Recycling International

January / February 2011, No.1

# Russia's metals sector: looking towards change

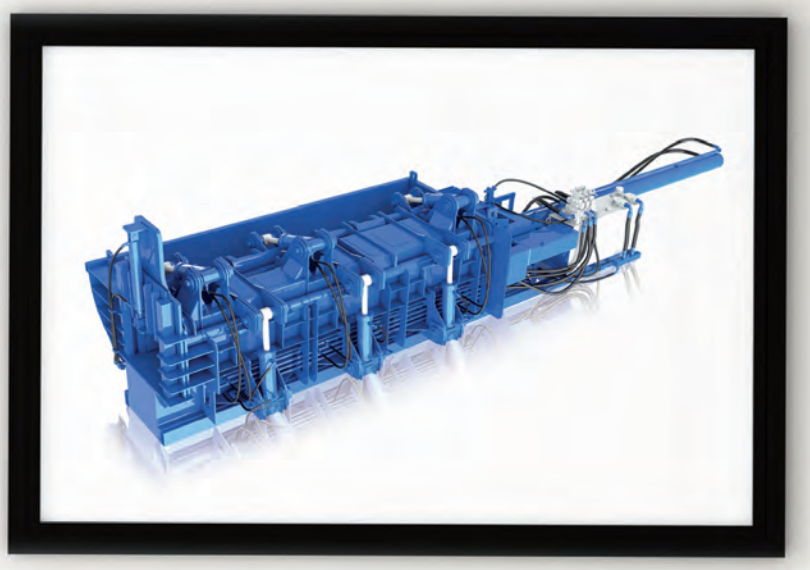
Future for e-scrap tied to change in China

The road map to reaching ELV targets

SIERRA

presents

# Modern technology masterpieces



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# Bra-cycling

**To my surprise, I have discovered that there is a US-based organisation dedicated to the recycling of bras. And if you'll forgive the pun, its activities are certainly worthy of support...**

One evening, when my wife Helga was out with some friends, I poured myself a whisky and started an Internet search for unusual stories with a recycling theme. There were not that many, but I stubbornly persisted with my Googling activities and ultimately stumbled upon a website which caught my attention because it mentioned a commodity to which our magazine rarely refers. We are all familiar with the recycling of ferrous and non-ferrous metals, as well as paper, textiles, tyres, e-scrap and end-of-life vehicles, ships and airplanes; but did you know there is a bra recycling business out there?

The town of Gilbert in Arizona is home to an organisation called 'The Bra Recyclers' whose motto is 'The new shape of recycling' and whose activities are marketed through its Bosom Buddy Recycling programme. The Bra Recyclers is a for-profit organisation which offers an environmentally friendly and cheap way to donate bras to breast cancer survivors and women in transitional shelters. 'Our concept is simple: Used Bras = Using Simple Encouragements to Develop, Blossom and Renew positive Attitudes and Self-esteem,' it states.

Foundation garments are not normally regarded as esteem-boosters. 'But ask any woman and they will tell you that a well-fitted bra gives you the confidence to go anywhere and do anything you want to do,' the organisation says on its website (www.brarecycling.com). 'Our bras are distributed around the world through exporters, organisations and Bra Recycling Ambassadors to deserving women and girls in transition back to self-sufficiency.'

*'Help reshape Haiti! Recycle your bras!'*

Since its inception in 2008, the company has donated more than 100 000 bras to support 23 organisations across the country and abroad. It goes without saying that not all bras can be accepted; they need to be in good condition, and clasps and straps need to be functional. And there is particularly strong demand for special-needs, post-breast surgery and maternity bras. The Bra Recyclers has drop-off points in 12 US states but women (and also men) can just as easily mail the old or new bras sitting in their lingerie drawers so that they can be 'worn by a deserving woman in your community'. The website urges interested parties to follow four easy steps: 'Wash it (All bras should be washed); Tag it (Fill out the Bra Recycling Form); Box it (Place your bras in a box or large envelope); and Drop it off to the mail.'

The Bra Recyclers buys and sells recycled bras, which are re-distributed through exporters and organisations to developing countries around the world. The aforementioned network of Bra Recycling Ambassadors assists the organisation in providing deserving women with used or unused bras. 'As a Bra Recycling Ambassador,' it is explained, 'you will have the opportunity to: directly impact the lives of women in your area by providing them with bras; host community events in your area to raise awareness about the lack of a simple lingerie staple that affects the self-esteem of women and girls nationally and globally; gain the personal satisfaction of giving back to deserving women and girls in our community; have access to our Ambassador kit, which has been specially designed to help guide you through the bra drive process.'

This left me wondering whether women alone are encouraged to organise bra drives or whether male Ambassadors are also welcome.

Last year, The Bra Recyclers struck up a partnership with Angel Wings International to send bras to women in earthquake-riven Haiti with the motto: 'Help reshape Haiti! Recycle your bras!' Its goal was to send 1000 bras to Haiti in January but the collection effort will continue until February 28. So our readers (male or female, since we don't discriminate) can still send their bras to: The Bra Recyclers, 3317 S. Higley Rd, Ste 114-441, Gilbert, AZ 85297, USA. For such a good cause, surely the person donating the most bras should be awarded a cup - or, more appropriately, two. □

**Manfred Beck**
*Editor*

# For Prices You Can Trust

**The Steel Index (TSI)** is the premier specialist resource for independent scrap, steel and iron ore reference prices. TSI's prices are based on actual transactions, making them more reliable and robust than any produced by telephone surveys.

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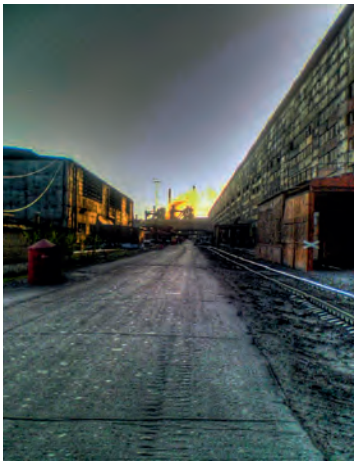
THE STEEL INDEX


## 16 / Russia's metals sector: looking outwards towards change



The country might be the world's largest in terms of size but Russia's scrap metal trading reach does not generally extend much beyond a few neighbouring ex-Soviet republics. While Russia's pipelines are supplying oil and gas around the globe, its metals scrap is increasingly staying home. Recycling International paid a visit to Russia in a bid to discover what is actually happening on the ground in this booming country.

## 20 / The road map to reaching ELV targets

The European Union has thrown down a challenge to industry of reusing and recovering at least 95% of a car by January 2015. However, many challenges lie ahead over the next four years if this goal is to be achieved. For example, there is a need for more effort to be invested in the recycling of automotive shredder residue (ASR). And clear definition of recycling and recovery quotas is also required.

## 26 / Future for e-scrap tied to change in China

At ICM's World Recycling Forum in Hong Kong last November, Shanghai-based journalist Adam Minter - a regular contributor to Recycling International - ventured a personal but extremely well-informed assessment of the future impact of China's recycling industry, with particular emphasis on e-scrap. This article represents an abridged version of his presentation

Recycling International

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IN THE LABORATORY

Laptop designed for rapid disassembly / 49

SECTIONS



MARKETS ANALYSIS

# 2011

**17-19 May** Bremen (Germany)
Waste to Energy + Recycling 2011
Freesen & Partner
Phone: +49 2802 948 4840
E-mail: info@wte-expo.de
www.wte-expo.de

**17-18 February** Moscow (Russia)
Ferrous and Non-Ferrous Scrap Forum 2011
Rusmet
Phone: +7 495 989 2674
Fax: +7 495 989 2674
E-mail: steel@rusmet.ru
lom.rusmet.com

**18-20 May** Karlsruhe (Germany)
Recycling Aktiv
Outdoor recycling exhibition
Geoplan GmbH
Phone: +49 7229 6060
Fax: +49 7229 60639
E-mail: info@geoplanGmbH.de
www.recycling-aktiv.de

**23-25 February** Kahrkiv (Ukraine)
WasteECo-2011
Co-operation for waste issues international exhibition and conference
EcoInform
Phone: +380 57 712 1105
Fax: +380 57 712 1105
E-mail: world_of_waste@mail.ru
www.waste.com.ua/cooperation

**19-21 May** Montichiari (Italy)
Metalriciclo
Edimet
Phone: +39 030 998 1045
Fax: +39 030 998 1055
E-mail: info@edimet.com
www.metalriciclo.com

**1-2 March** New Orleans (USA)
Plastics Recycling Conference
Resource Recycling
Phone: +1 503 233 1305
Fax: +1 503 233 1356
E-mail: cara@resource-recycling.com
www.plasticsrecycling.com

**23-25 May** Singapore
BIR Spring Convention
Bureau of International Recycling
Phone: +32 2627 5770
Fax: +32 2627 5773
E-mail: bir@bir.org
www.bir.org

**23-25 March Budapest (Hungary)**
IARC 2011
11th international automobile recycling congress
ICM
Phone: +41 62 785 1000
Fax: +41 62 785 1005
E-mail: info@icm.ch
www.icm.ch

**31 May-2 June** Moscow (Russia)
Solid waste treatment and disposal: leading-edge technologies
ISWA
Phone: +43 1253 6001
E-mail: iswa@iswa.org
www.iswa.org

**5-9 April** Los Angeles (USA)
ISRI Convention and Expo 2011
Annual convention & scrap recycling industry exposition
ISRI
Phone: +1 202 662 8500
Fax: +1 202 624 9257
www.isri.org

**31 May-3 June** Moscow (Russia)
Waste-Tech 2011
Sibico
Phone: +7 495 225 5986
Fax: +7 495 225 5986
E-mail: info@sibico.com
www.waste-tech.ru

**15-16 June** Tours (France)
Nouvelles Matières Premières
FEDEREC / DPE Evénements
Tel: +39 4 72 98 26 86
Fax: +39 4 72 98 26 80
E-mail: durand@nouvelles-matieres-premieres.com
www.nouvelles-matieres-premieres.com

**13-15 September** Birmingham (UK)
RWM 2011
EMAP
Phone: +44 20877 5440
E-mail: info@rwmexhibition.com
www.rwmexhibition.com

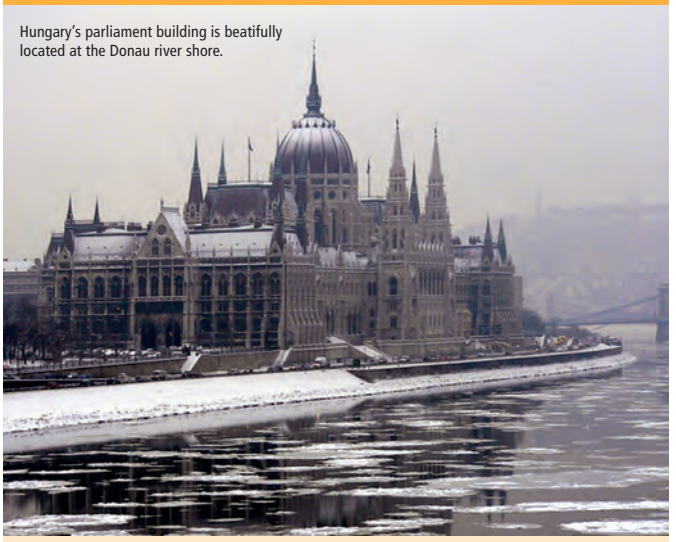
**13-15 April** Sofia (Bulgaria)
International Forum on Ecology, Waste Management & Recycling
Via Expo
Phone: +359 3296 0012
Fax: +359 3294 5459
E-mail: international@viaexpo.com
www.viaexpo.com

**9-12 June** Istanbul (Turkey)
REW Istanbul
International recycling, environmental technologies and waste management trade fair - IFO Istanbul
Phone: +90 212 275 7579
Fax: +90 212 288 3611
E-mail: rew@ifo.com.tr
www.rewistanbul.co

**29-30 June** Istanbul (Turkey)
Steel Scrap Conference
Metal Bulletin
Tel: + 44 20 7779 8989
Fax: + 44 20 7779 8294
E-mail: registrations@metalbulletin.com
www.metalbulletin.com

**27-29 September** São Paulo (Brazil)
Exposucata
Reciclagem Moderna
Phone: +55 11 5535 6695
E-mail: exposucata@exposucata.com
www.exposucata.com

## 23-25 March — Budapest (Hungary)
## IARC 2011



Hungary's parliament building is beatifully located at the Donau river shore.

The International Automobile Recycling Congress (IARC) is expected to attract hundreds of car recyclers, as well as a host of other interested parties. Attendees will converge on the historic Hungarian capital of Budapest to hear about latest relevant developments from politicians, as well as experts in the vehicle manufacturing and recycling arena. Keynote speeches will be delivered by representatives from the European and Hungarian authorities, in addition to the domestic recycling association. Through a panel discussion, presentations and a workshop, particular emphasis will be given to the consequences of the EU's regulation on Registration, Evaluation and Authorisation of Chemicals (REACh).
Other presentations will follow the recycling process from the car manufacturer through to the scrap metal consumer, with an eye on best available technologies and the future for car recycling. On the first day of the congress, a panel discussion will focus on the illegal export of car wrecks, while reports from various countries will underline international developments in car recycling. The three-day event will conclude with plant visits to some of Hungary's leading car recycling firms - including Hungarian shredder Alcufer and the local subsidiary of Austrian recycler Müller-Gutenbrunn. Trips will also be made to the Hungarian production facilities of Audi and Suzuki.

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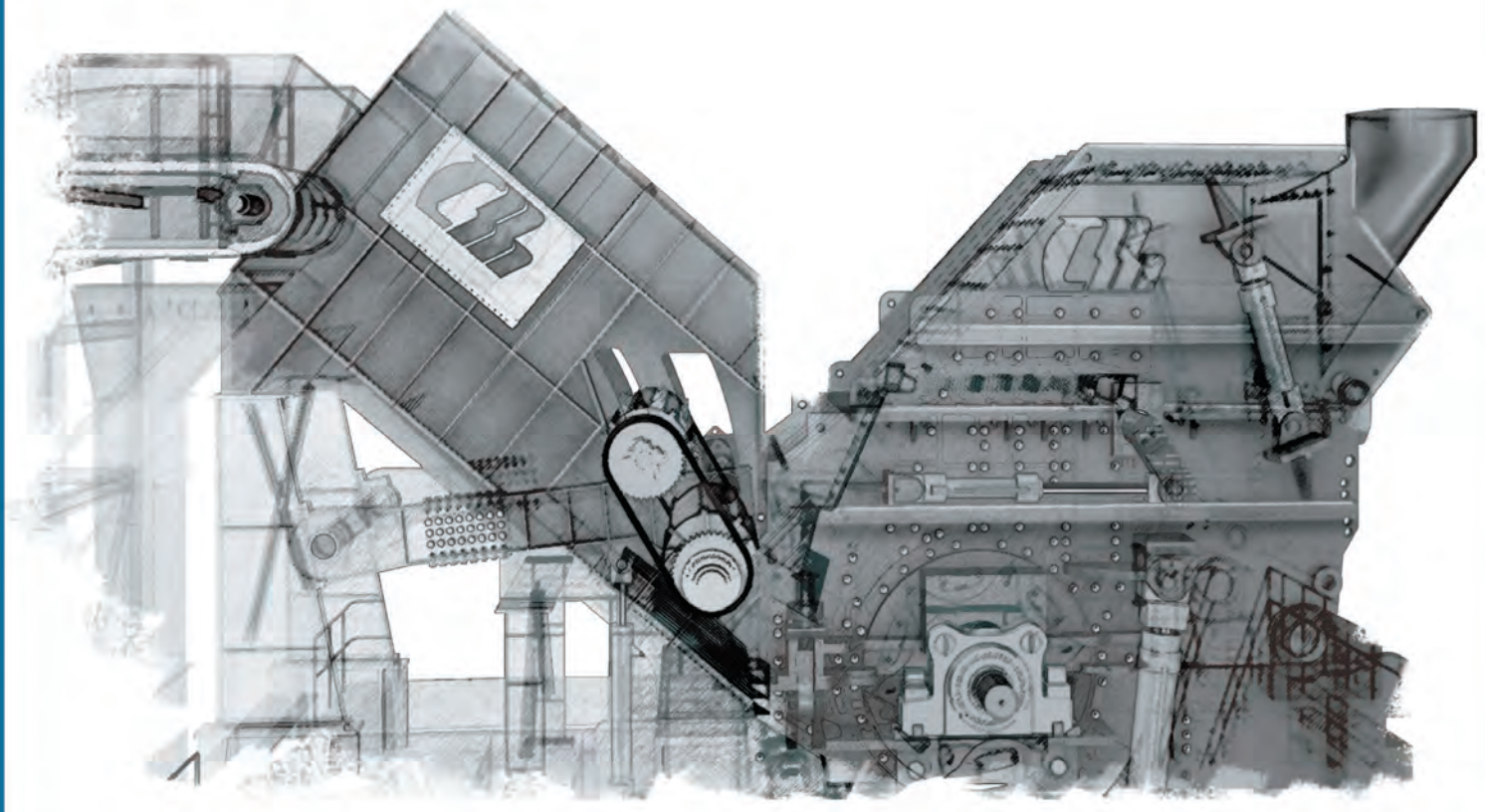

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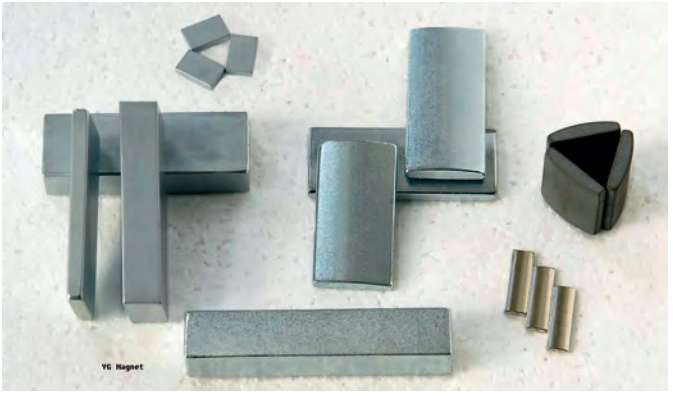
# Hitachi technology to recycle rare-earth magnets



**In order to become** more self-sufficient in rare earths, Japanese manufacturer Hitachi has developed a more efficient system to recycle rare-earth magnets from discarded technology. The company has devised innovative machinery which is said to be capable of extracting 100 magnets per hour compared to the current manual approach which enjoys a typical extraction rate of around 12 magnets per hour.

'We need to make sure we have a stable supply of these materials and recycling is part of that,' observes Kenji Baba, General Manager of Hitachi's resource recycling office. 'Now we have to work on bringing costs down.' Through this recycling effort, the company hopes to boost its use of recycled rare-earth materials to 10% by 2013 from around zero at present.

Although rare-earth minerals are relatively common in the Earth's crust, few nations or companies have invested in sourcing these materials. But as prices rise with China looking to safeguard its own supplies, there is now a greater incentive to open up new sources.

Celebrating its 100th anniversary, Hitachi's 'green' shift is being replicated among other Japanese companies: for example, Samsung made a US$ 4.3 billion commitment to green technologies in July last year. **www.hitachi.com**

# Another electronics recycler for Stena camp

**Stena Technoworld** has acquired fellow Italian electronics recycler SIRA srl. 'The acquisition creates strong synergies and enhances our efforts to develop the market's best solutions for electronics producers in Italy and the rest of Europe,' says Roberta Marchesi, Managing Director of Operations at Stena Technoworld which boasts 27 facilities in 10 countries.

Alexandre Comino, Managing Director of Stena Technoworld, adds: 'The important thing is to offer customers the best electronics recycling solutions financially as well as in terms of innovations, the environment and safety. The acquisition of SIRA reinforces this. Our collective production and expertise around Europe is a major asset for customers in each market.'

Since being formed in 1997, Fossò-based SIRA srl has undergone substantial expansion, focusing most of its operations on the recycling of refrigerators, air-conditioning equipment, computers, televisions and other monitors. The company has also co-operated with leading producer alliances in the market.

Electronics is the fastest growing waste category in the EU: every year over 9 million tonnes of electronics are thrown out, of which 33% is collected, according to official figures. 'In other words, there is a lot more to be done to fully utilise this resource,' says Mr Comino.

**www.stenatechnoworld.com**

# Further expansion for Schnitzer portfolio

**North American scrap** processor Schnitzer is continuing along the take-over trail by acquiring State Line Scrap of Attleboro, Massachusetts, USA. Meanwhile, Steel Pacific Recycling - the largest metal recycler on Canada's Vancouver Island - is being sold to Schnitzer, along with Vancouver-based Amix Salvage and Sales which operates two sites in Surrey and others in Nanaimo, Chilliwack, Edmonton and Fort McMurray, Alta.

The acquisition of Steel Pacific provides continued growth in Western Canada, according to Schnitzer's CEO Tamara Lundgren. 'Together with Schnitzer's recently-announced acquisition of Amix Salvage, we are adding to our export-based recycling platform to better serve our customers around the world,' she explains.

Schnitzer has been a long-time buyer of Steel Pacific's chipped metal, which it ships by barge to processing plants in the states of Washington and Oregon to make construction rebar, wire rod and vehicle parts such as wheel rims. Employing approaching 100 people and running a fleet of more than 30 trucks, Steel Pacific handles metals, wood waste, batteries, plastics and other recyclables.

Established 105 years ago, Schnitzer is one of the largest manufacturers and exporters of recycled ferrous metal products in the USA, with 46 operating facilities across 14 states and in Puerto Rico. The company also sells reconditioned vehicle parts through 46 self-serve facilities. **www.schnitzersteel.com**

## New recycling guide: RECYCLING2meet


Germany-based publisher Huss-Verlag is launching a cross-media reference guide for the recycling industry. The RECYCLING2meet initiative will provide detailed information about relevant products, performance and partners in every key recycling sector. Contact details will also be supplied.

It is claimed that the bilingual publication will be of practical daily help to operators of recycling equipment and to those industries involved in recycling their by-products. The guide will be available online via www.recycling2meet.com and as a supplement to Recycling International and German trade magazine Recycling Technology - both of which are published by Huss-Verlag. The publication will be released for the first time in May 2011 and then annually in bilingual print and online versions. **www.recycling2meet.com**

# China to enforce appliance recycling regulations

**New regulations governing** the recycling of waste electronics became effective in China on January 1 2011 - and non-compliance could result in fines of more than US$ 70 000.

The new rules stipulate that manufacturers of electrical appliances must pay for the recycling of discarded electronics and that all organisations carrying out the recycling process must be certified. Those found to have recycled electronic equipment without the required certification could be fined between Yuan 50 000 (US$ 7545) and Yuan 500 000 (US$ 75 450).

'This is certainly good news for companies involved in dismantling home appliances but bad news for appliance manufacturers,' says Chen Gang, Deputy Secretary General of the China Home Appliances Association. Costs may eventually be passed on to consumers, he added.

# Harsco forms venture with TISCO

**Harsco Corporation** and China's Taiyuan Iron & Steel (Group) Co. Ltd (TISCO) have announced a new 25-year joint venture covering the environmentally beneficial processing and metal recovery of the latter's stainless and carbon steel slag production by-products across a range of potential commercial applications. This is the largest-ever joint venture for both companies. Harsco says the link-up has the potential to generate new revenues of an estimated US$ 30 million per year at first, ramping up to approximately US$ 50-60 million when fully operational. Harsco and TISCO assume shares of, respectively, 60% and 40% in the new venture; definitive agreements on operations, technology licensing and land leasing are still to be reached, while final Chinese government approval is yet to be granted. These issues are expected to be finalised in the first half of 2011 such that the joint venture will commence operations in early 2012.

The new entity will be known as TISCO Harsco Environmental Protection Enterprise Co. Ltd and is expected to process up to 1 million tonnes of stainless steel slag and as much as 500 000 tonnes of carbon steel slag per year. The joint venture company plans to market these materials for 'zero waste' commercial reuse in such applications as metallurgical additives, recyclable stainless steel scrap, agricultural/turf fertiliser, and road-making and construction materials.

With an annual stainless production of more than 2 million tonnes, TISCO became the world's largest producer of stainless flat products in 2009 - the first Chinese company in history to reach the top of the rankings. **www.tisco.com.cn**

# Hydro and MIT work to fine-tune aluminium recycling

**Scandinavian producer Hydro** has entered into an agreement with the Massachusetts Institute of Technology (MIT) in the USA to develop modelling and analyses with the aim of optimising the recycling of aluminium.

Hydro runs a total of 19 aluminium remelting plants in Asia, the Americas and Europe. At a growing number of these facilities, Hydro is focusing on recycling in addition to the remelting of process scrap. In 2010, the company remelted more than 1 million tonnes of aluminium, of which around 260 000 tonnes was recycled from packaging, building products and automotive parts, among other sources. Its strategy is to increase its recycling volumes considerably over the current decade to 1 million tonnes per year. To this end, Hydro plans to build a new recycling centre at Karmøy in western Norway.

'Recycling as effectively and profitability as possible can be a new, important competitive advantage for Hydro as an integrated aluminium company,' says company researcher Hans Ole Riddervold. 'Post-consumed material comes from many different sources, consists of a number of different alloys, and the composition of scrap varies over time. The question is: How can we plan and handle this as effectively and profitability as possible?'

Hydro's response has been to link up with MIT for a research project which builds on a 20-year history of co-operation between the two. Helge Jansen, Head of R&D within Hydro's Extruded Products business, comments: 'We have a lot of faith in this project. Among other things, we want to find how "problems" in the form of various alloys can be turned into advantages in the handling of recycled materials.' **www.hydro.com**



# Aleris to sell Brazilian operations

US-based aluminium recycler Aleris International has sold its Brazilian division to local firm MCN Empreendimentos e Participaçoes. The transaction includes assets associated with 11 scrap collection centres located throughout Brazil and two melting sites at Pindamonhangaba. **www.aleris.com**

Aleris employees at one of the collection centres in Brazil.

## Quote ~ *Unquote*

'The optimist proclaims that we live in the best of all possible worlds; and the pessimist fears this is true.'

## *Joke of the Month*

### Repeat order

One morning in a posh hotel breakfast room, a guest calls over the head waiter and tells him: 'I'd like to order two boiled eggs, one of them so undercooked that it's runny, and the other so overcooked that it's tough. I also want some rubbery bacon, burnt toast, and butter that's so cold it's impossible to spread. Finally, I'll have a pot of extra-weak coffee, served at room temperature.' The bewildered waiter stutters: 'Sir! We could not possibly serve you such an awful breakfast.' 'Why not?' the guest replies, 'that's what I got here yesterday.'

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# People

*** Joe Zenobio**

The new Canadian division of Call2Recycle, North America's battery and cell phone collection programme, will be headed up by Joe Zenobio. The Executive Director is charged with driving the strategic direction for the organisation's expanding Canadian presence and serving as the liaison between battery manufacturers, government agencies and Call2Recycle's programme participants. Carl Smith, President and CEO of Call2Recycle, says: 'Joe's experience in managing strategies to address the needs of multiple stakeholders is already proving to be beneficial as our programme continues to grow in Canada.'

www.call2recycle.org

*** Adem Simsek**

The International Ship Recycling Association (ISRA) has named Adem Simsek as its new Chairman in succession to Liu Lu Gang. Mr Simsek operates ship recycling yards at Turkey's Aliaga hub and chairs the Ship Recyclers' Association of Turkey (Gemisander). Li Hongwei of Changjiang Ship-Recycling Yard in China has been elected ISRA's Vice Chairman. www.isra-dis.com

*** Scott Collins, Phillip Krieger and Adam Rosenthal**

Rapidly-expanding US scrap processor Upstate Shredding has added to its management team: Scott Collins becomes General Manager while industry veterans Phillip Krieger (formerly of Sims Metal Management) joins as CFO and Adam Rosenthal (previously with Schnitzer) as Director of Acquisitions. 'Over the past year, we have acquired businesses in Syracuse, Jamestown and Liberty (New York), and in Towanda, Pennsylvania,' notes President Adam Weitsman. 'We are eager to acquire others to feed our upgraded shredder capacity and maximise our investment in the latest non-ferrous technology.'

www.upstateshredding.com

*** Terry Hancock**

Industrial Services of America Inc. (ISA) has appointed Terry Hancock to head its alloys division. Involved in the scrap recycling industry for 25 years, Mr Hancock left as General Manager of an ELG Metals facility to join ISA in April 2010. ISA's President and COO Brian Donaghy comments: 'Terry has demonstrated leadership abilities from the time he joined ISA, and we are pleased to have someone with his credentials leading the alloys division.' www.isa-inc.com

*** Mike Vail**

Mike Vail has joined Alter Trading Corporation in the role of Regional Vice President, Operations. Based at Alter's Davenport premises in Iowa, he is overseeing the Davenport, Rock Island, Burlington, Quincy, Peoria/Keystone and Peoria warehouse facilities, as well as the company's Alter Bettendorf warehouse storage and processing operation. Mr Vail was previously Vice President of Operations at Metro Metals NW in Portland, Oregon, with responsibility for over 200 employees in multiple facilities which included ferrous/non-ferrous, marine terminal and rail-car operations. Prior to his time at Metro Metals, he was General Manager of Pacific Coast Shredding in Vancouver, Canada, from 1997 to 2003 and General Manager of Louisville Scrap Metal from 1996 to 1997. www.altertrading.com

*** Gregory Crawford**

The Steel Recycling Institute (SRI) in the USA has appointed Gregory Crawford as Executive Director following the resignation of William Heenan whose career in steel manufacturing and recycling has included 20 years with SRI and 19 years with United States Steel Corporation. As SRI's Vice President of Operations, Mr Crawford worked with private-sector and local/federal government managers on steel recycling issues. www.recycle-steel.org

## Battery recycling project takes root

Ground-breaking ceremonies have been held in respect of a US$ 150 million battery recycling plant at Florence. Wisconsin-based Johnson Controls, which makes lead-acid batteries for the automotive industry, first announced plans for the new plant in 2009. Company officials claim this will be the first new plant of its type in America for around 20 years.

www.johnsoncontrols.com

Representatives of the company and authorities are using the shovel to start construction.

# Portugal takes two NGR recycling plants

**Austria's Next** Generation Recycling Machinery (NGR) has installed its first two recycling plants in Portugal.

Esmeriz-based Plasmeriz is processing film edge strips with an E: GRAN 50 AP designed for in-line operation with a throughput of 5 to 50 kg per hour. And the S: GRAN 85 V HD supplied to Silvex of Benavente is a modular plant suitable for difficult-to-grind materials which now no longer require additional pre-grinding. At the heart of the latter machine is a patented shredder/single-screw extruder combination which is claimed to deal with almost any material without additional handling in a process known as NGR One-Step technology. Silvex can now process both HDPE and LD/LLDPE film; furthermore, the extrusion process allows it to handle biodegradable plastics. www.ngr.at

# Harris to market Ecotecnica range

**Under an exclusive marketing** agreement, leading US recycling machinery specialist Harris will market the Italian-made Ecotecnica range of balers, loggers and shears to the Americas, Asia and Australia. The deal also covers servicing in these regions.

Ecotecnica manufactures baler/logger/shears and balers in the shear force range of 500 to 800 tonnes. Powered by electric or diesel, units are available in stationary, mobile and transportable formats.

Kenneth Galason, President of Harris, states: 'The reliable performance of the machinery Harris sells is crucial to our success. In our discussions with Ecotecnica, it was clear that their service, parts and technical support was superior and gives Harris' customers a significant advantage.'

Doug Sebastian, Vice President of Harris Waste Management, comments: 'Harris is committed to providing their customers with the widest range of scrap processing equipment, supported by the highest level of customer service. Ecotecnica's commitment to providing those resources is what makes this partnership a valuable proposition.'

www.harriswaste.com

# Business

*** Empire Recycling**
US metals and paper processor Becks Recycling Solutions Inc. of Shortsville, New York, has been acquired by Empire Recycling. The latter was founded around 85 years ago and covers all grades of ferrous and non-ferrous scrap. Handling some 30 million pounds of recyclables each month, Empire currently has divisions in Utica, Syracuse, Liverpool, Waterloo, Albany, Watertown and Binghamton, New York. **www.empirerecycling.com**

*** Metso Texas**
A merger of three US scrap recycling firms in the New Mexico city of Albuquerque has been concluded with the acquisition of a new 4000 HP car shredder from Metso Texas. Albuquerque Metals Recycling and Acme Iron & Metal have merged with Ace Metals Inc. to form what the companies are calling the state's largest scrap metal processor. The shredding plant will feature a ferrous and non-ferrous downstream system boasting magnetic separation equipment from SGM Magnetics Corp. and sensor sorting technology from Steinert. **www.metso.com/texasshredder**

***SRS Canada**
Sims Recycling Solutions (SRS) has opened a new facility which is expected to increase the company's electronic scrap processing capacity in Canada to more than 100 000 tonnes per year. The three-phase project is said to include: a fully-mechanised cathode ray tube recycling process yielding commodity grades of leaded and non-leaded glass from monitors and televisions; improved metals recycling technologies; and latest separation technology allowing for closed-loop recycling of plastics. **www.simsrecycling.com**

*** Out of Use**
Newly-established electronics reuse and recycling firm Out of Use is to establish a plant for processing cathode ray tube (CRT) screens at Frontenay Rohan in the Poitou-Charentes region of France. The new plant is expected to have a processing capacity of 10 tonnes of CRT screens per hour, and will ultimately feature an electronics recycling line too. **www.outofuse.com**

*** Brookfield Resources**
US scrap processor Brookfield has started operations of a division in India. Together with India firm Overseas Metals, the new division is processing ferrous and non ferrous scrap metal. The new firm named Brookfield India Pvt. Has also the ambition to open a rolling mill next year. **www.brookfieldco.com**

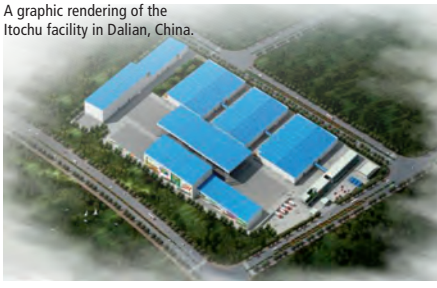


# President Obama calls for better e-scrap management

**US President Barack Obama** used America Recycles Day to draw attention to the growing problem of improper e-scrap management.
In a proclamation issued towards the end of last year, he pointed to recent initiatives to address how the federal government handles the large volumes of obsolete electronics produced each year. The Obama administration recently established an inter-agency task force composed of the US Environmental Protection Agency, the General Services Administration and the Council on Environmental Quality (CEQ) to produce for the federal government a national strategy for electronics stewardship. This is expected to be ready around March.
According to CEQ's Chair Nancy H. Sutley, the task force will produce a framework for the disposal of used electronics that builds partnerships in the public and private sectors, while coming up with a plan to reduce exports of e-waste to developing countries that lack capacity to properly manage them. The aim should be, she says, to 'build capacity within and share best practices with developing countries, so they can improve their ability to safely handle used electronics, while promoting economic development.'
**www.americarecyclesday.org**

# Itochu unveils integrated operation in China

**Japan's multi-disciplinary** Itochu corporation has broken ground on an integrated recycling operation in China. Dalian New Green Recycle & Resources Corporation will handle the recycling of ferrous and non-ferrous scrap, consumer electronics/home appliances and also plastics at the Dalian Changxing Island Harbor Industrial Zone, located in the north west of the city of Dalian. Major Japanese recycler Suzuki Shokai will head up the steel and non-ferrous scrap operation.
The only recycling company licensed by the Chinese government within the industrial zone, Dalian New Green is planning to install one of the most sophisticated facilities in the world employing advanced environmental technologies from Japan. Scrap processing is expected to commence in 2012, with all plants - including those for appliances and plastics - scheduled to start up by 2015. The annual sales target is around Yen 20 billion by 2014. **www.itochu.com**


A graphic rendering of the Itochu facility in Dalian, China.

# Kuusakoski takes over Danish e-scrap processor

**Scrap metal specialist** Kuusakoski Oy takes over the majority share in Averhoff A/S. The former owner of the Denmark based firm, Michael Averhoff, will keep a 20% share and continue as CEO. The e-scrap recycling firm reports a revenue of Euro 5.3 million in 2010. Mr Averhoff has been the owner since 1998 and is delighted about the new merger 'Twelve years ago we had one employee and a revenue of Euro 100.000. It's an altogether different company today and the sale of a major stake to Kuusakoski gives the company the necessary competitive edge.'
**www.averhoff.dk**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PST Material Recovery Systems

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metso
Expect results

## / Lower-capacity briquetting range from Metso

**Metso's new, compact briquetting press - the MSB - is designed especially for sites handling small to medium volumes, with processing capacities extending from 80 to 1500 kg per hour.**

Until now, Metso has offered only the industrial-size MUB 630 heavy briquetting press with its hourly capacity of up to 9000 kg; however, the briquetting of smaller volumes or special raw materials has also become economically viable, it states.

The MSB is equipped with hydraulic cylinders which compact loose chips into a solid puck with densities of up to 5.4 kg/dm³ for steel and 2.4 kg/dm³ for aluminium. Briquette diameter varies with the machine and application; tools for 60, 80, 95 or 120 mm are available. Pre-stressed tie rods take the high compacting forces and make the machine very robust and reliable, according to Metso.

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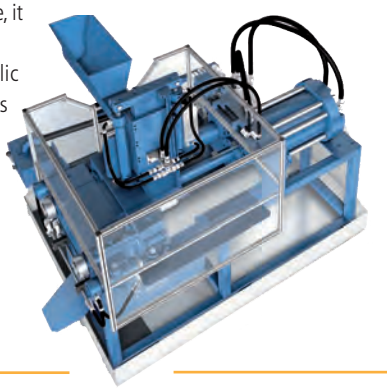
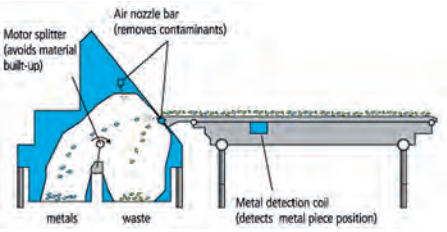


## / Trio of modular residue recovery systems from SiCon




**Germany-based SiCon has unveiled a range of modular ASR (automotive shredder residue) Metals Recovery Systems that, it claims, ensures a high level of reliability and performance.**

The SiCon 75 detects, separates and recovers metals down to 1.5 mm and consists of a basic process, eddy current and 'Finestuning' process. The SiCon 100 adds Varisort optical sorting to this arrangement - a system which is claimed to have the highest coil sensitivity and ejection accuracy on the market. The Varisort is capable of ejecting stainless steel from ASR, Zorba or Zurik.

The most sophisticated of the new systems - the SiCon 120 - is said to ensure that virtually all metals are recovered and separated to a quality suitable for direct metallurgical recycling. Adding an advanced processing step to the SiCon 100 system, this liberates copper from insulation for No 2 copper capture (97% yield) and generates completely metal-free plastic and fibre material for further recycling. The new modular SiCon ASR Metals Recovery Systems can be adapted to any size of shredder throughput up to 300 tonnes per hour. The new systems can also be integrated into existing downstream plants to improve the quantity of metals recovered and also to increase quality.

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## / Removing bottle labels prior to recycling

**Available in capacities of 4500 or 8000 kg per hour, the Label Remover from Germany-based Herbold Meckesheim is designed to be used at recycling plants for the removal of wrap-around PVC labels from PET bottles.**

Until now, says its developer, the process of removing and separating these labels has been impossible at the pre-wash stage of bottle recycling, as well as difficult and costly at subsequent stages. With the new machine, however, the labels are removed in a single step early in the process - and without the expense of generating extra steam. This new development also separates bottles that are stuck together, thereby reducing costs associated with manual separation. By taking off almost all wrap-around labels early in the recycling process, the Label Remover also saves money at the size-reduction stage because cutting blades will stay sharp for longer given that they will not become dulled by the remains of labels stuck to bottles, Herbold explains.

The removal of labels and adhesives from bottles is accomplished via friction between exchangeable rip-off elements bolted to the rotor and exchangeable pins fitted to stator elements. All rip-off elements and pins are made of special wear-resistant steel. The design of the chamber is said to ensure even loads and dwell times as bottles are advanced by the rotor. The chamber has no spaces that would allow bottles to pass through the machine without undergoing full frictional contact; likewise, there are no surfaces to constrict material flow, thus reducing the possibility of damage to bottles.

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## / CentriCut granulators for plastics and rubber

**Swiss recycling technology developer Nuga AG has reviewed its range of low-wear granulators for grinding plastics and rubber.**

Available as stand-alone or in-line systems, the CentriCut series of plastic recycling systems extends from the Type 33r model for small- and medium-sized parts, sprues and hollow items which offers a maximum throughput of 500 kg per hour, through to the Type 44slr with its maximum hourly throughput of 2500 kg.

A major focus of development activity at the Balgach-based firm has been wear protection. By applying the results of in-house wear tests to the production process, it has been possible to achieve a substantial extension to the service life of typical wear parts across the entire range of CentriCut granulators, according to the company. Benefits include: very low maintenance requirements; long, uninterrupted uptimes; and cost reduction.

'Innovative' machines for grinding rubber have successfully completed their test phase at Nuga. These do not require a cooling agent and so bring significant cost savings, the company explains.

The Swiss company has supplied machines around the world, both as central granulators and as secondary granulators on two-stage shredding and granulating lines for all types of plastics, as well as for special applications such as the fine-grinding of fibres or rubber.

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By Gert van der Have

The country might be the world's largest in terms of size but Russia's scrap metal trading reach does not generally extend much beyond a few neighbouring ex-Soviet republics. While Russia's pipelines are supplying oil and gas around the globe, its metals scrap is increasingly staying home. Recycling International paid a visit to Russia in a bid to discover what is actually happening on the ground in this booming country.

# Russia's metals sector: looking outwards towards change

Russia wouldn't be your first choice if you wanted to move scrap metal around the world with as little complication as possible. Long distances, culture clashes, oligargic structures and stringent VAT regulations are dominant reasons why expansion-hungry scrap metal specialists are skipping Russia in their search for secondary raw material.

But Russia is ready for change. Owing to an extensive modernisation programme by its metals producers, the country's old open-hearth furnaces are being replaced by modern electric arc furnace (EAF) technology. Traditionally export-oriented with regard to scrap metal, increasingly Russia will be using its scrap reserves for domestic consumption.

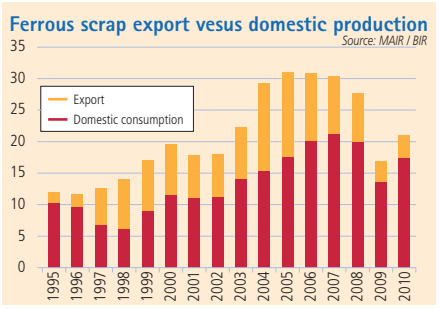
Over the past 15 years, Russia has been one of the few countries where scrap collection surpassed consumption of steel products, according to raw material producer Metalloinvest. But that's history, as Russia's 142-million-strong population is expected to consume ever more over the coming years. For example, annual car sales will accelerate to 5.9 million units in 2012 - making Russia Europe's fastest growing market.

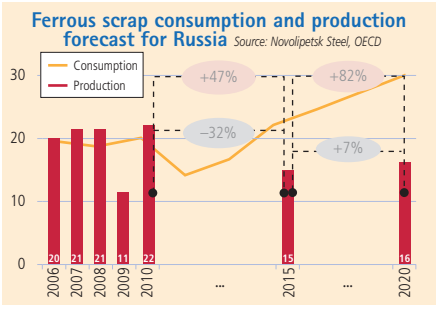
## Imports on growth curve

Although starting from a very low level, the country's scrap metal imports soared in 2010, according to latest statistics from the Russian Economic Development Ministry. And forecasters believe these inflows will grow extensively over the coming years.

Russian ferrous and non-ferrous scrap metal imports increased 140% in 2010 to 10 660 tonnes. However, that's still only a tiny fraction of the country's export performance, with outgoing volumes growing 50% to 5.518 million tonnes. Most of the imported scrap came from Kazakhstan (4800 tonnes) whereas the bulk of the exports went to Turkey (1.859 million tonnes), Belarus (1.479 million tonnes) and South Korea (774 200 tonnes).

Differences between ferrous imports and non-ferrous imports are extensive. Russia's large-scale non-ferrous metal works are relying increasingly on imported scrap whereas imports of ferrous have just begun to take off. 'The ferrous industry is not yet ready in terms of logistics and import formalities,' said Siberia metals purchasing manager Ildar Neverov in a report to the BIR world recycling body last year. 'Regarding non-ferrous metals, everything is going smoothly. Russia has a strong domestic market for aluminium, copper and lead products, so why not attract tonnage from non-domestic sources?' He stressed that a zero import duty will motivate Russians to import.




## New EAF capacity

Over recent years, the modernisation of metal manufacturing in Russia has been intensifying the country's hunger for secondary resources. Traditionally, Russia's metal-making has been predominantly primary-based; however, newer capacities are increasingly relying on scrap metal. Last year alone in the ferrous sector, new mini-mills were installed or announced by Mechel, TMK, Novorosmetal, NLMK Kaluga, Maxi Invest, UGMK and Novotrubny Pipe Works.

In total, these new EAFs will deliver 9 million tonnes of additional annual steelmaking capacity. Government analysts expect EAF capacity to surge to 25 million tonnes by 2015 compared to 19 million tonnes in 2007, for when the calculation was last made available. In other words, Russia's EAF capacity is about to match the global average of 30% of its total steelmaking capacity.

The low cost of electricity in Russia is a decided advantage. In contrast to what happens in India and China, companies in Russia often employ their own electricity resources. While the energy cost from the grid - currently between 3 and 4.5 dollar cents per kWh - will inevitably rise when the sector is completely privatised, analysts still expect power costs to remain a competitive advantage for Russia.

But Viktor Makushin, President of MAIR Industrial Group, has said that, with corruption and bribes, the return for many on domestic investments may be lower than appears at first. 'In a number of years, the profitability gap between investments in Russia and Western Europe will narrow,' the owner of Russia's largest independent collector told a Metal Bulletin conference last year.

## Battle for scrap

'The early 1990s saw hardly any scrap generated (in Russia), and most of the available material was exported,' according to a spokesman for Magnitogorsk Iron & Steelworks. 'Consequently, we are about to encounter a few years of shortages in scrap supplies from 2011.'

The battle for scrap has focused the minds of metal manufacturers on improving domestic collection volumes, either by acquiring scrap yards or by investing in machinery to increase efficiency. Recent major developments have included the acquisition of Maxi Group scrap yards by the country's largest EAF steelmaker NLMK and the installation of shredder facilities at Cherepovets-based Severstal, Beriosovski-based Uralvtorchermet and VMI-Group in Moscow.

To support scrap inflows, the Russian government reduced the import tax to zero last year. Recently, NLMK completed the acquisition of the VMI group for US$ 28.4 million - a process which had begun in 2009. This deal provides NLMK with an additional 620 000 tonnes per year of scrap supply capacity. 'NLMK's presence in the Moscow region, which has a surplus in terms of scrap collection, is strategically important,' NLMK's President Alexey Lapshin commented during the press announcement. According to Russian Railways, which holds the monopoly for transporting goods by rail in Russia, Moscow and the Moscow region ranked as

## A little bit of history

The scrap metal industry in Russia has historical links to the military. During the Crimean War (1853-1856), Russian Engineer Putilov started using scrap metal in the foundry of his employer, naval military equipment producer Obukhov.

Mr Putilov developed a revolutionary steelmaking technology based on scrap because he couldn't solve the problem of transporting iron and other raw materials from the Urals to St Petersburg without rail. According to Scrapmarket analyst Oleg Maslennikov, 'this pushed the development of the Russian scrap market before 1917'.

Another cornerstone of Russia's scrap industry development was established on April 19 1922 when Bolsheviks took over the reigns to save the country from bankruptcy. In those tumultuous times, when the economy was in a parlous state and workers went on strike across Russia, the new government appointed Metallotorg as a state scrap collector.

Over the decades, the success of Russia's metal-producing industry was harnessed to the success of the Soviet state. The military expansion of Russia after World War II was the main driver for metal production growth.

When the communist era ended two decades ago and the country opened its doors to the outside world, metal producers in Russia recognised that it lagged some way behind Western Europe, since when entrepreneurs have invested in technology. They may not be as organised as their counterparts in Europe just yet, but they are well on their way.

## Russia: a prominent non-ferrous player

In Russia, there is strong domestic demand for non-ferrous metals, and scrap imports are on a gradual growth trend. Material is being brought in from the Baltic States and from former Soviet republics lacking their own production capacity. Small amounts also arrive from elsewhere in Europe. Meanwhile, exports are very limited because of a 50% duty.

Small aluminium and copper melters have lost market share to their larger counterparts. According to Dmitry Puzanov, Chairman of the Council of Secondary Material Producers, the number of individual licensed scrap collectors, processors and sellers has decreased due to mergers and bankruptcies during the economic crisis. Unlike with ferrous metals, non-ferrous producers in Russia have always been competing on a global scale. Primary aluminium producer RusAl, headed by metals tycoon Oleg Deripaska, is battling with America's Alcoa to be the world's largest light metal producer. And as a country, Russia is the world's fifth largest aluminium producer, Alusil's recent aluminium recycling congress was told by Alexey Alipchenko, Director at German aluminium recycler Trimet.

Even more so for non-ferrous scrap, the black market operating within Russian territory is a dominant factor in holding back supply. 'There is not enough supply to meet demand in Russia,' insists Mr Puzanov. In a relatively recent development, some of the more unscrupulous scrap dealers have abusing the VAT system.

Previously based principally on volume rather than on quality, the non-ferrous situation in Russia has changed. 'This is mainly driven by the high quality demanded from Europe,' says Mr Alipchenko.

Prominent sources of scrap include obsolete military equipment and construction waste. 'Before, aluminium cans were considered not to be useful,' says Mr Puzanov. 'But along with the improvement in our technology, we now also take them for melting.'

### Export taxes for non-ferrous scrap

| | |
|---|---|
| **Russia** | **50%** |
| Belarus | 50% |
| Moldavia | licensing |
| Uzbekistan | quota of government |
| Tajikistan | quota of government |
| Kazakhstan | state monopoly |
| Turkmenistan | prohibited |
| Kyrgyzstan | state monopoly |
| Armenia | no limits |
| Georgia | 11 € (25 Lari) |
| Azerbaijan | prohibited |
| Latvia | EU regulation |
| Lithuania | EU regulation |
| Estonia | EU regulation |

*Source: Alexey Alipchenko, Trimet AG*

the country's top scrap collection areas during last year's January-September period by accounting for 12% of its total scrap collection volumes.

### Export restrictions

Russian metal producers are being helped in their attempts to safeguard supply at relatively low prices by scrap metal export bans. Russia is one of the very few large nations not to have signed the World Trade Organization (WTO) treaty on the free movement of goods, and so can implement high taxes or outright bans on the export of scrap.

However, the possibility that Russia will become a party to the WTO has been growing since the EU decided to back the country's application. Russia formally applied to become a WTO member as far back as the mid-1990s, and since 2010 the Medvedev government decided to cut some export duties in a bid to speed up the decision-making process.

The situation has echoes of the Ukraine's battle to join the WTO when the country pledged to lower its ferrous scrap export duties, which now stand at Euro 10 per tonne. But whether Russia abolishes its existing scrap export duty of 15% remains to be seen given the strong opposition of domestic steelmakers to any such move.

'The export duty of 15% helps to protect the Russian market for an imbalanced situation,' explains Oleg Maslennikov, an analyst for consulting firm Scrapmarket. But Turkey is still a prominent outlet for Russian material. 'Our branch is a part of a global market but the price in Turkey is a very important signal for our domestic yards and traders,' he notes.

'My experience is that you never know what is going to happen in Russia,' adds a European scrap trader, referring to rumours that a restriction will be put in place to limit scrap export shipments to just a few of the country's seaports.

### Relatively small population

Many factors distinguish the Russian scrap market from that of other countries - and its geography is prominent among them. The Russian Federation is the world's largest country in terms of its dimensions, measuring almost 17.1 million square kilometres. Although almost twice the size of Canada, China and the USA, Russia has a very small population compared to these other countries.

The country is rich in natural resources such as oil, gas, bauxite and iron ore. Also, its relatively

The new HBI production facility of Belgorod-based Lebedinsky GOK. Hot Briquette Iron is one of the answers to increasing EAF capacity and scrap shortages.

under-developed transportation system impedes the physical movement of goods; currently, most scrap is transported by rail. 'And don't underestimate the culture part,' says a seasoned German scrap trader. 'Europeans are still quite anxious about getting into Russia. You often hear that doing scrap business in Russia means unlimited vodka drinking, women and fighting. We are not used to that.' Also, an often-severe climate impacts heavily on collection volumes and demand for scrap: in the cold Russian winters, collections are very low while demand from domestic mini-mill operators is much higher than in the summer.

'One of the key problems we have,' adds Dmitry Puzanov, Director of the Secondary non-ferrous metallurgy council in Russia, 'is the extensive smuggling of scrap metal in the east of Russia. Around agglomerations like Moscow, St Petersburg and Nizhniy Novgorod, the market is quite well regulated. But further inland, the lack of enforcement is hurting everyone.'

According to Mr Puzanov, very high export tariffs attract criminals, otherwise known as the Middle Men. Such activities are said to be especially prevalent in the areas bordering China such as in Tajikistan, as hungry eyes in China also look to Russia's estimated scrap reserve of 1 billion tonnes.

Steel manufacturers in Russia are quickly replacing the old BOF systems with the most modern EAF technology.

Metal producers are increasingly protecting their own scrap supply systems.

## Low shredder count

Around 1800 to 2000 small-scale collectors and yards are thought to be active in Russia, gathering approximately 27 million tonnes of ferrous scrap each year prior to 2009. For the period between January and September last year, ferrous scrap collections are estimated at 15 million tonnes.

'The independent medium-sized yards have been affected the most since the economic crisis,' confirms analyst Oleg Maslennikov. More than 40% of Russia's scrap processing capacity is now in the hands of metal manufacturers while small yards account for around 35%. Some 150 scrap traders operate a logistics and factoring service for small yards, steel plants, and between 50 and 70 export firms. Another prominent characteristic of the Russian market is the small share commanded by containerised scrap given that only six large-scale shredders are operating countrywide; most yards send sheared scrap by rail to the steel mills. 'If small yards buy machinery, they favour Chinese-made; the larger scrap producers are investing in Western technology,' according to a Russian scrap trader.

Recently, German manufacturer Metso Lindemann sold a 1 million-tonne shredder to the OMK steel plant while UK manufacturer Lynxs is currently establishing a shredder site at Severstal, Cherepovets.

## Third-quarter backlash

The Russian Federation is one of the components of an acronym which has become well known around the world. But despite its status as a BRIC country (the others being Brazil, India and China), recent economic growth for Russia has been weaker than for the other three. According to Russia's statistics agency Rosstat, the country's GDP rose in the second quarter of 2010 by 'only' 5.2%. In the same period, China's GDP advanced 10.3% and India's 8.9%. Brazil outstripped the rest on 11.3%.

Even with this relatively lower rate, the Russian economy grew faster than the USA (3.2%), Japan (1.9%), Germany (3.7%) and France (1.7%). However, there was a third-quarter backlash for Russia with a growth of just 2.7%, setting the country even further apart from the other major emerging economies.

Fellow BRIC countries India and China are also seen as leading competitors in the low-cost steelmaking sector. 'Russian steel production grew rather slowly, by 16%, between 2001 and 2008, while in China it increased during the same period by 232%, and in India by 100%,' explains Anton Bazulev, Vice President of Russian steel manufacturers organisation RSPP. The difference is largely due to relatively low steel consumption in Russia and difficulties - both natural and regulatory - in accessing export markets. Moreover, new capacity growth was coupled with the closure of inefficient plants. In 2008, six Russian companies accounted for 75% of the country's total steel output.

## Turkey the main casualty

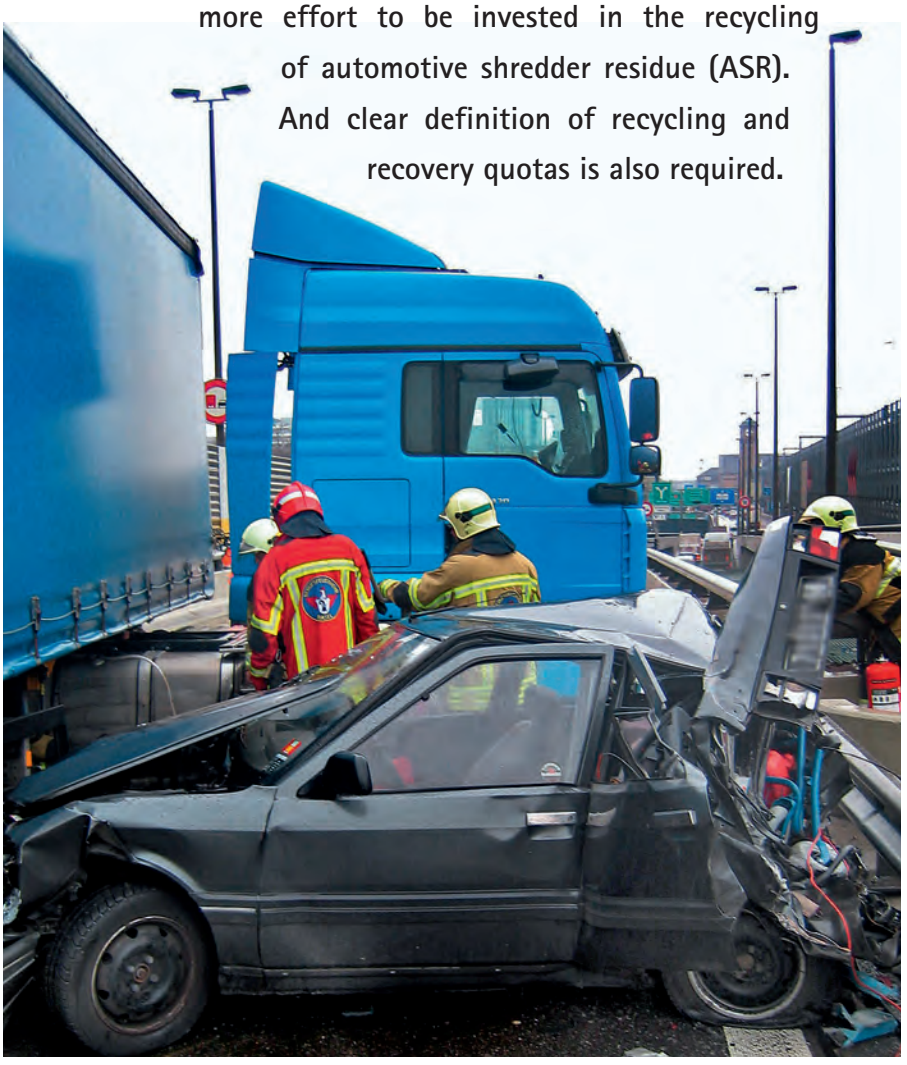
Russia's exports are expected to decline as the country looks to cover its own production requirements. And the biggest casualty will be Turkey, its main export outlet. Instead, ferrous scrap shipments will be replaced by exports of hot briquetted iron. According to the Hot Briquetted Iron Association (HBIA), Russia is the world's second largest producer after Venezuela. Lebedinsky GOK (LGOK), whose 21.5% share makes it Russia's largest iron ore producer, is investing in technology to produce HBI for domestic use and for export. According to LGOK's owner Metalloinvest, the scarcity of domestic scrap leads to an irreplaceable domestic demand for an additional 2 million tonnes of HBI. The company's ambition is to reach a production capacity of 8 million tonnes per annum, of which 5 million tonnes will be sold on the world market. □

By Allard Verburg

*Automotive shredder residue*

# The road map to reaching ELV targets

**The European Union has thrown down a challenge to industry of reusing and recovering at least 95% of a car by January 2015. However, many challenges lie ahead over the next four years if this goal is to be achieved. For example, there is a need for more effort to be invested in the recycling of automotive shredder residue (ASR). And clear definition of recycling and recovery quotas is also required.**



Each year, more than 6.3 million vehicles reach the end of the road in Europe, according to European Commission statistics. The EU's End-of-Life Vehicle (ELV) Directive stipulates minimum reuse and recovery rates for cars of 95% by January 2015, including a requirement for 85% material recycling.

There are basically two major routes to achieving the recycling rates targeted by the EU Directive: promoting more complete dismantling; or using post-shredder technologies (PSTs) to treat remaining automotive shredder residue (ASR). PSTs already available are ten times less expensive than the manual dismantling undertaken by specialist companies and therefore offer the most promising avenue for meeting the targets for 2015.

## Positive market value

The current processing infrastructure is based on the dismantler buying the ELV from the last owner, a car retailer or an insurance company. Reusable parts or recyclable materials with a market value are removed, accounting for between 5% and 35% of the total vehicle weight. The value for the last owner depends on the condition of the vehicle and the perceived value of the parts and materials removed. Generally speaking, however, ELVs have a positive market value.

Dismantled ELVs are then sold to shredder operators and are reduced to fist-size pieces by large rotating hammer mills. The shredder light fraction (SLF) is removed from the stream by suction, the intensity of which determines the amount and composition of the SLF. Ferrous metal is recovered by magnetic separation followed by hand-picking to remove, for example, copper coils and large impurities such as tyres and textiles. The remaining stream is the shredder heavy fraction (SHF) which consists of, typically, 50% non-ferrous metals and 50% rubber, wood and plastics. Usually, eddy current separation produces a pre-concentrate of non-ferrous metals and an SHF residue fraction. The ferrous and non-ferrous metals are sold for recycling while the SLF and SHF residues - equating to 12-22% of the ELV - become potential input materials for PSTs.

Without the processing of the SLF and SHF residues, the ELV recycling rate is likely to top out at 75-80%, including dismantling, reuse of spare parts and metal recovery at shredder plants. Therefore, additional processing steps are required to reach the EU's 95% target by 2015.

## Heavier ELVs

The availability and volumes of ASR depend mainly on the weight and number of ELVs, as well as on exports and enforcement of the landfill ban. ELVs have become heavier over the years: in the Netherlands, for example, ELVs have recorded an average weight increase of 0.8% per annum. Metal content has remained fairly constant at around 75% whereas the volume of plastics has more than doubled. *Figure 1* shows a plastic content of 75 kg for the average ELV in 2003, with extensive dismantling studies forecasting this figure will increase to 160 kg by 2015. These plastics end up in ASR and represent a valuable source of raw materials.

Meanwhile, availability of ASR has declined due to higher export figures *(see Figure 2)*; between 2000 and 2008, there was an average decrease of 14 500 ELVs per year, which is equivalent to 300 000 tonnes of ASR if one assumes a total of 200 kg of ASR per ELV. Owing to the Dutch scrapping scheme, the number of ELVs increased to 263 572 in 2009; and for 2010, the number of ELVs treated in the ARN automotive recycling association's network matched the number of cars sent for export.

Approximately 145 000 tonnes of shredder residue was landfilled in 2009 *(see Figure 3)*; as almost 25% of this mass results from processing ELVs, there should be 35 000 tonnes of ASR available for the Netherlands. The Dutch landfill ban on shredder residue was introduced in January 2009 and forced operators of these plants to look for other outlets. Saving costs represents the main driver in shredder operators' search for alternatives.

Shredder operators were given dispensation in 2009 owing to a lack of treatment facilities, but this situation changed in 2010.

The minimum treatment standard for shredder residue is incineration with energy recovery.

## Cleaner fractions

Shredder residue is usually classified as hazardous waste by shredder companies. Generally speaking, ASR is less polluted with mineral oil and heavy metals than shredder residue. Basically, this means that the output fractions after mechanical separation of ASR are cleaner, thereby broadening the applications for material recycling.

The composition of shredder residue depends on a number of factors, including: variety of input material (ELVs and other post-consumer scrap); composition of the other post-consumer scrap; shredder type and suction characteristics; and additional separation steps directly after the shredder to recover valuable metals. ELVs normally command a 15-20% share of total shredder input. The composition of shredder light fluff (SLF) from ASR is different from shredder heavy fluff (SHF) residue *(see Figure 4)*. ASR is a highly heterogeneous mixture consisting of organics, plastics, wood, rubber, glass and metals. The average energy content of ASR is around 14-16 MJ/kg and chlorine values can be up to 3%. Fines, or material smaller than 10 mm, make up more than 15% of the SLF from ASR. The heavy metals vary in a wide range and are typically dependent on the composition of the shredder input material. Further treatment processes for ASR must be able to cope with this broad range of material and chemical compositions.

**Table 1**

A typical range of shredder output fractions from ELV processing. Naturally, metal percentages are strongly influenced by the intensity of manual dismantling and spare part trading.

| | Share of ELV [%] |
|---|---|
| 0 Dismantling and reuse | 5-35 |
| 1 Ferrous | 45-68 |
| 2 Copper coils | 0,1-0,3 |
| 3 Non-ferrous metals | 2-3 |
| 4 SLF (ASR) | 10-17 |
| 5 SHF residue (ASR) | 2-5 |

## Two main processing options

To achieve the EU's 2015 target of 95% recovery, additional efforts to recycle ASR are

**Figure 1 – Plastics in ELVs in the period 2003 to 2015** (source: ARN dismantling study)

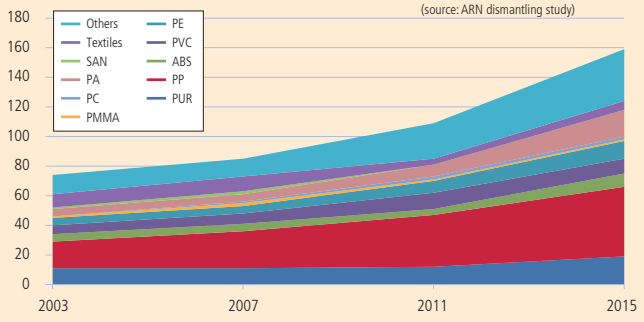



**Figure 2 – Overview from the Netherlands of the number of ELVs and exports in the period 2000 to 2009.** (source: RDW)

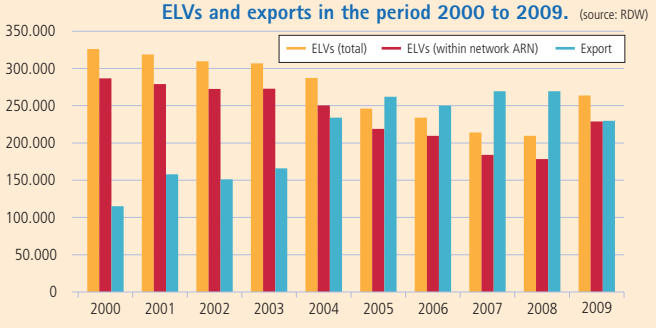



**Figure 3 – Landfilling of Dutch shredder residue in the period 2005 to 2010.** (source: LMA)

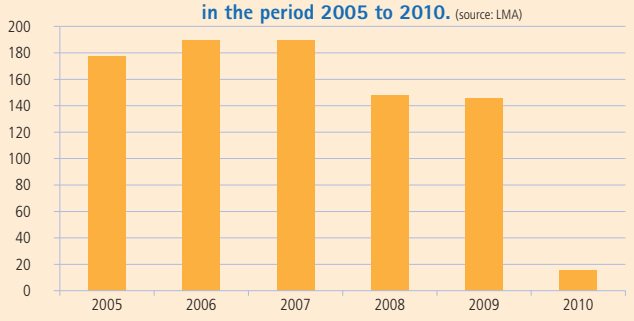
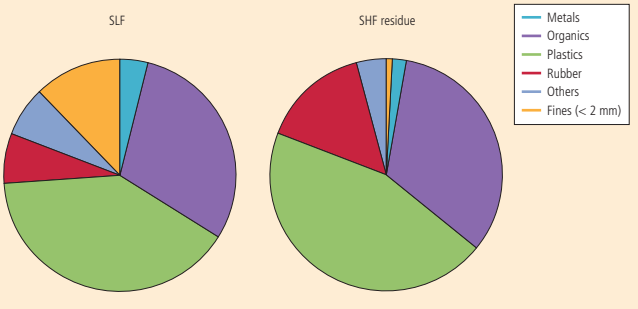
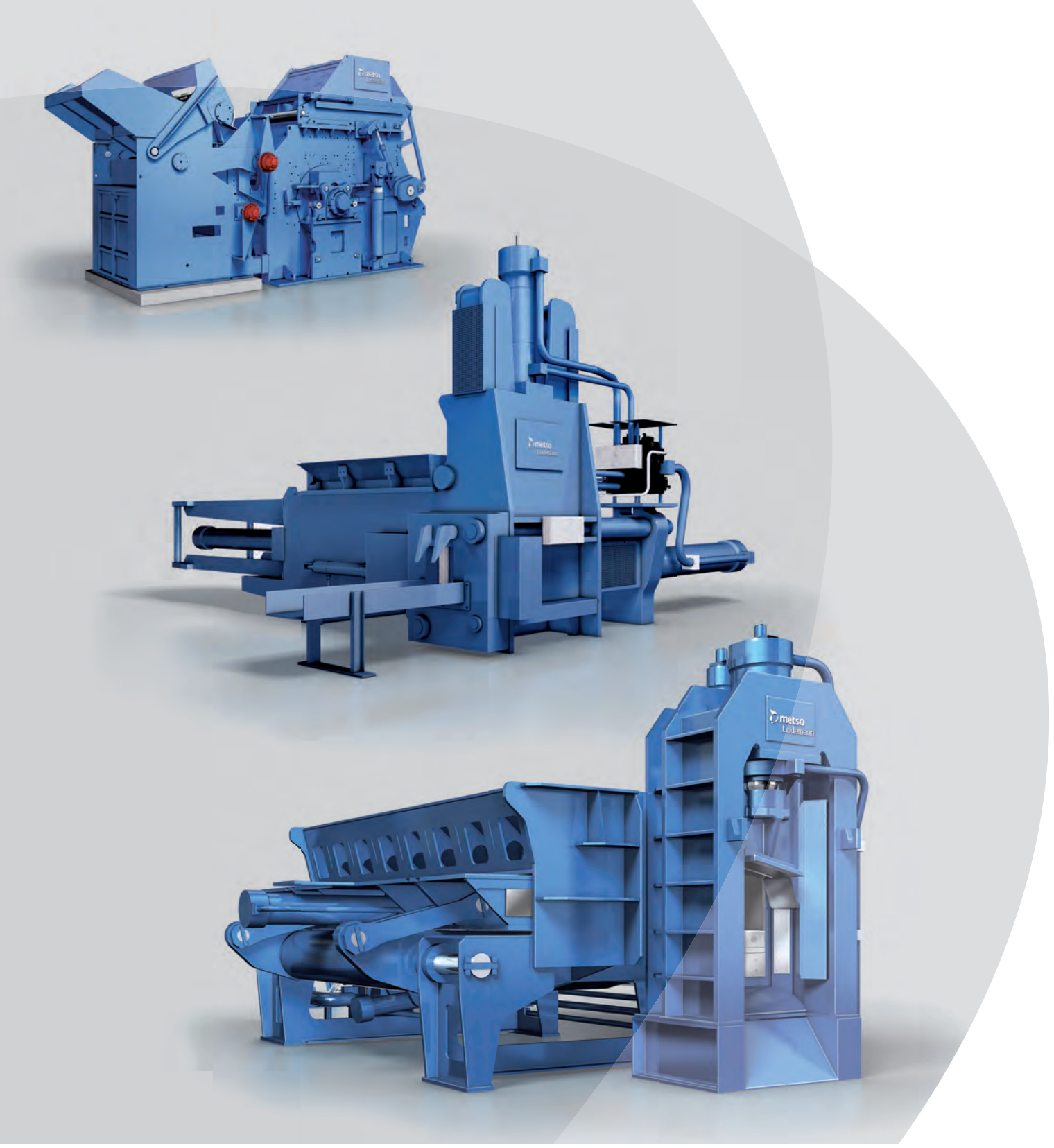



**Figure 4 – Composition of SLF and SHF residue** (source: ARN trials)





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## ASR processing in the Netherlands

ARN, the organisation fulfilling car producer responsibility requirements in the Netherlands, has undertaken to build a plant for the mechanical processing of automotive shredder residue (ASR). The main goal is to achieve - at reasonable cost - the EU's 95% ELV recycling target by 2015 with a minimum of 85% material recycling and a maximum of 10% energy recovery. This will mean maximising the recovery of raw materials (including plastics, fibres and fines) from the ASR.

The plant is based on the innovative VW-SiCon technology and is currently under construction. Full start-up of operations is scheduled for the first quarter of 2011. Capable of processing ASR as well as shredder residue in a broad range of compositions, the facility is designed to process 100 000 tonnes per year.

The process includes many mechanical sorting steps such as grinding, sieving, wind sifting and air tabling, as well as magnetic and eddy current separation. For the pre-treatment of the plastics fraction, there are two sink-float steps based on the ECR technology of Belgian company Galloo Plastics. The complete process will produce the following output streams:

- A plastics pre-concentrate consisting of polypropylene, polyethylene, ABS and polystyrene - a mixture which will be further processed by Galloo Plastics and returned in a closed loop to automotive applications;
- A plastics granulate mainly used as an reducing agent and as a replacement for coal or heavy oil in blast furnaces;
- A fibre fraction used as a de-watering agent for sewage sludge as a replacement for coal dust;
- A sand fraction (fines) mainly used as a road construction material and for backfilling material for old salt mines;
- Metals for recycling;
- And a remaining fraction comprising dust and sludge which will be destined for incineration with energy recovery.

Seeking alternative material outlets in response to changing legislation and cost optimisation represents an on-going focus of R&D activity at ARN Recycling.

ARN's shredder residue processing plant is currently under construction.


Plastics mixture in automotive shredder residue. *(source: ARN)*

required. Thermal treatment and mechanical separation are basically the two main options for processing ASR, both of which are already being undertaken.

Thermal treatment of ASR in conventional municipal solid waste incineration plants is not only possible but also common practice in most member states. Owing to its high calorific and chlorine content, the fluff is usually mixed with the municipal waste in a proportion of 5-10% to prevent incorrect combustion conditions which might produce dioxins and corrosion due to organic chlorinated matters in the plastic part of shredder residues.

Other thermal treatment processes, such as pyrolysis and fluidised bed gasification, have been developed and are commercially available. Valuable ferrous and non-ferrous metals can be separated from the solid residues and the remainder can be landfilled as an inert residue. Incineration essentially provides a means for considerably reducing the volume of material destined for landfill.

Increasing numbers of municipal solid waste incinerators are classified as R1, thereby enabling them to import waste - including ASR - from other EU member states. This R1 status also means that processing ASR is classified as energy recovery. Owing to overcapacity, these incinerators have an interest in accepting ASR at low prices and are therefore in fierce price competition with the mechanical treatment plants.

### Far more promising

In the main, mechanical treatment processes are developed and owned by shredder companies, and started out with the recovery of the remaining metals in the fluff. Today, more and more shredders are focusing on the recovery of other valuable materials such as plastics; pre-treatment steps are being developed to produce plastic concentrates for dedicated plastics recyclers.

Mechanical separation technologies make more extensive recycling possible and allow the recycling target of more than 85% to be achieved. Thus, these can be considered as far more promising from a material recycling point of view than incineration of ASR.

A major drawback for incineration is that the sub-quota for energy recovery of less than 10% will be exceeded.

Overall, it can be concluded that the plastic, fibre and fines content of ASR is a key issue for achieving the ELV recycling targets set down by the EU.

### Optimising the ELV chain

To optimise the impact of the ELV Directive, there should be a level playing field for all recycling operators; for example, enforcing the landfill ban will direct ASR down recycling and recovery routes. A level playing field might create a more sophisticated recycling and recovery infrastructure and ultimately increase the performance of the whole ELV recycling chain.

There should be a single, clear definition for all EU member states concerning which and how much pre-treated (A)SR is allowed to go to landfill. Today, major differences exist between member states in relation to landfilling policy because of varying national interpretations of the EU's Waste Framework Directive.

In order to measure and compare annual results within member states, there should also be a clear definition of recycling and recovery quotas. This can achieved, for instance, by establishing quota calculation systems using the expertise of the car and recycling industry acquired over many years.

On the road towards 2015, there are still many technical, economic and legislative challenges. But if the automotive and recycling sectors work together in a constructive way over the next four years, it will be possible to comply with the targets stipulated in the ELV Directive. □

Allard Verburg, the author of this article, works for ARN Advisory - a branch of the Dutch automotive recycling association ARN. He can be reached at **allard.verburg@arn.nl**

By Gert van der Have


# Polluneige!

**It is the worst scenario for an exhibition organiser: heavy snowfalls which bring to a grinding halt all public and private transport to and from the show venue. The victim on this occasion was Pollutec, one of Europe's largest environmental exhibitions, which was held in the French city of Lyon in early December last year. With the weather playing its part, this prestigious get-together suffered a 31% fall in visitor numbers.**

The 'Recycling hall' in Lyon's EuroExpo centre.

Maybe a positive observation to make is that violent natural phenomena tend to bring people together. So it was at Pollutec where thousands of visitors and exhibitors huddled together in lines hundreds of metres long, waiting for some form of road transport away from the exhibition centre. And for those hoping to travel on by air, the only comfort was that there were no planes leaving in any case.

'The fact that 50 830 visitors did do battle with the conditions shows just how important it is for a large number of environmental professionals to take part in this key event,' was how the Pollutec organisers managed to put a positive slant on the impact of these highly-disruptive weather conditions.

Under these difficult circumstances, the Pollutec organisers and local authorities did the best they could for Lyon's largest exhibition. Unavoidably, however, it makes you question whether such massive shows can be staged at congress centres without direct train or metro access.

'This was an expensive get-together,' a prominent German scrap equipment salesman sighed at the conclusion of the show. And events brought an equally strong opinion from Pollutec's Sales Director Olivier Debiard who said: 'If you have been working on this show for a year, what has happened now is a disaster - especially as we had made so much effort to attract visitors.' According to Mr Debiard, many foreign visitors in particular had anticipated the bad weather and had thus cancelled their plans to travel to Lyon.

Nevertheless, the show did go on - and some of its recycling highlights are reviewed here. □

## Aktid

Recycling innovations were hard to find at this year's Pollutec, a show where increasing amounts of floor space are given over to other environmental technologies. However, a company which is taking its first tentative steps into the recycling arena is Aktid, a newly-established firm closely related to well-known shear manufacturer Akros Henschel. The Chambery-based business builds and upgrades waste sorting units, energy recovery plants and residue recycling units for processing domestic, industrial and demolition wastes. Under the leadership of Pierre André Payerne, the firm is currently designing and testing a mobile

## Focus on the French market

For Federec, France's multi-branch recycling association, the Pollutec exhibition offers a prime get-together opportunity for its membership as well as for others interested in the host country's recycling industry. A highly-informative programme of presentations was devised by Federec and drew a large audience at the show's 'Recycling Pavilion'.

It emerged that, where the distribution of secondary materials are concerned, France is changing from a consumption-oriented country into an exporter. Although Spain has traditionally been the destination for its exports, especially with regard to ferrous scrap, France is also looking at markets further east. At present, the other major export market for France is Turkey.

According to statistics presented by Federec, France suffered an all-time-low steel production in 2009 of around 12.5 million tonnes compared to a peak annual level of 21 million tonnes; however, there was an increase in the share attributable to electric steel-making, mainly due to the idling of oxygen furnaces. Some 40.2% of French steel is now based on secondary sources. In 2009, France's steel scrap production remained broadly unchanged.

### Fundamental shift

Robert Lifschitz, President of Federec's non-ferrous scrap division, insisted that global growth 'is not at zero level' as emerging countries such as China, Brazil and India have been surpassing their pre-crisis performance levels. But even though the world economy's centre of gravity appears to be shifting ever more eastwards, the weight of the 'old' powers is such that global business cannot grow faster without them, he assured a Federec meeting.

'The latest indicators coming from the world's main locomotive - the USA - reveal a slowing economy, not a country in full acceleration,' warned Mr Lifschitz. In a note from the US Federal Reserve, he added, its Chairman Ben Bernanke had identified 'a profusion of signs of abating' and went on to emphasise his concerns about the pace of recovery in the USA.

Over the last decade, commodities have become an increasingly sought-after asset class, Mr Lifschitz continued. Institutional investors such as pension funds and insurance companies have been looking to diversify their investment portfolios in order to protect against inflation. Mr Lifschitz noted: 'According to Barclays Capital, investments in commodities have gone through the US$ 300 billion barrier this year (2010) for the first time in terms of assets under management. This is remarkable growth for a class of assets that, 10 years ago, accounted for just US$ 10 billion.'

Against this backdrop, Mr Lifschitz insisted that each business operation must know how to distinguish 'between risk and prudence, between speculation and protection'. **www.federec.org**

household waste sorting plant which can separate various fractions on site. **www.aktid.eu**

### Aymas Makina

The only Turkish recycling equipment manufacturer present at Pollutec was Aymas Makina, which displayed a variety of its machines. According to European Sales Agent Celal Cimkar, the Izmir-based firm is finding significant success in mainland Europe.

The firm recently introduced a competitively-priced press which produces round briquettes measuring 80, 100 or 140 mm from iron, steel and copper chips. All parts - including the pumps, valves, hydraulics and electronics - come from well-established suppliers such as Rexroth and Telemeqanique. Easy to connect to a feeding belt, the briquetting press (BP) consists of 3+1 spiral feeders which fill the compression chamber automatically. **www.aymasmakina.com**

### HSM

The V-Press 860L vertical baling press from German manufacturer HSM is said to be suitable for easy transportation of bales using a pallet truck or fork-lift truck; bales are produced with a recess so no pallets are required.

Incorporating a pressing power of 532 kN as well as low-noise and energy-saving technology, the V-Press 860 is designed to compress used packaging material such as cardboard and foil. The machine boasts flexible and fixed retaining claws which optimise material compression and reduce the number of filling processes. The integrated HSM TCS (Torsion Control System) prevents one-sided overloading during the pressing procedure. Other features include double doors with hydraulic lock. **www.hsm.eu**

### Becker Shredder

One of the few shredding equipment manufacturers to exhibit at the Pollutec show was Becker Shredder International from France, which specialises in small-capacity car shredders designed to cut transportation costs by being suitable for siting closer to the source of end-of-life vehicles (ELVs). These smaller units also lend themselves for use in areas where ELV volumes are low - such as on islands or in emerging countries.

Other major advantages of these units include compactness, automatic lubrication/greasing and elimination of the need for concrete foundations. **www.beckershredder.fr**

## EEP Award for Plastinum Polymer Technologies

At the latest Pollutec show in Lyon, the European Environmental Press - comprised of 17 leading European environmental magazines - presented EEP Awards to several companies in recognition of products that demonstrate innovation in the field of environmental technology while at the same time respecting the importance of cost, quality and reliability.

The EEP Gold Award 2010 was presented to Plastinum Polymer Technologies BV of the Netherlands in respect of its Blendymer process which directs flows of waste plastics and composite materials into the production of high-tech thermoplastics and hybrid co-polymers.

With unfortunate timing, it emerged at around the same time as the Pollutec show that Plastinum was facing financial difficulties; the business had idled its production facility at Emmen in the Netherlands and had sent home its employees without pay. In early January, however, the firm found a new Switzerland-based investor and production at Plastinum is duly expected to restart. **www.plastinum.com**

Plastinum CEO Niels Berten (r) receiving the EEP award.


# Future for e-scrap tied to change in China

**At ICM's World Recycling Forum in Hong Kong last November, Shanghai-based journalist Adam Minter - a regular contributor to Recycling International - ventured a personal but extremely well-informed assessment of the future impact of China's recycling industry, with particular emphasis on e-scrap. What follows is an abridged version of his presentation**

It is a fact that most of the world's scrap industry doesn't sell to China; and among those who don't sell to China, many don't care to sell to China. It is also a fact that, although scrap commodity prices are now dictated in part by the demands of China's market, much of the world doesn't spend much time thinking about how to export to China.

Undoubtedly, what happens in China's recycling industry does and will impact the global trade for decades to come. But it would be wrong to think that the recycling industry is the living, breathing manifestation of classical economic theory: demand happens in one place, supply flows from another - end of story. In effect, China's reach isn't nearly as long as some might believe.

## Unable to ship

There are certainly places that China has yet to influence. Six weeks ago, I flew to Brazil to speak at Exposucata, the largest recycling convention in Latin America. On the way from the airport to the convention centre, I could see a scrap yard with towering piles of ferrous material. I had been to that yard before in February 2010 and there wasn't nearly that volume of material. I was told that there was at least 40 000 tonnes of material there and that the

Cheap containerised shipping has revolutionised the international scrap trade over the last decade.

yard had been unable to ship for two months. Some might ask why this material wasn't being shipped to China, India, South Korea or somewhere else in Asia. But there are three problems with this. First, demand for scrap in Brazil is quite high because its economy and infrastructure needs are expanding. Second, Brazil's three major steel mills are all determined to see the price of scrap remain low, so one of those mills has informed this yard - and several others in Brazil with the scale to export - that it would no longer purchase its scrap if they exported. And finally, Brazil's scrap industry has always been domestically-oriented and traders simply don't have much experience with exporting.

### Limits to China's reach

I was in Brazil to give a speech on how to trade with Asia. Exposucata attracted some 2000 attendees, and only four of them were buyers from Asia. So how is this possible? A few of the reasons I have encountered indicate the limits to China's reach as a global scrap consumer. First, containerised shipping rates out of Brazil are some of the most expensive in Asia and, as is well known, cheap containerised shipping has revolutionised the international scrap trade over the last decade. Second, there's growing resentment in Brazil towards low-cost Chinese imports and their impact on Brazil's small manufacturers. Indeed, I found evidence of an unwillingness to ship to China.

And third, there's considerable suspicion of Chinese scrap buyers, particularly after stories of broken contracts in 2008. Unlike many other countries that trade scrap on the global markets, Brazil didn't suffer the effects of that sorry period in scrap trade history, but neither did it benefit from prior years of strong global markets. They didn't trade with China - but that lack of trade only amplified the concerns.

As a result of all of these factors, only one of which is directly market-oriented, Brazil has been largely insulated from China's impact on the global scrap trade. And it is not alone. In talking about the global impact of China, it's important to keep these factors in mind and not to overstate the country's influence. Indeed, I would argue that the global impact of the USA and, to a lesser extent, the EU remains more powerful on the trade.

### Re-thinking imports

Nevertheless, there are some important areas where I think we'll see China's influence, specifically on the global scrap trade. It is likely - and perhaps inevitable - that China will, at some point in the next few years, relax its approach to the importation of materials prohibited under the Basel Treaty, especially e-scrap. In fact, based upon conversations with government, academic and industry participants in China's non-ferrous community, I predict that China will lower most barriers to the import of e-scrap before the end of the decade.

> *'China's rise as a scrap power has engendered a great deal of nervousness abroad.'*

At the recent annual conference of the China Non-ferrous Metals Industry Association Recycling Metal Branch (CMRA), there was a significant statement on this subject from the association's President Wang Gongmin. 'We will add to the variety of and expand the scale of imported scrap metals,' he said. 'On the one hand, scrap home appliances, circuit board scraps, (and) scrapped cars are all valuable renewable resources. On the other hand, recycling technology has matured, and the processing shall not result in secondary pollution. But those products are all on the list of prohibited goods. It is suggested that relevant departments should make policies to approve the import of such products.'

The holder of various government positions touching on solid waste and recycling over many years, the speaker helped to draft recycling-related provisions in China's 11th and 12th Five-Year Plans. And so when Wang Gongmin speaks about recycling, he is speaking from a position of authority.

### More liberal view

This news about imports may come as an unpleasant surprise to many people but informal discussions along these lines have been taking place for a couple of years now. And as China's new e-waste recycling law takes effect and - most important - as environmentally sound systems are developed and implemented to handle that e-scrap, officials and entrepreneurs are wondering when that system will be robust enough to handle e-scrap imports from countries where processing is considerably more expensive. Indeed, there have long been indications that the relevant officials in charge of this issue take a much more liberal view of it than the rather sheltered environmental activists in the developed world who have made it a cause. For example, it's quite noticeable that China's import licensing requirements have adopted the RIOS standards of the US Institute of Scrap Recycling Industries (ISRI) as one of two certification standards required to get an AQSIQ licence to export recyclables to China, and not the Basel Action Network's highly-touted E-Steward Standard. According to my contacts at least, BAN and E-Steward officials have never even met with those in charge of AQSIQ licensing standards.

Surely if China's long-term hope was to restrict e-scrap imports, there would be more discussion between the relevant government departments and the environmental groups rallying to end the trade. But China's regulators have had almost no contact with those groups, and there's absolutely no interest in starting them now.

### Not 'if' but 'when'

To be clear, it's not really a matter of if but when China opens its borders to e-scrap and other

Basel-regulated materials. And the 'when' is based on one factor: when will the technology exist to handle the material reasonably safely? We are not necessarily talking EU-style developed world standards here, but we are talking about standards that improve on circuit board cooking and, in all likelihood, on shredding. At least in principle, the idea is that China can engage in deep processing, utilising its relatively low-cost labour to disassemble materials that would be shredded in the developed world. And then, when the deeper recovery is complete, the material could be shredded and recovered. Theoretically at least, that kind of system should be scalable, profitable and - if green enough - competitive with the best systems in Japan, the EU and the USA. That's a lot of 'ifs' - but enough to justify a Chinese rejection of Basel based upon the belief that this very controversial material is not hazardous.

## Severe shrinkage

The impact of such a move on the global scrap trade is going to be determined somewhat by whether e-scrap exporting countries have been successful in placing restrictions on the overseas shipment of e-scrap. Assuming that they haven't, what are the net effects of China becoming a low-cost, environmentally sound e-scrap recycling destination in the same way that it has become, for example, a motor scrap recycler?

Though I'm speculating here, I think one possible benefit might be a severe shrinkage of other e-scrap recycling destinations. As it is, many destinations - such as those in Africa - are marginal except for reuse owing to the lack of local industry to consume the materials recycled from e-scrap. China, as one of the world's major consumers of the materials derived from e-scrap, is assured of being a consumer of e-scrap and those materials for decades to come. It is also fair to assume that, as China recycles more of the world's e-scrap, the country will want to design for recycling.

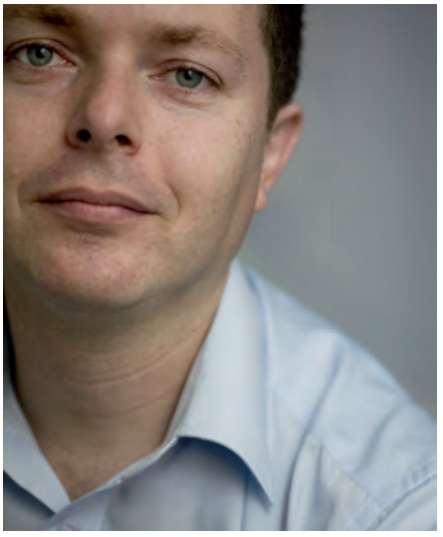
There are other possible impacts. For recyclers in the developing world who don't meet green standards, supplies may very well shrink as exporters opt for China as a green, semi-profitable destination that uses advanced technology. For recyclers in the developed world, especially those who collect these materials in large volumes, China's development of a green e-scrap recycling infrastructure would be a competitive and philosophic challenge.

For two decades now, the developed world's e-scrap recycling debate has been premised on two contradictory assumptions: that developing countries are incapable of handling hazardous materials in an environmentally sound manner; and that they should have to figure out a way to handle their own hazardous materials without recourse to export to places where they

> *'Most of the world's scrap industry doesn't sell to China.'*

can be handled correctly. If China does manage to perfect its still-nascent e-scrap recycling system, those premises are due for re-evaluation. China could become the developed world's low-cost green destination for e-recycling. Imagine that. At a minimum, I suggest that most of the e-scrap infrastructure being developed in the USA, where Basel has not been ratified, would be for nought. Quite likely, the same would hold true for Europe.

Such a move by the world's largest developing country is likely to force a deep re-think of the Basel Treaty.



Adam Minter: 'In general, China's influence upon the global scrap trade has obviously been a net positive.'

China can engage in deep processing, utilising its low-cost labour to disassemble materials that the developed world would shred.

## Nothing is inevitable

The changes that China's scrap trade is experiencing will impact the global industry but I don't believe anything is inevitable. In fact, despite the macro trends that have shaped China's scrap business over the last two decades, micro events that trigger nationalist outbursts and trade wars can be just as influential and much more quickly.

China's rise as a political and economic power, and as a scrap power, has engendered a great deal of nervousness abroad. And for better or worse, the greatest impact of China on the global recycling trade could be - inadvertently - to restrict it. For an example, one has only to look at recent reports that China was restricting the export of rare earth elements. If a trade war were to break out, with raw materials as the weapons, surely the developed world has an arsenal of scrap commodities with which to retaliate.

Economic nationalism might be the greatest threat to the growth and health of a global scrap commodities market. And though some may say that there's too much money at stake, I say that Brazil's highly-distorted, monopolistic and nationalistic scrap markets offer an ominous rejoinder.

## Net positive

Let us end on an optimistic note: if you ask the average scrap processor or trader in the EU or the USA whether or not China's influence upon the global scrap trade has been a net positive or negative, I think you'd be very hard pressed to find one who would say that it has been negative. As for consumers in the EU and the USA, that's another subject.

In general, China's influence upon the trade has obviously been a net positive: markets have opened; prices have risen; and finally, and most importantly, more material is being recycled than ever before. We are now facing freer trade in e-scrap, and greater consolidation to deal with China's consolidating mega-buyers. Both of these trends could be reason for concern, and yet they can also be viewed as opportunities for both the industry and the environmentalists concerned with this industry. □

By Adam Minter

# The SHOW that goes on ... and on

Labourers pull out the Lucite spindles of the UK pavilion and toss them to the ground where they shatter ingloriously.

**Expo 2010 in Shanghai was the largest and most expensive World Expo in the 160-year history of these international mega-fairs, which are staged roughly every five years. But after the glitz and glamour of the event itself, organisers demand that the fair's multi-million-dollar structures are demolished - and that's where controversy has arisen.**

On a late-winter afternoon in Shanghai, the UK is being demolished; the UK pavilion for Expo 2010, that is. From May 1 to October 31 last year, the spindly, sea-urchin-like structure was the iconic symbol of Shanghai's Expo 2010 whose theme was 'Better city, better life'.

The 200-plus exhibiting countries and organisations competed to tout their pavilions as the most 'sustainable', with the UK's - complete with thousands of seeds implanted into six-metre-long Lucite poles that stuck from the building like pins in a pin-cushion - at the top of every visitor's list.

But on the day of my visit to the eerily-silent 5.2 square kilometres of post-Expo, the only thing sustainable about the UK pavilion is its ability to sustain demolition contractors. Labourers pull out the Lucite spindles and toss them to the ground where they shatter ingloriously. Later, I'm told, they will be picked up by a demolition contractor who paid for the privilege, and eventually sold into China's thriving secondary plastics markets.

## Strict rule-book

World Expos are selected and governed by the Bureau International des Expositions - a treaty-based organisation with a strict rule-book requiring the demolition of the various pavilions built for these six-month events, irrespective of cost. Exceptions are made for structures to be utilised by the host city, but otherwise the final beneficiaries of most Expos are local demolition contractors and recycling companies.

And so in China, where the demolition industry has created at least one billionaire, the race is on to benefit from Expo 2010's pavilions. According to well-placed sources with three different European pavilions, most countries and organisations that participated in Expo 2010 made contractual arrangements for their Chinese building contractors to handle the demolition and scrapping of their respective pavilions. However, few pavilion organisers seem to have appreciated the fact that multi-million-dollar buildings - even temporary ones - are built from materials that can fetch hundreds of thousands of US dollars (if not more) in the reuse and recycling markets. And this oversight is creating a few problems.

## Post-Expo shake-down

According to the director of one national pavilion, who asked not to be identified due to the sensitive nature of his country's relationship with China, Shanghai Expo Bureau is in the midst of the 'post-Expo shake-down'. In essence, the Bureau and its minions, anxious to get its hands on the scrap steel and other valuable materials used to construct the pavilions, has been busy generating new permitting requirements and other paperwork that makes demolition difficult, if not impossible, for the contracted crews.

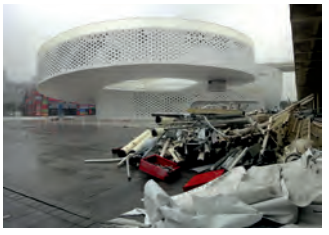
'And then after they make your life miserable for a few weeks, they come back to you and say "If you'd like, we can take it off your hands and deal with all of this red tape for you",' says a pavilion director. Several national pavilions of note, including Brazil and France, have taken this deal.

## Suspicions aroused

For more cautious, image-conscious pavilions and countries, the deal arouses more suspicion than relief. 'If they want to make money recycling a pavilion, that's one thing,' says another pavilion director, neither French nor Brazilian, who also asked not to be named. 'But what we worry about is that they're planning to sell off pavilions for reuse. Imagine if they sold off the Latvian pavilion to a karaoke. And next year it's operating as a whore-house in Chongqing. You think the Latvians are going to be okay with that?'

Latvian sentiment aside, the Expo site is abuzz with demolition contractors, many of whom belong to the Bao Group - owner of China's leading steelmaker BaoSteel. At the Polish pavilion, a crane outfitted with a shear stands ready to tear apart the once-delicate structure; and over by the supposedly sustainable US pavilion, piles of insulation have been tossed aside by recyclers seeking material that can be sold by the kilo.

But in the midst of all this activity, several pavilions remain suspiciously vacant, tied up in red tape but sought-after by recyclers. According to two pavilion directors, the entire Expo site is scheduled to be empty by summer 2011. □



The entire Expo site is scheduled to be empty by summer 2011.

The Expo site is abuzz with demolition contractors.

# Ferrous

**Closed: January 24 2011**

## 'Grey' period in winter-price wonderland

**As Recycling International heads for press, prices are proving almost impossible to fathom because many buyers have not been buying and many sellers have been opting to hold on to their hard won material. With this proviso, cfr price indications for shipments from Europe to Turkey are as follows: US$ 490 495 per tonne for standard quality HMS I/II 80/20 scrap; US$ 495 500 per tonne for shredded; and US$ 485 490 per tonne for the HMS I/II 70/30 mix.**

Recycling International takes a short winter break and look what happens! As our December issue was closing at the very start of that month, the talk was of whether the heat in the ferrous scrap market was sufficient to sustain cfr prices for shredded and HMS above US$ 400 per tonne; in the intervening weeks, however, the threshold under debate has shifted to US$ 500. Many experts had foreseen further price increases at the time of our previous report, but it's not at all certain this is what they had envisaged. That said, the 'aggressive' buying of December and early January has been followed by a period in which trading has reached 'almost a full stop', according to market experts. In recent weeks, buyers' attempts to reduce prices have met with almost universal resistance from sellers who are prepared to wait for the right price to come along, safe in the knowledge that supply is as tight as ever. For example, reports confirm that scrap stocks in Rotterdam are low, not least because of the adverse effects of difficult winter weather on supplies from inland Europe.

'It's a really grey market at the moment,' insists a leading European-based trader. And another adds: 'It's on a knife edge - something, and who knows what, could happen tomorrow which makes a big change to prices.' That decisive event could involve the Turkish mills who, after having made very few deep-sea bookings since the middle of January, are widely expected to return to the market with more gusto. At the time of writing, prices of imports into Turkey have stopped rising and several of the country's steel mills are understood to have reduced their domestic scrap buying prices.

### Animated push for scrap

December saw an ever more animated push to obtain scrap as tradition dictates that supply becomes even tighter in a month truncated by holidays. Although the month began with a dip in export prices to South East Asia, momentum built very quickly. For example, Metal Bulletin's Ferrous Scrap Index cfr Turkey recorded its biggest single-week rise (of US$ 11.52) since the index went daily in reaching US$ 407.90 per tonne cfr Iskenderun for HMS I/II 80/20. By the following week, the index was registering an increase of US$ 11.60 in a single day.

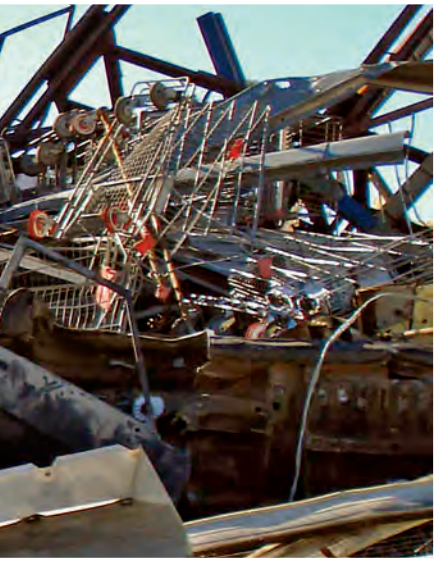
In Japan, leading buyer Tokyo Steel Manufacturing responded to low raw material stocks and more promising construction steel prospects by raising its scrap purchasing prices on several occasions during the first half of the month; by December 17, the company was paying up to Yen 37 000 per tonne (US$ 445) for H2 material.

In the USA, where domestic scrap prices gained some US$ 25-30 per tonne in early December, there was more reticence about export business with Turkey because of the attractiveness of prices at home. In Turkey itself, mills raised their domestic purchasing prices four times in the first three weeks of December. And despite a relatively slow start to the final month of 2010, ferrous scrap prices into South East Asia rapidly made up ground to reach their highest level since August. As the rapid upward price movement gathered pace, suppliers became increasingly reluctant to sell for fear of missing out on an even bigger payday.

### Market surges again

Far from deploying cruise control immediately before Christmas, the market surged again, with Metal Bulletin's Ferrous Scrap Index soaring to US$ 476.68 per tonne cfr Iskenderun for HMS I/II 80/20 after the country was reported to have made further excursions into the international market. And despite expectations of a hiatus in buying activity between Christmas and the start of January, Turkey's domestic scrap prices were forced to respond to elevated import offers.

As an aside, latest figures confirm that, by the end of November 2010, Turkey's



scrap imports had reached 17 million tonnes - almost 20% up on the January-November 2009 total and not far short of the record for an entire year of 17.4 million tonnes which was set in 2008.
Turkey's scrap imports were limited to 15.6 million tonnes in 2009 as a whole.
According to latest statistics from the Turkish Statistical Institute (TUIK), the country imported 1.73 million tonnes of scrap in October and a further 1.68 million tonnes the following month when the leading suppliers were the USA with 371 265 tonnes and Belgium with 203 832 tonnes. Third place was tightly contested, with Romania winning out on 186 761 tonnes followed by Russia on 185 562 tonnes and the Netherlands on 184 572 tonnes.
As mentioned, the strength of demand from the domestic market noticeably dampened US exports of ferrous scrap in the final weeks of 2010 and early part of 2011. But even in the first 11 months of last year, US ferrous scrap shipments had been lower (by 8%) than in the corresponding period of 2009 at 17.9 million tonnes - despite a 17% increase in shipments to Turkey. American exports to China slumped almost 50% in January-November last year.

### Rebate removed

2011 began with a new set of circumstances for China's scrap industry. Having previously been able to apply for a 50% rebate on the 17% VAT paid on scrap deals, they had this concession removed on January 1. As a result, steelmakers in some parts of China raised their scrap buying prices by, typically, US$ 40 per tonne in early January in a bid to convince dealers to part with material.
At around the same time, the first reports began to emerge of shredded and A3 scrap cargoes from the USA and the Baltics selling into Turkey at more than US$ 500 per tonne on a cfr basis.
By the end of the first week of January, Metal Bulletin's Ferrous Scrap Index was standing at US$ 508.18 per tonne cfr Iskenderun for HMS I/II 80/20.
But by the time sales prices into Turkey were touching US$ 520-525 per tonne for shredded scrap, the number of purchases made from Europe and the USA began to dwindle.
Of late, A3 scrap has continued to move with reasonable regularity between CIS countries and Turkey at prices of, generally, US$ 490-495 per tonne cfr. Further east, South Korea's Hyundai Steel has recently paid slightly in excess of US$ 500 per tonne cfr for US-origin HMS 1 for shipment within the first quarter. As for India, shredded scrap in containers was being bought at prices up to US$ 495 per tonne cfr Nhava Sheva in the third full week of January. And at around the same time, Tokyo Steel was still prepared to raise its scrap buying prices to upwards of Yen 38 000 per tonne for H2 material.

### Severe weather impact

Undoubtedly, the global market has responded in recent weeks to the impact of difficult weather conditions in key scrap-exporting regions of the world, such as the USA and the EU. However, severe weather in southern China has also served to tighten the supply screw, helping to convince the country's steelmakers to keep their purchasing prices keen. Leading consumer Shagang is understood to have raised its scrap buying prices by more than US$ 23 per tonne as recently as January 21.
A meeting of the OECD Steel Committee in Paris late last year was told that export restrictions on ferrous scrap have had an adverse impact on global supply, leading to shortages. Thomas Danjczek, President of the Steel Manufacturers Association in the USA and the American Scrap Coalition's President Alan Price calculated that some 20 countries have introduced restrictions of some form - from taxes through to complete bans on exports of scrap.
They argued that scrap-deficient countries should take account of their ability to expand domestic scrap supply or to build alternative iron facilities when planning any new electric arc steelmaking capacity - especially as scrap supplies from traditional exporters such as the USA, the EU and Japan are approaching a practical limit.

### Competing commodities

Iron ore prices have continued to rise thanks to those two traditional persuaders - high demand and tight supply. The demand is coming largely from China while supply issues are dogging both India and Brazil.
Having begun December at around US$ 170 per tonne cfr China, spot prices for 63.5% Indian fines were relatively becalmed for most of the month. However, following a sudden spurt around the middle of January, spot prices are currently hovering at - or even just above - US$ 190 per tonne.
The iron ore spot price is likely to average around US$ 178 per tonne cfr China in the first half of 2011, according to Credit Suisse. However, supply disruptions could push prices to upwards of US$ 250 per tonne in the second quarter, it adds. Macquarie Capital's Jim Lennon told the Iron Ore Trading World Europe conference held in London late last year that iron ore prices could rise as high as US$ 200 per tonne cfr China in the first half of this year on the back of weather-related supply disruption.
Citigroup's head of dry bulk trading Boudewijn van Vliet told the same conference that the global iron ore market will move into oversupply in 2014 as new projects come on stream. However, tightness over the next two years will lead to prices remaining above US$ 150 per tonne cfr China - and possibly scaling the heady heights of US$ 250, he added.

### Revenues more than double

Brazil's exports of iron ore increased almost 17% last year to a shade under 311 million tonnes; however, the higher iron ore price levels in 2010 ensured that revenues from these shipments more than doubled from US$ 13.2 billion to almost US$ 29 billion. China headed the queue of customers in buying 152.5 million tonnes although the total fell short of the 166 million tonnes bought from Brazil in the previous year.
Turning to pig iron, production among the 42 countries reporting their figures

to the World Steel Association (WSA) amounted to 945.4 million tonnes in the January-November period of last year - raising the prospect of annual output exceeding 1 billion tonnes for the first time ever. Yearly production had peaked at just over 960 million tonnes in 2007 before dropping back to 935 million tonnes and 908 million tonnes in the ensuing two years.

According to even later figures from China's National Bureau of Statistics, the country's

pig iron output fell marginally in December to 46.65 million tonnes, but the total for the whole of the year - 590.22 million tonnes - represented an increase of 7.4% compared to 2009.

## Steel

A relatively strong finish to last year ensured that, as many experts had predicted, world crude steel production entered uncharted territory in 2010. Output soared 15% from 1.229 billion tonnes in 2009 to an all-time high of 1.414 billion tonnes last year, according to statistics supplied to the WSA.

Despite the fact that its production surged a further 9.3% from 573.6 million tonnes in 2009 to 626.7 million tonnes the following year, China's share of world crude steel production declined from 46.7% in 2009 to 44.3% in 2010 - primarily because of massive output recoveries in key parts of the developed world. Notably, America's share of world production advanced from 4.7% to 5.7% while the gain for the EU-27 was 0.9 percentage points to 12.2%.

However, three of the world's top five steel-producing countries fell short of their pre-recession output: Japan's total dropped from 120.2 million tonnes in 2007 to 109.6 million tonnes last year, while the US tally slid from 98.1 million tonnes to 80.6 million tonnes and Russia's from 72.4 million tonnes to 67 million tonnes. In contrast, Chinese steel production leapt from 489.3 million tonnes in 2007 to 626.7 million tonnes last year while India posted an increase from 53.5 million tonnes to 66.8 million tonnes over the same period.

The tables appearing with this article provide a more detailed breakdown of steel production by region and in the leading steelmaking countries of the world. An additional point worthy of note is that the EU produced a total of 172.906 million tonnes of steel last year - or 24.5% more than the 138.834 million tonnes of 2009. Greece and the UK were alone among the 27-state membership in recording a drop in steel output (of 8.1% and 3.7%, respectively).

In December 2010, world crude steel production for the 66 countries reporting to the WSA was 7.8% higher than in the final month of 2009 at 116.2 million tonnes. The crude steel capacity utilisation rate of these countries declined to 73.8% in December from 75.2% in November; last year, the utilisation rate peaked in April at 82.6%, according to the WSA figures.

## Target outstripped

Chinese steel output will record further growth to around 686 million tonnes in 2011, according to Graeme Train, a commodities analyst at Macquarie. Domestic construction steel demand is expected to slow in 2011 but will remain at high levels, he told delegates at The Steel Index's conference in Shanghai late last year.

Meanwhile, a recent report from China's Ministry of Industry & Information Technology suggests decommissioned steelmaking capacity reached 66.83 million tonnes per annum between 2005 and 2010, thereby outstripping the target of 55 million tonnes enshrined in the country's eleventh five-year plan covering this period. However, modern technology additions pushed domestic steelmaking capacity to 718 million tonnes by the end of 2009 - and this figure continued to rise in 2010, the China Iron & Steel Association has confirmed.

Elsewhere, 2010 ended positively for vehicle manufacturers in the USA, with the top seven players achieving a combined sales increase of almost

**Table 1**
**Steel production by region 2008–10** (x millions of tonnes)

| | 2010 | 2009 | 2008 |
|---|---|---|---|
| Asia | 897.9 | 804.9 | 771 |
| Europe | 314.9 | 265.5 | 342.2 |
| North America | 111.8 | 82.4 | 124.5 |
| South America | 43.8 | 37.8 | 47.4 |
| Middle East | 19.6 | 17.7 | 16.6 |
| Africa | 17.5 | 15.2 | 17.0 |
| Australia/New Zealand | 8.1 | 6.0 | 8.4 |
| **Totals** | **1.414** | **1.229** | **1.327** |

*Source: World Steel Association.*

**Table 2**
**World's top 10 steel-producing countries in 2010**

| | | 2010 | 2009 | % change |
|---|---|---|---|---|
| 1 | China | 626.7 | 573.6 | +9.3 |
| 2 | Japan | 109.6 | 87.5 | +25.2 |
| 3 | USA | 80.6 | 58.2 | +38.5 |
| 4 | Russia | 67.0 | 60.0 | +11.7 |
| 5 | India | 66.8 | 62.8 | +6.4 |
| 6 | South Korea | 58.5 | 48.6 | +20.3 |
| 7 | Germany | 43.8 | 32.7 | +34.1 |
| 8 | The Ukraine | 33.6 | 29.9 | +12.4 |
| 9 | Brazil | 32.8 | 26.5 | +23.8 |
| 10 | Turkey | 29.0 | 25.3 | +14.6 |

*Source: World Steel Association.*

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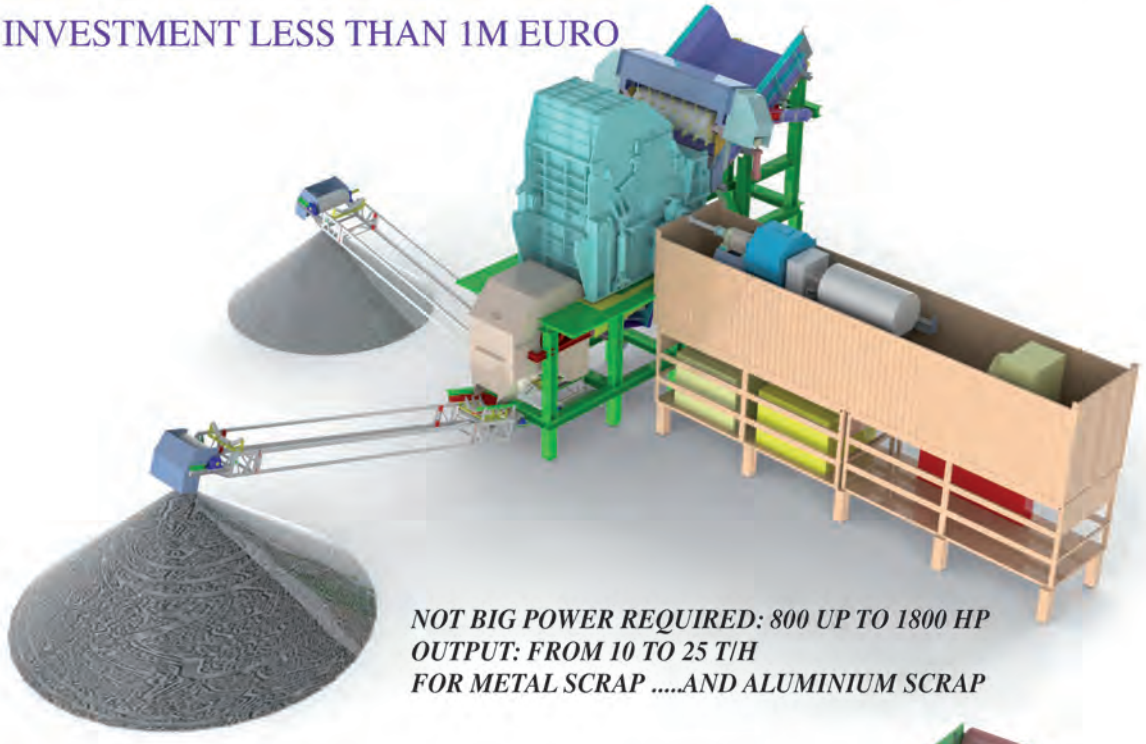

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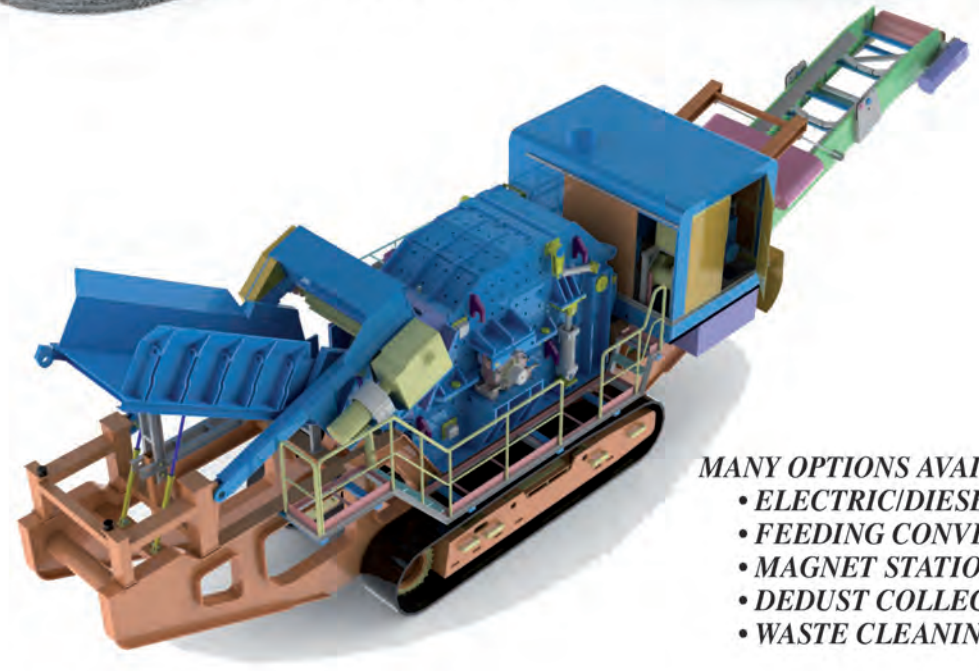

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10% in December when compared to the final month of 2009. For last year as a whole, their sales were some 10.4% higher than in 2009 - with some of the majors predicting further growth above 10% for the current year.

Also on a positive note, total steel consumption in Latin America is likely to have climbed to a record high of almost 60 million tonnes last year from 45 million tonnes in the previous year, according to the Latin American Steel Institute (ILAFA).

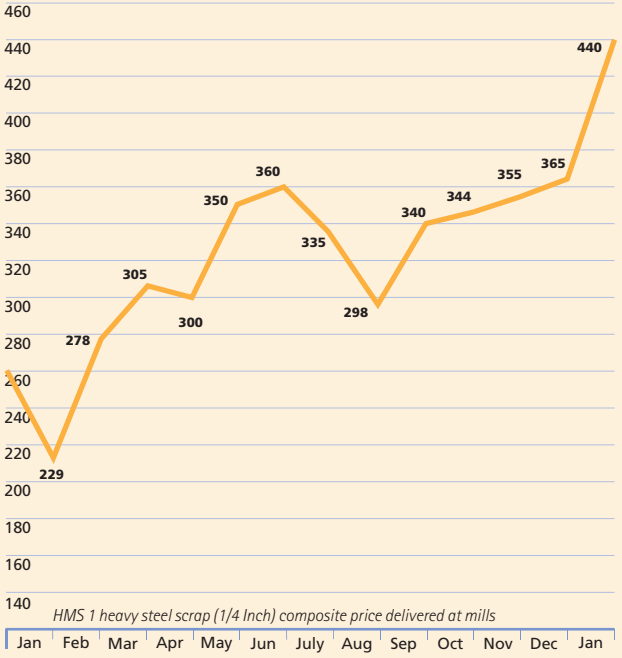
### Outlook

At the time of writing, the market appears to have paused for breath. But with stocks generally low, availability tight and the prospect of more bad weather hampering supply, it would take a brave man to predict a substantial decline in ferrous scrap prices. Mills are certainly nervous about the recent escalation in their raw material costs, but the majority of scrap suppliers are in no mood to compromise given the difficulties encountered in accumulating supplies. □

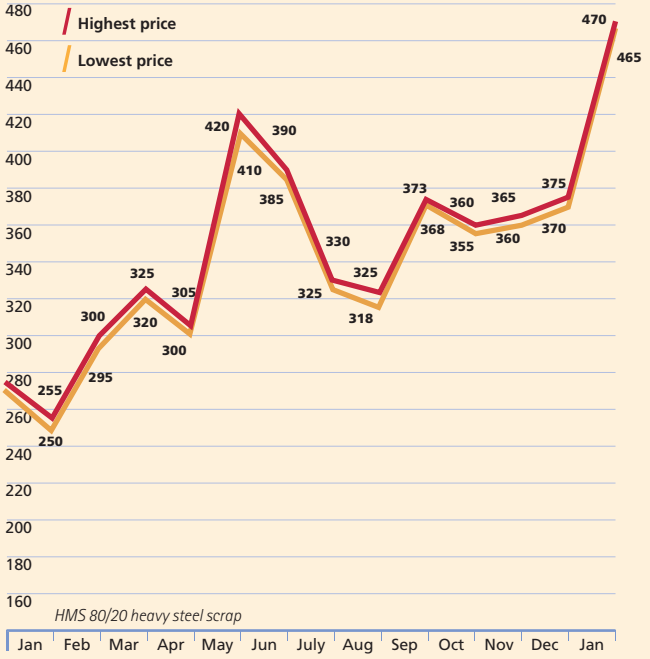
# Ferrous Scrap Prices

**Reference date: January 25, 2011**

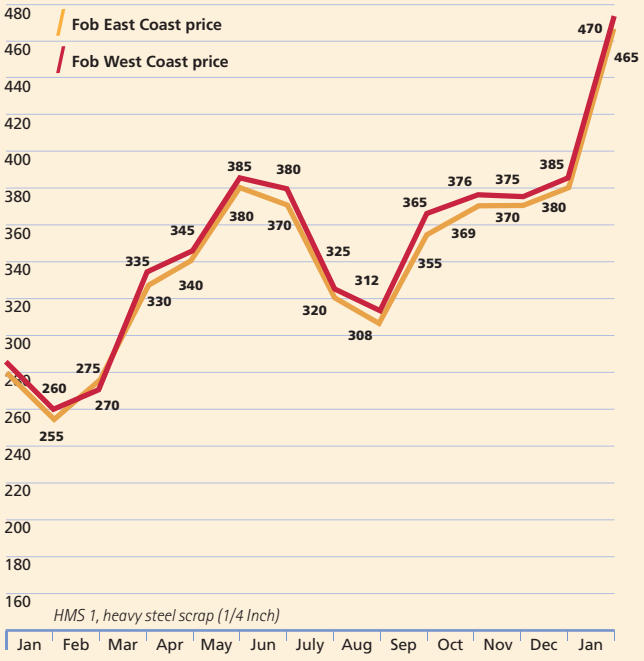
## USA Domestic Scrap Prices *(US$/GRT)*



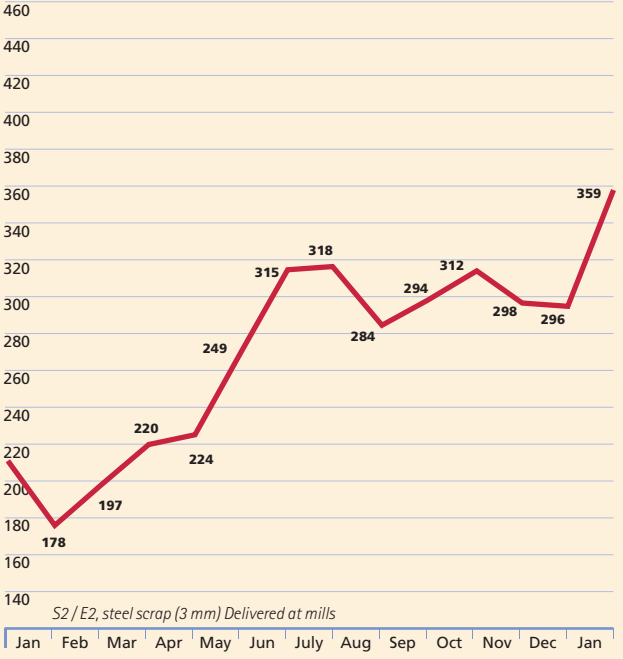

## Fob Rotterdam Export Prices *(US$/t)*




## USA Export Prices *(US$/GRT)*




## Average German Scrap Prices *(€/t)*



By Gerhard Teborg et al

# Nickel & Stainless

**Closed: January 24 2011**

## Nickel price flouts the fundamentals

**At the time of our previous report in early December, 304 stainless steel scrap was attracting US$ 2150-2190 per tonne and the 316 grade US$ 3020-3060. Deep into January, however, the former is commanding US$ 2500-2600 per tonne and the latter US$ 3450-3500. Meanwhile, the 430 quality is quoted at US$ 550-600 per tonne and the 409 grade at US$ 400-450.**

Market observers are complaining that the LME nickel quotation is not an accurate reflection of the physical market, with many insisting that the metal's value is well above the level currently justified by its fundamentals.

Demand from the all-important stainless steel industry has been quite restrained whereas nickel production has reached a high level as most producers look to benefit from prices well over US$ 20 000 per tonne. One of the consequences was a market surplus of more than 20 000 tonnes at the end of November last year, according to latest statistics from the International Nickel Study Group.

In comparison with other industrial metals, it is believed that nickel could under-perform in 2011 and that capacity additions could lead to another surplus this year. As well as unspectacular stainless steel output, nickel-saving qualities such as AISI 200 and 400 are being produced in larger quantities and are substituting the more nickel-rich AISI 300 series, thereby impacting on overall nickel usage.

Nickel production is predicted to increase 9.6% in 2011 to 1.6 million tonnes whereas usage growth is expected to be limited to 5% for a total of 1.5 million tonnes.

At the time of writing (when the US dollar/Euro exchange rate stood at 1.34), stainless steel scrap prices have climbed to US$ 2500-2600 per tonne for the 304 quality and to US$ 3450-3500 for the 316 grade. The high nickel price, moderate ferro-chrome levels and a surging steel scrap price are the reasons behind this development. Consumers are describing stainless steel scrap availability as relatively healthy, not least because of a sharp drop-off in export activity, particularly to Asia.

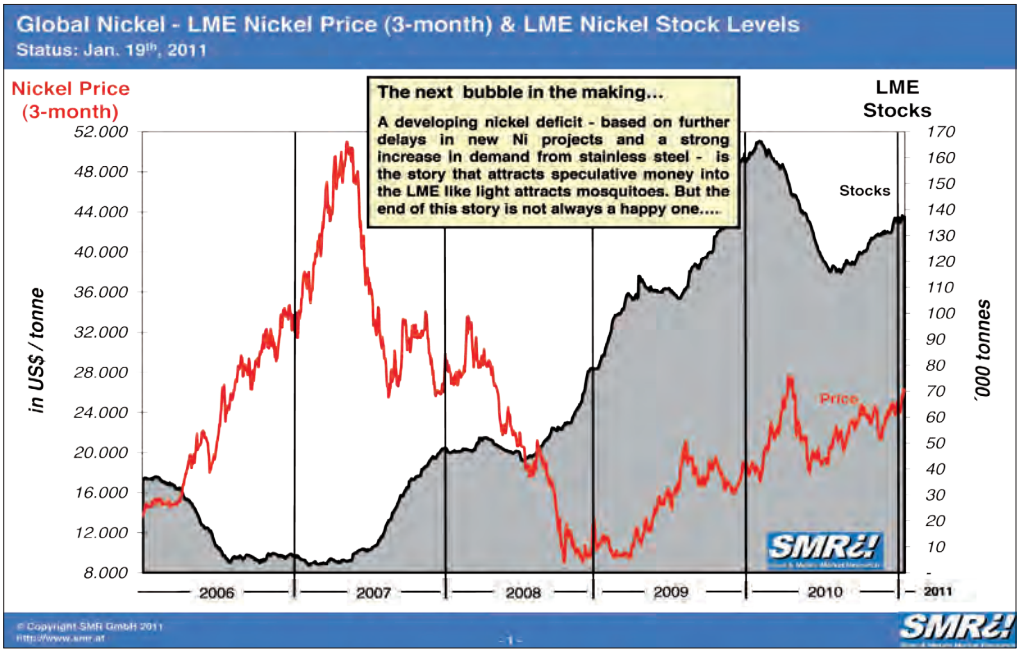
After last year's winter season in South Africa (running from April to June), ferro-chrome producers raised their production in the fourth quarter of 2010 with curtailed capacities. A roll-over of the fourth-quarter price into first-quarter 2011 could not be achieved and values slid from US$ 1.30 to US$ 1.25 per lb. Insiders are expecting increases in the coming quarters because of China's insatiable appetite.

Chrome scrap prices remained stable in the face of this temporary weakness. At the time of writing, the 430 quality is quoted at US$ 600-650 per tonne and the 409 grade at US$ 400-450.

### Europe

In Germany, nickel cathode prices were placed recently at just below US$ 25 000 per tonne, with V2A (304) scrap yielding US$ 2389 and V4A (316) scrap around US$ 3257. In the Netherlands, INOX 18/8 nickel scrap has been fetching US$ 2339 per tonne and INOX 316 nearer US$ 3209.

Analysts are offering rather different forecasts for the nickel market in 2011. However, given that some mines have production problems, there is a view that nickel will be in relatively short supply. A major German nickel trader, for example, expects that 'the lowest LME price might be at US$ 20 000 per tonne and there will be short-supply situations'. LME prices spending significant periods of time above US$ 25 000 per tonne 'would not be in line with the market fundamentals', he adds. Such price moves 'would be the result of the activities of speculative hedge funds'.



## China and elsewhere in Asia

Despite falling in November, China's exports of refined nickel and its alloys leapt 98% to 51 475 tonnes in the first 11 months of last year whereas imports declined 29% to 167 283 tonnes over the same period. But supported by short supply on the domestic market, Chinese imports are expected to rise in the coming few months to feed growing internal demand for stainless steel.

The nickel price on the Shanghai Yangtze spot market was stable at around Yuan 178 000 per tonne (US$ 26 969) in early December, but by mid-January the price had surged to around Yuan 195 000 per tonne (US$ 29 545). At this point, most market participants became more cautious in their approach.

Severe winter weather in some countries tightened the overall supply of stainless steel scrap on China's spot market, resulting in a positive price momentum which is expected to persist for some time.

## North America

North American Stainless Inc., AK Steel Corp. and Allegheny Technologies Inc. have responded to higher raw material costs by announcing increases in many of their stainless product surcharges for February.

Latest figures from the US Department of Commerce confirm that exports of nickel scrap jumped 3.7% in November last year despite a drop of almost 10% in deliveries to Canada. As for US exports of stainless steel scrap, these surged into six-figure territory last October - from 71 377 tonnes in September to 100 883 tonnes the following month.

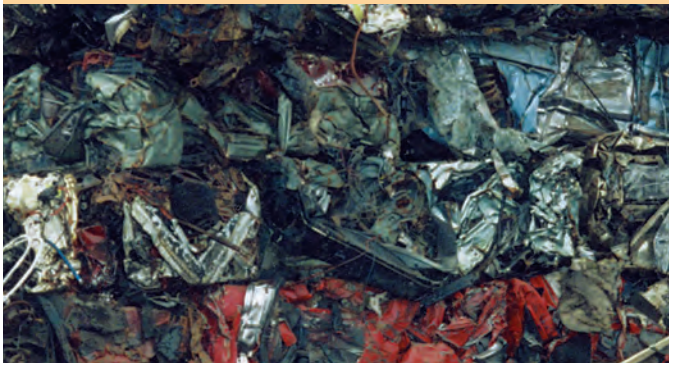
However, cumulative overseas shipments for the first 10 months of last year were more than 21% lower than in the corresponding period of 2009 at 757 411 tonnes. □

## Minor metals

The ferro-titanium price has jumped to US$ 7.50-8.00 per kg (maximum 4.5% Al) in response to a deep shortage of available material. Demand is coming from all over Europe and further east. The Russians are re-starting their production only in the fourth week of 2011 and so some time will pass before material becomes available to the spot markets.

Owing to tight power supplies in China, molybdenum production had to be curtailed. Coupled with strong consumer demand in Europe, the price climbed to US$ 37 300-37 700 per tonne on the LME.

Tungsten surged to higher levels because of healthy buying interest from China: the price stabilised at US$ 42-43 per kg W. The LME cobalt quotation advanced to US$ 39 000-39 500 with a remarkable backwardation of some US$ 1000. Meanwhile, strong consumer demand has driven the ferro-vanadium price to US$ 29.50-30.60 per kg V.



# Non-Ferrous

**Closed: January 24 2011**

## Cold weather warms lead market

**The renewed upward price momentum which began last autumn has been maintained into 2011, with most primary and secondary metals continuing to chart an upward course. As per January 24, LME cash prices are at the following levels (per tonne): aluminium US$ 2389; copper US$ 9484.50; lead US$ 2549; zinc (Special High Grade) US$ 2339.50; and tin US$ 27 690.**

### Aluminium

In Europe, demand has been very strong as primary aluminium producers' order books remain filled to over-capacity.

In Germany, aluminium wire scrap (Achse) was recently trading at US$ 2356 per tonne and aluminium turnings (Autor) at around US$ 1535. Over in the UK, meanwhile, commercial pure cuttings have been fetching US$ 1428-1495 per tonne, mixed alloy/old rolled cuttings US$ 1161-1228 per tonne and commercial turnings nearer US$ 1014-1068.

In the USA, aluminium scrap prices made minor upward progress towards the middle of January, with sheet and cast attracting around 74-76 cents per lb. Meanwhile, US aluminium scrap exports were 17% higher in January-November 2010 when set against the corresponding period of 2009.

Alcoa Inc. is reportedly reactivating idled potlines at three aluminium smelters in the USA for annual production increases of 137 000 tonnes in 2011 and 200 000 tonnes per year in 2012. Following these developments, the idled proportion of Alcoa's total annual capacity of 4.5 million tonnes will drop to around 15%.

Although US aluminium production was virtually unaltered at just under 1.73 million tonnes in 2010, North America's total light metal output fell 1.4% last year to 4.69 million tonnes on the back of a drop in Canada to 2.963 million tonnes.

Based on statistics from China's Customs Office, the country's primary aluminium imports surged 815% in the first 11 months of 2010 to 170 335 tonnes. Over the same period, however, incoming volumes of aluminum scrap increased by a more modest 11% to 259 000 tonnes year on year. China's enthusiasm for scrap has been dampened by the rising cost of labour to sort imported material for further processing.

The price of aluminium on the Shanghai Yangtze spot market advanced from Yuan 15 850 per tonne (US$ 2400) in early December to Yuan 16 300 (US$ 2470) by the middle of the month. This gentle increase cooled the overall dealing atmosphere given the large stocks on the spot market; most end users were under pressure to improve cash flow at the end of the year.

However, severe snow storms, especially in the southern part of China, made aluminium traders more unwilling to sell their stocks and so prices have been driven higher to the equivalent of US$ 2515 per tonne. With the majority of refiners about to break for the Chinese New Year holidays and with the high inventories not expected to disappear any time soon, prices are not expected to maintain their forward momentum.

China's primary aluminium production of 1.35 million tonnes in November indicates that smelters were making full use of their capacities.

### Copper

Analysts expect the red metal's price to break through the US$ 11 000-per-tonne barrier this year. But even though global demand is rising, these high prices are also a reflection of speculative hedge fund activity - to the extent that some market commentators believe copper to be overpriced, pointing by way of justification to recent market volatility. However, the majority of experts believe copper prices will remain at high levels this year.

Supply of copper scrap is sufficient within Europe and processors have well-filled warehouses. However, if Asia's buyers were to make a strong return to the market, scrap supply could become short. In Germany, bright wire scrap (Kabul) was recently fetching around US$ 9328 per tonne while non-alloyed bright wire (Kader) has been trading lately at US$ 9639 and copper granules 1a (Kasus) at US$ 9185.

The 32-day strike at Chile's Collahuasi copper mine, which accounts for more than 3% of global mined copper, ended late last year but resolution of the dispute failed to put a brake on red metal prices. The Chilean Copper Commission (Cochilco) has raised its forecast for the copper price in 2011 to US$ 3.40-3.50 per lb. Meanwhile, Sonami is forecasting that Chile's copper output will rise 11% this year to 5.9 million tonnes.

Heading north into the USA, the country's copper scrap exports were 22% higher in the first 11 months of last year when compared to the same period in 2009.

Meanwhile, statistics from China's Customs Office show that the country's imports of copper scrap shot up 29% to 400 000 tonnes in November last year owing to a narrowing of the differential between refined metal and

scrap on the spot market. Rolling together the figures for last year's January-November period as a whole, China's copper scrap imports jumped 10% to 3.39 million tonnes. Based on tight supply on the spot market and low stockpiles, China's imports are expected to remain at a high level over the next few months.

To some extent, the market has been undermined by hesitancy among China's copper scrap users and traders since early December; most are debating whether there is still further scope for higher copper prices. Most scrap consumers have been limiting their purchases to production needs while traders have been somewhat more reluctant to build stocks or to buy from overseas.

China's imports of refined copper remained strong towards the close of last year although the total for the first 11 months was 9% lower than in the corresponding period of 2009 at around 2.7 million tonnes. China's appetite for the red metal remains fundamentally robust.

Copper prices maintained their upward momentum during December despite the strengthening US dollar. The Shanghai Yangtze spot market surged from Yuan 62 500 per tonne (US$ 9470) early in the month to Yuan 69 700 (US$ 10 560) by year-end.

According to the country's Bureau of Statistics, China's refined copper production in November last year showed an increase of 5.4% from the previous month to 420 700 tonnes - the third consecutive month in which a record has been posted.

Latest stats from the International Copper Study Group (ICSG) indicate that the refined copper market recorded a production deficit of 436 000 tonnes for the first nine months of 2010; this compares with a shortfall of around 55 000 tonnes in the first three quarters of 2009. 'The global market balance for the full-year 2010 is likely to show a significant deficit owing to stronger-than-anticipated demand growth,' it states.

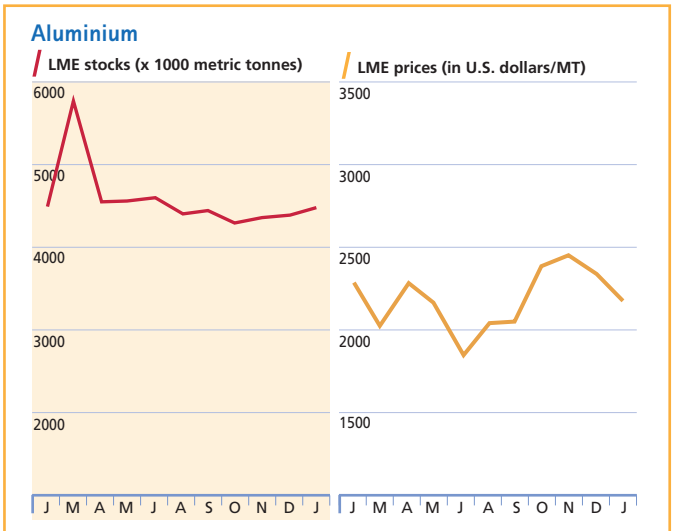
During the first nine months of 2010, world apparent copper usage climbed 8% (approximately 1.09 million tonnes), principally owing to renewed growth in the EU (+11%), Japan (+27%) and the USA (+7%); in all three cases, however, consumption remained well below pre-crisis levels. In the first nine months of 2010, Chinese apparent usage increased 4.5%. World refined production gained 5% (equivalent to 705 000 tonnes) in January-September last year. 'Primary production increased by 1.9%, while secondary production (from scrap) increased by 24.5%,' the ICSG points out. 'The large relative increase in secondary refined copper production reflects in part the lower copper prices and consequent tight scrap market that existed in early 2009.'

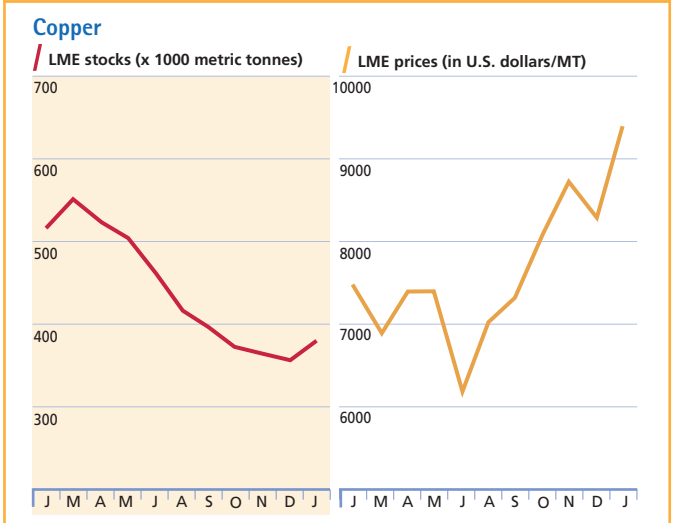
Globally speaking, the refined production capacity utilisation rate advanced to 79.7% in the first nine months of 2010 from 77% in the same period of the previous year, thereby reflecting 'increased scrap availability and the restoration of temporary cuts made in early 2009', states the ICSG.

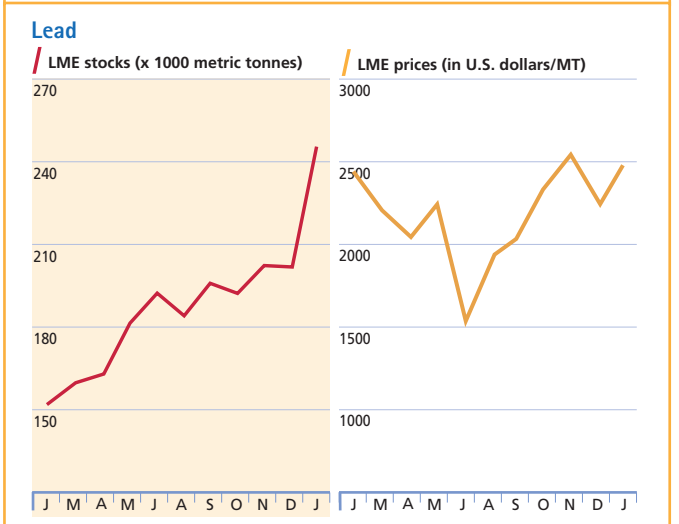
## Lead

Preliminary data compiled by the International Lead & Zinc Study Group (ILZSG) indicate a global refined lead market surplus of 41 000 tonnes for the first 11 months of 2010. Production climbed 5.8% - principally on the back of further growth in Chinese output - while demand surged 6.3% higher when compared to the January-November period of 2009. China's apparent usage gained 8.2% while demand in Europe and Japan made significant upward progress after the 'sharp reductions' of the previous year, according to the ILZSG.

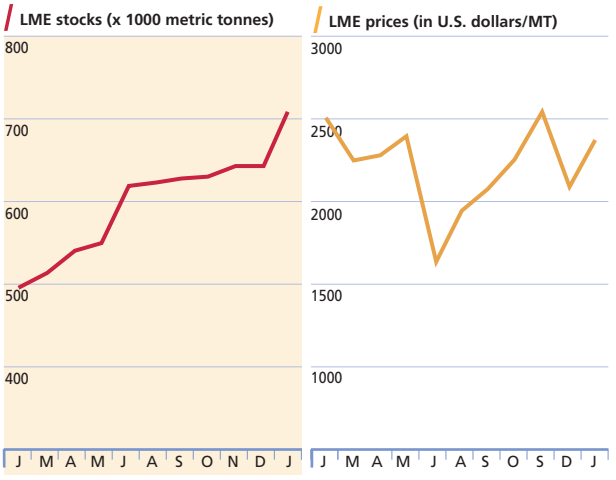
In Europe, high prices for lead have prompted processors to order only enough material to satisfy their immediate needs in the hope of a decline. Although mild price falls are possible, most analysts believe the market will remain largely stable in 2011 on the back of a global demand increase. In Germany, soft lead scrap (Paket) has been trading recently at some US$



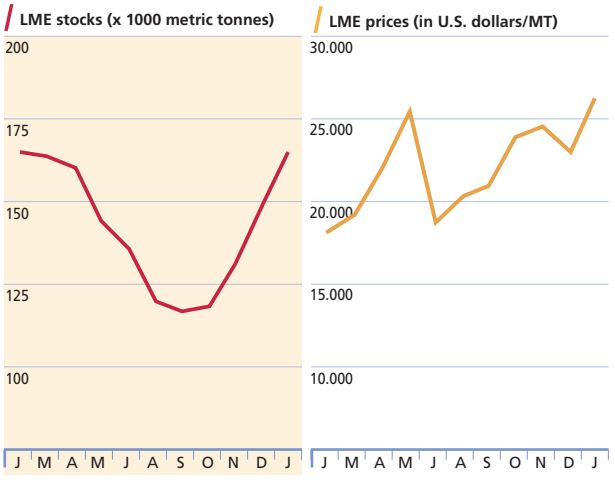



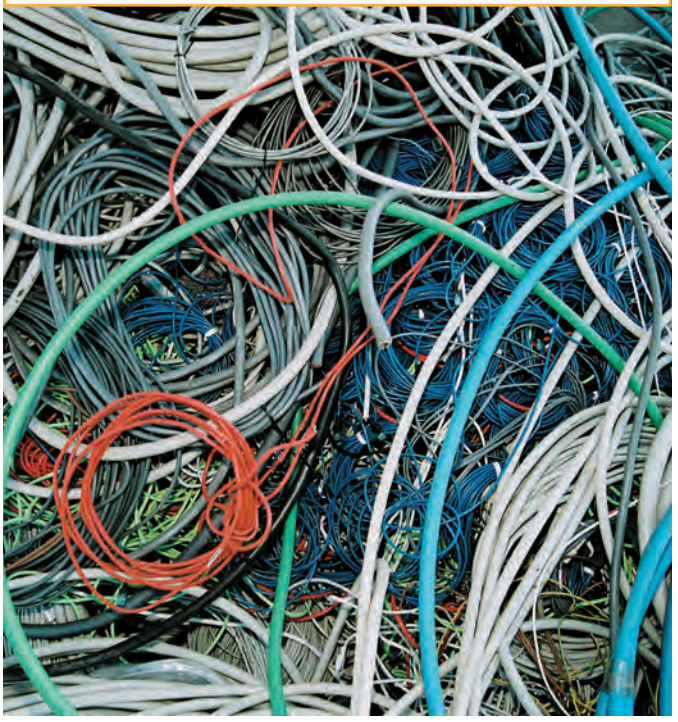




## Zinc




## Nickel



2823 per tonne while old lead scrap has been commanding around US$ 2139 in the Netherlands.

The primary lead price on the Shanghai Yangtze spot market fell from Yuan 17 000 per tonne (US$ 2575) at the beginning of December to Yuan 16 750 (US$ 2538) by the middle of the same month. However, the onset of more difficult winter weather conditions in southern parts of China ignited demand for lead-acid batteries and drove the lead price to around Yuan 17 500 per tonne (US$ 2650) by mid-January. With some end users needing to build stock, the metal's price is expected to remain high for some time to come.

China's lead imports fell by 4% in November to 1643 tonnes and by 86% to 20 770 tonnes when comparing the total for the first 11 months of 2010 with the same period of the previous year. Slow demand from the domestic market is seen as the key factor in this decline.

Figures from the Chinese government confirm that the country's refined lead production recorded a 3% year-on-year dip to 335 100 tonnes in November owing to an insufficient supply of lead concentrates.

In the USA, scrap lead batteries have seen modest price gains when compared to the lead increase on the LME. Overall, US lead scrap exports were 67% lower in the first 10 months of last year compared to the same period in 2009.

## Zinc

According to the International Lead & Zinc Study Group (ILZSG), world supply of refined zinc exceeded demand by 223 000 tonnes during the first 11 months of last year. Taking into account 50 000 tonnes of refined zinc released by China's State

Reserve Bureau in November, total reported stock levels increased by 201 000 tonnes, the organisation points out.

Across the January-November period, global refined zinc production leapt 14.5% - only to be outstripped by an increase in world consumption of 16.7%. The principal influences on an increase in world usage were strong recoveries in demand within Europe, Japan and South Korea, together with further growth in Chinese apparent demand of 14.9%, the ILZSG states.

China's zinc scrap market has remained generally quiet in recent weeks. Most traders have demonstrated little enthusiasm to buy from overseas given the lifeless tone of the domestic market. The country's refined zinc exports leapt 132% in the first 11 months of last year to 39 893 tonnes while imports across the same period slumped 56% to 288 133 tonnes on a year-on-year basis due in large part to a 20% increase in domestic production in the January-November period compared to 2009.

In the four weeks to mid-January, the zinc price on the Shanghai Yangtze spot market fluctuated between Yuan 18 500 and Yuan 18 650 per tonne (US$ 2800-2825). The dearth of optimism in the zinc market owed much to the fact that most zinc smelters had been running at low capacity utilisation levels until the end of the year. Furthermore, trading tends to be more muted late in the year as consumers focus on digesting their stockpiles.

In Europe, many processors are struggling to pass on higher raw materials costs to their customers and, as a result, are ordering only enough material to meet immediate production requirements. The concern is that these high prices are spurring fresh discussions in European industry circles about options for substituting zinc with other materials in their production processes.

In Germany, Special High Grade zinc was trading recently at US$ 2650 per tonne while old zinc scrap was fetching US$ 1588; in the Netherlands, old zinc alloy scrap was attracting some US$ 1671 per tonne. □

**Contributing to the Non-Ferrous Metals Market Analysis:**

- Ralf Schmitz, German non-ferrous trade association VDM, Europe
- Lili Shi, journalist and consultant, China

# Paper

**Closed: January 24 2011**

## Asian buyers part with tradition

**Around the turn of the year, recovered paper demand in Asia tends to become noticeably more muted. However, many of the continent's buyers have ignored convention and maintained strong purchasing pressure in recent weeks. The other key market factor has been the continuing lack of generation in many parts of the world.**

### Europe

#### Snow hits December collections

Despite reasonably healthy incoming volumes of the lower grades of recovered paper, European mills have put up their prices for January. For the Far East, levels have been subject to a greater degree of fluctuation; January prices have shown an increase under the influence of a number of parameters, such as the value of the US dollar.

The market is tending to move upwards at present, not least because demand for these grades has been good despite the imminence of the Chinese New Year holidays. With Asian buyers continuing to make purchases and with good demand being recorded at home, there is not much OCC available and stocks are still low across Europe. A similar lack of availability also applies to mixed papers, most of which is being sorted into deinking grades and also OCC. Due to snowfalls in many parts of Europe, there was a significant decline in the volumes of recovered paper collected during the month of December.

Freight rates into China - and also India - have been relatively stable of late. Difficulties are reported in obtaining trucking for sea containers owing to high levels of activity.

Among the deinking grades, incoming volumes of household mixed have reportedly returned to normal levels for the time of year after falling below the average for December due to the above-mentioned severe winter weather conditions. Export prices for deink have increased to the same levels prevailing in Europe where values have been relatively stable to slightly improving.


Demand for the deinking grades is good across Europe where consumers appear to have accepted the push for higher recovered paper prices because of their own healthy order books. Asia is also displaying good demand for the deinking grades, although orders from India have remained somewhat slower as buyers claim to be unable to afford current asking prices.

All of the middle grades of recovered paper are attracting good demand from Europe, India and other destinations in Asia. European prices have become quite stable at a time when volumes entering merchant processors' facilities are still slow owing to the general downturn in economic activity.

A similar situation applies to the high grades: not much material is available and prices are showing an upward tendency on the back of decent demand.

Across the spectrum of grades, the recovered paper collection picture in Europe was decidedly mixed last year, according to the latest Paper Mirror from the BIR world recycling organisation. In the Czech Republic, for example, collections increased by 3.3% in the first nine months of 2010 whereas volumes in the UK sagged by exactly the same proportion across the first 10 months of last year.

Finland was forced to import more recovered fibre last year to fill the gap between domestic supply and demand - even though collections mounted a recovery from their 2009 levels. In Sweden, news & pams collection volumes fell 6% in the first three quarters of 2010 whereas the OCC total jumped 10% when compared with the corresponding period of 2009.

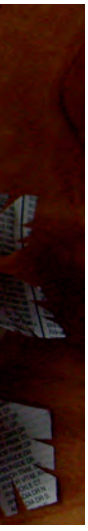
### North America

#### No panic-buying

The North American recovered fibre markets are lacklustre at present and activity is muted. The biggest problem facing both the recovered paper industry and consuming mills has remained the lack of generation. As a result of the difficult winter weather conditions in many regions, collection and generation have been very slow.

Despite expectations of a slight decline, prices of the brown grades have held their ground both domestically and for export. Before the onset of winter, domestic paper mills had already built up inventory and so, as their production slowed towards the end of last year, there was no need for any panic-buying for January.

The corrugated market is expected to remain stable in the near term; the only



potential spark for higher prices is that new paper production is scheduled to come on stream in China following the Chinese New Year. Prices of the middle and deinking grades have also been stable throughout December and January.

Overall, experts do not expect market conditions to change significantly over the next four weeks. Business is usually slow in the post-Christmas period - a fact that does nothing to help generation.

Of late, freight rates from North America have been basically unchanged and container availability is presenting no problems. According to latest figures from the US Census Bureau, the country's recovered paper exports fell around 2% in the first 11 months of 2010 to 17.023 million tonnes - largely because of a 10% drop-off in shipments to China from 11.671 million tonnes in January-November 2009 to 10.509 million tonnes in the corresponding period of last year. The second biggest consumer of US recovered fibre was Mexico on 1.698 million tonnes (+63% compared to January-November 2009), followed by India on 1.077 million tonnes (-3%).

## Merchants asked to act over mill incident

In what is being claimed as a 'first', a specific production loss is being blamed on a digital printing technology 'that is not compatible with the existing paper recycling system'.

European deinking paper association INGEDE, which promotes the utilisation of recovered graphic paper, says the incident at an unnamed German paper mill is evidence that liquid toner prints should be avoided in recovered paper for deinking and directed towards corrugated board production only.

Small flakes resulting from liquid toner films as used in HP Indigo's production printers are difficult to remove, but it had been assumed until recently that sufficient dilution would allow the paper mills to cope with this new challenge. In late-August 2010, however, paper engineers at a German paper mill 'were alarmed by rapidly-increasing dirt speck numbers in control samples during the production of high-quality graphic paper', according to INGEDE. Investigations revealed the source to be liquid toner prints coming from a photo book printer. This material had been bought together with other high-quality recovered paper specified as Multi Printing (3.10).

The paper mill in question is said to have the most sophisticated deinking plant in Europe, using a two-loop flotation system with two dispersers. The production loss is estimated at 140 tons of premium quality paper while the total cost of the incident has easily exceeded Euro 100 000, according to INGEDE. 'Dirt specks also have to be avoided in tissue mills,' says INGEDE. The organisation and its members are now advising recovered paper merchants 'to collect liquid toner overprint separately from other graphic papers and direct it toward the production of corrugated board'.

HP has confirmed that it is looking to engage with the mill 'to help assess and understand this incident'. It adds: 'HP Indigo's Deinking Research program, and HP's expertise in printing technology, could be of significant assistance in identifying the prints involved, analysing the deinking mill incident and supporting additional tests as appropriate.'

## Asia

### Huge demand increase

Traditionally, the end of December and early January are rather quiet business periods; contrary to this norm, however, the last seven weeks have produced a huge increase in demand. Indeed, price increases have been recorded for several months in succession, with the steepest hikes reserved for the lower grades of recovered paper such as OCC, mixed papers and news & pams.

Entering the second half of January, prices have shown signs of becoming more stable, leading to predictions from some quarters that a small correction might occur as mills in the Far East are struggling to assimilate these higher prices for their raw material. Also in January, ocean freight rates have continued on their slow declining trend.

Business in the middle and high grades has been very slow for several months, especially from India. But here too, demand seems to be picking up and prices have been rising.

In general, most qualities are in short supply and so high prices appear likely to be maintained.

As suggested in the BIR's latest Paper Mirror, recovered fibre supplies into Asia will have been affected by the floods in Queensland, Australia. □

**Contributing to the Recovered Paper Market Analysis:**

- Melvin de Groot (Van Gelder Recycling, the Netherlands)
- Marielle Gommans (Bel Fibres, Belgium)
- Steve Vento (Vipa Lausanne SA, Switzerland)

## Textiles

**By Günther Krippendorf, FWS Alta-West, Germany**

Since the onset of more challenging winter weather in November last year, original material has been in short supply within Europe. Collections have been generating relatively low quantities of original material; faced with almost empty warehouses, many sorting companies have been forced to cut production.

There is fierce competition between charitable and commercial collectors for available tonnages of original material. Many experts are predicting that prices will continue to escalate and that the market will become overheated, prompting fears of another crisis in the used clothing sector. Similar experiences in previous years have proved that the sector's structure is vulnerable to almost overnight collapse when the equilibrium between supply and demand becomes distorted. If a price war does indeed break out over originals, many smaller sorting companies are likely to disappear and capacities will be shut down.

European traders are describing sales of high-quality used clothing as 'satisfactory' at present. African countries have ordered large volumes in recent months; however, it is feared that steep increases in food and energy prices on the world markets will seriously impair their purchasing power when it comes to used clothing. Under such circumstances, sorting companies would find it virtually impossible to pass on their own higher purchasing prices to the customer base.

Meanwhile, Eastern European demand for winter clothing remains good and sales are relatively stable.

Demand for wiping cloths has also remained satisfactory and all grades can easily be sold; there are even expectations of moderate price increases becoming achievable in the near future. The recycling grades are still attracting healthy demand at stable levels. Orders for bed feathers are also very good and prices are moving higher. □

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# ASIA bucks downward paper collection trend

The latest global recovered paper analysis prepared by Italy's Giampiero Magnaghi, Past President of the BIR world recycling body's Paper Division, is founded on an interesting comparison between 2008 - a year only partially affected by global recession - and 2009, which was characterised throughout by an economic downturn. The following is a summary of his report, the full version of which can be found on the BIR website at www.bir.org.

Asia was the only major recycling region of the world to record higher recovered paper collection volumes in 2009 - with its total rising to just over 83.1 million tonnes from 80.65 million tonnes in the previous year. Elsewhere, volumes available for collection 'were adversely affected by generally poor economic conditions and the negative impact on consumer spending', concludes recovered paper industry stalwart Giampiero Magnaghi *(see Table 1)*. 'A drop in the production of paper and board had repercussions on arisings of recyclable material.'

The higher collection volumes in Asia went some way towards feeding the region's growing appetite for recovered paper. In 2009, China led the world in terms of recovered paper consumption on 61.75 million tonnes - equivalent to an increase of 11.3% over 2008. In second place was the USA on 25.9 million tonnes (-10.3%), with Japan third on 16.8 million tonnes (-11.6%).

The leading importers of recovered paper are covered in *Table 2*. The recovered paper export leader remains the USA with totals of 18.2 million tonnes for 2008 and 19.1 million tonnes for 2009.

## Easily outstripped

Global paper and board production advanced from 315 million tonnes in 1999 to 370.7 million tonnes in 2009. Pulp production was basically unchanged at around 179 million tonnes whereas recovered paper production soared from 144 million tonnes in 1999 to 210 million tonnes a decade later. Mr Magnaghi comments: '2009 was the fourth successive year in which generation and consumption of recovered paper easily outstripped that of virgin fibres.'

Use of recovered paper in China has grown to around 70% whereas the average for the rest of the world is nearer 55-56%. The country's imports are mostly in the form of bulk grades, accompanied by some smaller quantities of news. Around 41% is provided by the USA, 10% by the UK and 12% by Japan, with the remainder coming from various countries, the majority of which are members of the EU.

## Trend more pronounced

'Once again, it is clear that production of paper and board - and also of recovered paper - is a barometer of the state of the general economy,' concludes Mr Magnaghi. Global production of paper and board fell from 391.2 million tonnes in 2008 to 370.7 million tonnes the following year despite an increase in Asia from 154.9 million tonnes to 157.2 million tonnes. He states: 'The trend already observed in 2008 towards reduced production became much more pronounced in 2009. The West was the area most affected by these reductions but Asia also saw slower progress as a result of global economic upheaval.'

China witnessed increases in production and apparent consumption of paper and board in 2009 - in both cases of slightly more than 8% to 86.4 million tonnes and 85.7 million tonnes, respectively. Elsewhere, India and Indonesia were the only other countries covered by Mr Magnaghi's statistics to register a paper and board production increase in 2009. The biggest decline in proportional terms was the -19.2% recorded in Finland.

From the world perspective, apparent per capita consumption of paper and board fell to 54.4 kg in 2009 after having attained 59.2 kg in 2007 and 57.7 kg in 2008. □

**Table 1**
Recovered paper collections (tonnes)

| | 2008 | 2009 |
|---|---|---|
| Asia | 80 650 000 | 83 108 000 |
| Europe | 64 200 000 | 62 980 000 |
| North America | 51 400 000 | 49 900 000 |
| Latin America | 10 200 000 | 10 020 000 |
| Australasia | 3 320 000 | 3 340 000 |
| Africa | 2 250 000 | 2 140 000 |
| **Total** | **212 020 000** | **211 488 000** |

**Table 2**
Major importers of recovered paper (tonnes)

| | 2008 | 2009 |
|---|---|---|
| China | 24 200 000 | 27 500 000 |
| Indonesia | 2 080 000 | 2 290 000 |
| India | 1 755 000 | 2 135 000 |
| Mexico | 1 436 000 | 1 510 000 |
| South Korea | 1 307 000 | 1 120 000 |
| Thailand | 1 218 000 | 970 000 |
| Taiwan | 835 000 | 565 000 |


# Laptop designed for rapid disassembly

**A group of mechanical engineering graduates have created a computer which, it is claimed, can be subjected to complete manual disassembly in less than 30 seconds. The 'Bloom' prototype laptop is the result of collaboration between students at Stanford University in the USA and Finland's Aalto University.**

At the beginning of 2009, 3-D modelling technology firm and project sponsor Autodesk tasked students with developing an electronic product that makes e-cycling a more effective, engaging and complete process for consumers, and thus has the potential to reduce the volume of waste consigned to landfill.

The multi-disciplinary team included mechanical engineering students, a business student and two industrial design students from the universities of Stanford in the USA and Aalto in Finland. During the first few months of the project, the team worked to identify barriers to - and motivators for - recycling electronics, as well as key design requirements.

After four months, the team agreed that the focus of its electronic consumer product design efforts should be a laptop. 'We decided the laptop would be best because it's so difficult and shares almost all problems of recycling that other electronics have,' explains team leader Aaron Engel-Hall. 'If we can make a laptop recyclable, we can apply those lessons to anything else.'

## Ten steps

'Almost everything in a laptop is theoretically recyclable,' adds Engel-Hall. 'It's mostly metal, plastic and glass. The problem is that the metal, plastic and glass are completely integrated (with the rest of the laptop), and we need to separate them before they can be recycled.'

The Bloom can be disassembled by hand in 10 steps taking a total of around 30 seconds, it is claimed. A traditional laptop, meanwhile, requires three tools and some 120 steps to disassemble in a process taking up to 45 minutes. Among the features of the Bloom, there is an envelope with prepaid postage behind its screen for customers to send circuit boards to a specialist recycling facility.

Aaron Engel-Hall and his Stanford team members - Rohan Bhobe and Kirstin Gail - spent the first six months of the academic year conducting user testing and research to determine why people do not currently recycle their laptops and what would make them change their behaviour. Then they collaborated with four students at Aalto University on the actual design and construction.

## Working in relay

The 10-hour time difference between California and Finland actually helped the team as it neared its deadline. 'We would work around the clock and then, as we were going to bed, they were waking up, and we'd Skype briefly and tell them what needed to be done,' Aaron Engel-Hall explains. The Finnish students, in turn, would Skype their Stanford counterparts at the end of their own working day.

The team brainstormed several project ideas before deciding on a recyclable laptop, including toys that can change as children grow older, remote-control explosives and a phone with a bamboo seed that customers can water at the end of the product's life (the seed would sprout, crack the phone's casing and continue growing out of it). The team ultimately chose the laptop, says Engel-Hall, in order to generate the widest set of criteria for sustainable design.

For its efforts, the team won an award as Autodesk Inventor of the Month. The laptop is still in its prototype - or 'proof-of-concept' - stage and has not yet been adopted by any manufacturer. The team 'might be interested' in further developing the technology at some point, according to Mr Engel-Hall. □

**www.stanford.edu**

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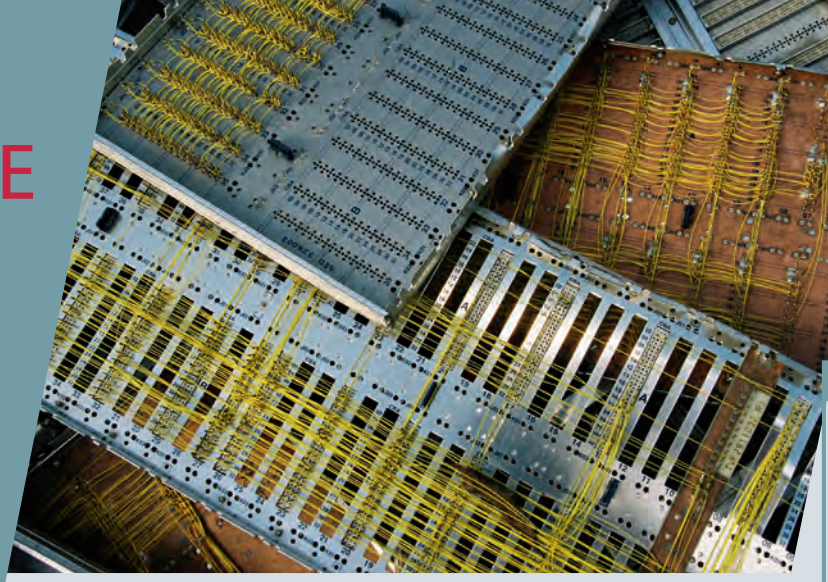
## *March*



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