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	N/A	N/A	2,000	2,000	2,000	2,000	2,000	5,000	5,000	6,000	8,000
	N/A	N/A	N/A	N/A	N/A	3,000	3,000	6,000	6,000	7,000	9,000
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RESEARCH plastics extraction from the oceans
LED BY Boyan Slat
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Operation Ocean Clean-up

Recognising that it might just be 'one of the largest environmental rescue operations yet', 19-year-old Boyan Slat – a Dutch aerospace engineering student at the Delft University of Technology – has come up with a novel construction designed to clear our oceans of plastic waste. Dubbed the Ocean Cleanup Array, it consists of an anchored network of floating booms and processing platforms which could be dispatched to so-called 'garbage patches' around the world.

After the Stone Age and the Bronze Age, we now find ourselves in the middle of the Plastic Age because, together, we produce about 300 million tonnes of plastics each year,' asserts Boyan Slat. A proportion of this volume enters rivers, waterways and eventually the oceans, with the result that approximately a third of the global ocean surface is now polluted by plastics. 'According to new calculations, a whopping 7.25 million tonnes of extractable plastic waste will be found in oceans by 2020 - that is the weight of roughly a thousand Eiffel Towers,' observes the aerospace engineering student from Delft University of Technology in the Netherlands.

Colossal undertaking

The financial implications are severe, notes Slat. 'Plastic waste causes over US\$ 1 billion in vessel damage a year,' he says. But if the plastics were to be retrieved from the oceans' several well-known plastic waste hotspots, called gyres, these could then be sold with

potential revenues of 'more than US\$ 500 million per year', he observes. Most researchers into plastic pollution believe the focus should be more on prevention - for example, through education about materials - rather than on actively seeking to reduce existing waste levels. This is mainly because we would need to deal with five colossal areas, each moving around,' Slat explains. Furthermore, the plastic debris adrift on the waves differs greatly in size, ranging from massive ghost nets which trap seals to mere fragments and even molecules. People have grown accustomed to throwing away their rubbish without considering the consequences, according to Slat. 'That is why we will need a combination of both worlds: prevention and action. And we will need them soon. After all, the waste residue poisons the entire food chain - a chain that involves us.'

The enemy's advantage

Adopting the motto 'he who wants to achieve different results must think differently', the aerospace engineering

student proclaims: 'Let's use our enemy to our advantage.' By this, he means the ever-changing oceanic currents. 'Why move through the oceans if the oceans can move through you?' Slat asks. 'By fixing the ships to the seabed and letting the rotating current do its work, large amounts of funds, emissions and manpower will be saved.' His vision is of a zigzag array of floating booms and processing platforms that will span the radius of a selected gyre. The booms would act as 'giant funnels', the angle of which would force plastic in the direction of the platforms. Once the debris enters these platforms, it will be filtered out of the water, separated from the plankton and stored in containers for recycling on land. A vital advantage of this approach is that it would not obstruct shipping routes. 'The array would be placed parallel to those shipping routes, preventing any issues,' Slat explains. 'Besides, most gyres are located in scarcely-sailed areas.' Opting for booms instead of nets also means that marine life

would not become caught up as the currents 'move slowly enough for organisms to escape'.

Promising results

Citing a recent 'plastic spill' off the coast of Hong Kong whereby massive damage was done by a single shipping container, Slat predicts his approach could eliminate some 55 containers-worth of material each day. It's a start - although Algalita Marine Research Foundation researcher Captain Charles Moore estimates it would take up to 79 000 years to remediate all the material. But the Delft student counters: 'I believe that the Great Pacific Garbage Patch can completely clean itself in just five years.'

Despite his abundant enthusiasm, Slat acknowledges: 'We are currently only about a quarter of the way towards completing our feasibility study.' Although preliminary results appear promising, he underlines that it is too soon to guarantee the complete workability of the concept. □

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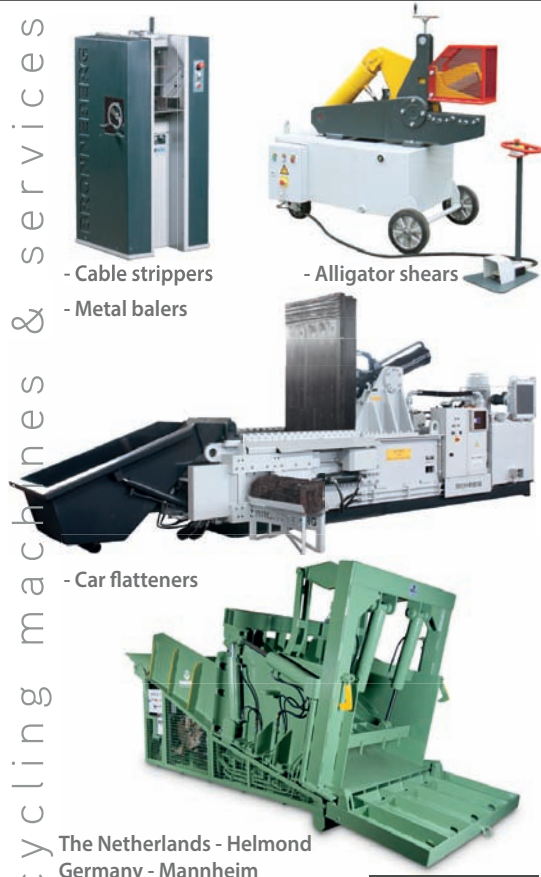


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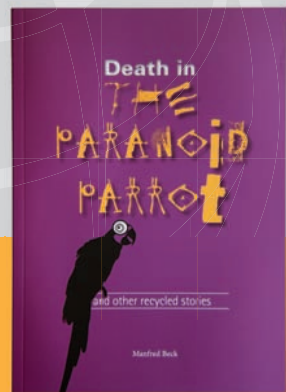
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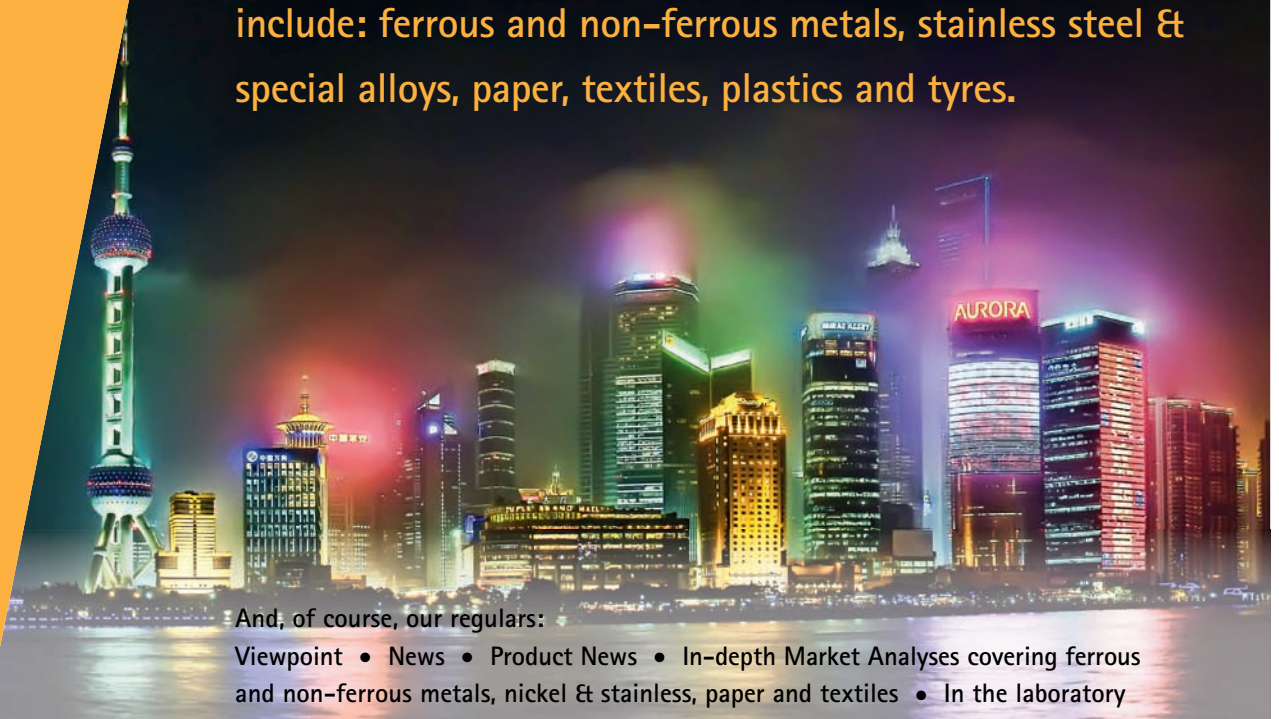
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In the June issue

The June issue of Recycling International will feature detailed reports from the BIR world recycling organisation's late-May Convention in Shanghai, China. Coverage will include: ferrous and non-ferrous metals, stainless steel & special alloys, paper, textiles, plastics and tyres.



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Advertiser index

A-1 Specialized Services & Supplies	26	Bollegraaf	92	Inpladi	16	Ousei Kankyoshoji	90	US Shredder and Castings Group	86
Adam, John R. & Sons	13	Bulk Handling Systems	78	ILG	98	Pallmann Maschinenfabrik	64	Vezzani	54
AdRem	20	Cheng Ho Hsing	60	ISRI	28+29	Recycle Benelux	15	Worldscrap	103
Albert Hoffmann	88	Colmar	116	IUT Beyeler	82	RecySystems	4	ZB Group	21
Andrin Magnetic Systems	86	Copex	100	KC International Consulting	15	RIISA	11		
ATM Recyclingsystems	78	Cronimet	84	KW-Generator	86	Saphymo	100		
Aurubis	86	Danieli Henschel	58	Lefort	50	Salem Ehitus	90		
Bakker	78	De Groot Metals	14	Liebherr	115	Scrap Magazine	64		
BDSV	16	Duesmann & Henschel Recycling	78	Magnapower	106	Sennebogen	24	For advertisements please contact:	
Bel Fibres	67	E-Crane	70	Metal Bulletin/Copper Recycling	106	Sierra Europe Recycling	2	Vincent Smit (Sales Manager)	
BHS Sonthofen	7	ELG Haniel	12	Metso	76	Spectro	78		
BIR	18	Gemini	94	Mewa Recycling Anlagen	14	Stahlwerke Bochum	48	P.O. Box 2098	
Bonfiglioli	106	Group Galloo	20	MG Recycling	94	Sunberg	52	6802 CB Arnhem	
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