

Recycling

International



E-scrap plastics expert:

'We need to press the reset button'

Turkey's ferrous scrap imports on the rise

Boom times for material handler producers

**E-mobility:
the game changer**

.LEFORT Amazone

. The largest machines in the LEFORT range



Conkest



Conkeror



Mobile



Midway TS



Midway BL



Amazone TS



Trax



Baler



B 500 A

FROM 300 to 3000T



LEFORT S.A.
Rue Tahon, 1 a
6041 - Gosselies
Belgium
T. + 32 71 35.16.09
@. info@lefort.com
www.lefort.com



Why we need the 'eye in the sky'



I have met him a couple of times now: Jim Puckett, director of the Basel Action Network (BAN), an organisation that combats both the illegal scrap trade and questionable recycling practices across Africa and Asia.

He is a frequently sought speaker at electronics recycling conferences and that offers great opportunity to observe him at first hand. And, I must say, he is an interesting character. Despite the fact that he always manages to exceed his allotted speaking time, Puckett is a good performer.

He is serious and, in a way, funny at the same time. He is the main character in his own revelations. Stories about illegal or unhealthy recycling sites are usually illustrated with slides of him climbing over fences in Chinese back alleys.

He is assiduous and determined and not easy to deflect from his purpose, which in his job is definitely a plus.

Also, he is a man of great description. He calls Hong Kong's New Territories 'cowboy country' referring to illegal and unhealthy recycling practices taking place there. Cowboy country says it all, no need for further explanation. It's immediately clear this is a very

bad place because Puckett says so. What I admire is his energy. Puckett never gives up. He seems tireless in fighting illegal exports of electronic scrap. When he hears of an illegal recycling site, he searches until he finds it. Puckett may be a pain in the ass for people or businesses that are, perhaps unintentionally, involved in the practices he combats. But at the same time they – at least some of them – embrace him. Since 2016, Puckett has placed GPS tracking devices in discarded electronic devices to check whether they are being shipped illegally to third world countries.

A few electronics producers – among them Dell and Samsung – have teamed up with BAN to use its GPS technology to monitor their own devices.

Should we see this as a 'keep your friends close but your enemies closer'? I don't know. What I do know is that big brands are well aware how much negative publicity can harm their reputation. You may hate or love him but it is good to have a watchdog like Jim Puckett around.

Martijn Reintjes
Chief Editor, Recycling International

Recycling International
Informaticaweg 3
7007 CP Doetinchem
The Netherlands

Editorial
☎ +31 (0) 88 29 44 800
✉ martijn@recyclinginternational.com
✉ kirstin@recyclinginternational.com

Advertisements
☎ +31 (0) 88 29 44 739
☎ +31 (0) 6 556 899 47
✉ judith@recyclinginternational.com

FORTRESS™

ATTACHMENTS FOR THE DEMOLITION &
SCRAP RECYCLING INDUSTRIES

DESIGNED AND
MANUFACTURED BY
SHEARCORE™
CONTACT US AT
INFO@SHEARCORE.COM
TO LEARN MORE ABOUT
OUR INTERNATIONAL
DEALER NETWORK.



FRG SERIES



FS SERIES

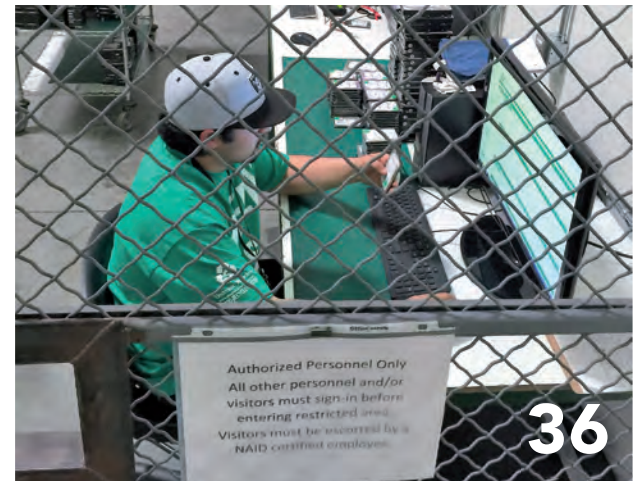
PHONE: 001-715-395-3715 ♦ INFO@SHEARCORE.COM

SHEARCORE.COM



COVER STORY

Impressive quantities of batteries are currently swamping the recycling market, and will continue to do so, according to Wassilij Weber, owner of the new collection service company Simpli Return.



BIR GATHERS IN LONDON

It is 'very likely' that China will close its doors to non-ferrous scrap imports by the end of 2020, stressed BIR non-ferrous division president David Chiao during the world recycling organisation's latest convention.



A NEW THREAT?

Studies have shown that various types of nanomaterials cause toxic effects, which makes the development of appropriate recycling strategies imperative.



IT'S DIVERSIFY OR DIE

Basic electronics recycling will not go away but relying solely on traditional models would be a dead-end street, US industry leaders warned at the E-scrap 2018 conference in New Orleans.

SECTIONS

Editorial	3	Buyers' Guide	72
Interview	6	Next issue	74
Trends & Updates	10/42		
Cover story	28		
Conference reports	14/36		
Country report	24	Market Analysis	
Technology	22/40	Ferrous	54
Niche market	46	Nickel & Stainless	58
In the Lab	67	Non-Ferrous	60
Events	68	Paper & Textiles	64
Beck's	71	Plastics	66



E-scrap plastics expert Craig Thompson:

'We need to press the reset button'

Plastic is still fantastic, despite the trade and environmental headaches, insists e-scrap plastics expert Craig Thompson. But we need to process more at home rather than relying on unsustainable export markets. 'If they are not doing so already, businesses involved in e-scrap worldwide will have to reshape.'

Craig Thompson is what you could call a global citizen. He's constantly on the move and his business card has mobile numbers for Hong Kong, UK, Netherlands, Brazil, Latvia and Canada and the USA. Recycling International meets up with Thompson in New Orleans at the E-Scrap 2018 conference. Thompson has been active in the e-scrap recycling industry for almost 20 years but he has never seen such change affecting the business than what is happening now. 'E-scrap plas-

WHO IS CRAIG THOMPSON?

Craig Thompson, 47, has been active in electronics recycling since 1999. He launched the UK's first franchised e-scrap collection system in 2005 and opened one of the UK's largest electronics recycling facilities. In the past ten years, Thompson has worked with the majority of e-scrap recyclers in Europe, Canada and the USA on outlets for their e-scrap plastics, and more recently with European manufacturers of e-scrap plastic processing and flat panel recycling equipment.

tics are one of the most complicated of plastics to recycle,' he says. 'Multiple polymer types, brominated flame retardants, contamination – wood, textiles, dirt, toner/ink residue, ceramics.... It is an endless list. The end markets have always been in China and more recently south Asia: Thailand, Vietnam and Malaysia. But now those markets have either closed or are closing and the recycling industry will be left with limited outlets to bring in revenue. But solutions do exist in Europe and there is talk of some new sites opening in the US and Canada.'

HOW WOULD YOU DESCRIBE THE SHIFT IN THE MARKET?

'There has to be a major change in the way recyclers and the industry handle e-scrap plastics. Over 25% of the items received by a recycler for processing will be plastic. For the European market, with kitchen appliances such as kettles, toasters, hand blenders and coffee machines, the percentage of the assembled product can be as high as 80%. With negative values for e-scrap plastics (or at best cost-neutral after transport charges), large volumes and end markets disappearing, stockpiling could soon be the next issue. The market needs to re-adjust to a cost for the treatment for e-scrap plastics rather than it being an income. Otherwise the industry could have the same issues as it did with CRT glass when we had warehouses full of plastic.'

WHAT ARE THE MAIN FACTORS CHALLENGING THE INDUSTRY?

'The lack of processing capacity and this presumption of receiving an

income for e-scrap plastics are some of the main challenges. As for CRT TV monitor plastics: there are some established recyclers in the US and Canadian markets receiving, treating and processing these plastics but at a much reduced value to what recyclers received when exporting baled CRT plastics to Asia.

The shredded mix of e-scrap plastics is one of the hardest plastics to recycle due to the mixture of polymer types. If you recycle a PET drinking bottle you may have only two or three polymer types (bottle – PET, label – LDPE, cap – PP). With e-scrap shredded plastics you can be looking at over ten different polymer types as well as contamination in the shred resulting in as much as 40% being non-recoverable.'

CHINA IS BEING FOLLOWED BY OTHERS IN THE REGION IN BANNING SCRAP IMPORTS. BASED ON YOUR EXPERIENCE, WHAT DO YOU SEE?

'It is not sustainable or even ethical for western countries to send plastics in the volumes they generate to smaller countries who do not have the infrastructure or capability to cope. They can only just about handle their own plastic waste without adding huge volumes of PET bottles, HDPE (shampoo, detergent, household bottles), LDPE (agricultural films, food packaging) and e-scrap plastics. Vietnam and Thailand are already closed to e-scrap plastics. Some may still take clean washed regrind but not baled or shredded materials. This summer, Malaysia announced the clo-



Craig Thompson: 'With Asian export markets closing, and reduced margins and policy changes in those countries receiving the plastics, it is just too risky for most traders.'

sure of 114 non-permitted sites. It is currently (October 2018) the only market in Asia accepting e-scrap plastics but this is likely to be stopped entirely soon. By the way, exports of plastics are not restricted to Asia. In Europe, Poland is also considering banning imports after seeing a major increase in volumes of low-grade materials delivered into the country. Some UK firms recently illegally exported more than 1,000 metric tonnes of low-grade material to Poland. The only sustainable solution is domestic recycling.'

WHAT IS THE IMPACT OF IMPORT BANS ON E-SCRAP TRADING BUSINESSES?

'Traders have either left the market or will do so shortly. Shipping lines are requesting large deposits on containers before loading them to ensure the container will be unloaded at the destination point and return empty. With Asian export markets closing, and reduced margins and policy changes in those countries receiving the plastics, it is just too risky for most traders. European recyclers are also being inundated with direct approaches from the producers of e-scrap plastics, leaving no room for traders to broker material for processing in Europe. With US legislation on exports of e-scrap plastics being less stringent, some traders may continue but only by bending the rules on customs paperwork.'

WHAT PROPORTION OF COMPANIES HAS CHANGED THEIR BUSINESS BECAUSE OF IMPORT RESTRICTIONS IN ASIA?

'If they have not done so already, all such businesses will have to reshape. Regulations, legislation, permitting, health and safety regulations, product handling, tenders, certification and auditing - the list continues - are a large part of every recycler's monthly routine and the paperwork burden will only increase. Those that have automated shredding and processing lines with investment in new processing equipment will gain market share, especially in the US and Canada. With new state legislation for recycling of e-scrap coming into force over the coming years, their volumes will increase.

Europe has had its Waste Electrical and Electronic Equipment (WEEE) regulations for over 10 years covering electrical and battery operated items. Throughout that period there have been many casualties, consolidations and changes within the market. Recyclers are having to change and adapt to new changes in the regulations and the types of products received for recycling: solar panels, large refrigeration equipment and battery operated scooters, bikes and power tools.'

WHICH OTHER CHANGES IN BUSINESS MODELS DO YOU SEE?

'Recyclers are already experiencing fewer printed circuit boards and less precious metals in computers, telecoms

recycling because it has been too easy to load a container and export it to Asia. Short-term contracts issued by waste management companies and schemes are also a problem as recyclers do not have sufficiently long periods to invest in processes and recycling equipment. The technology does exist to process e-scrap plastics at home: it is simply down to changes in legislation and the necessary investment to make it worthwhile.'

THAT'S EASIER SAID THAN DONE

'Clearly, this cannot happen overnight. For a recycler in Europe to push the button today and install a system for recycling domestic e-scrap plastics would take at least 12 months. So if

'Export markets for plastics to Asia are finished. Over. No more...'

equipment etc. They are now harvesting components and going down the reuse route to increase revenue. Reuse is always preferable to recycling but you are only delaying the end-of-life of the electrical item by anything up to two years before it is beyond economical repair or technically obsolete. So it will still need recycling.'

IF YOU WERE ASKED TO OFFER THESE BUSINESSES A SURVIVAL KIT, WHAT WOULD YOUR TOP THREE TIPS BE?

'Invest in new recycling equipment and automation; work together to stop the illegal export of e-scrap leading to non-registered or non-compliant recyclers; fight for legislation to prevent car shredders or incinerators processing e-scrap and to make sure it goes to a dedicated registered e-scrap recycler.'

'WHAT DO YOU SEE HAPPENING TWO YEARS FROM NOW? AND WHAT OF THE LONGER TERM, LET'S SAY IN 2025?

'Every country, irrespective of the waste stream it generates, should stop exporting and process more - if not all - at home. There has been a major lack of investment in domestic

Malaysia bans the import of plastics you are still looking at 2020 before a recycler could start to process their own plastics in their own country. Therefore 2019 looks bleak.'

SOUNDS A BIT PESSIMISTIC...

'Lets not end on doom and gloom. Recycling is the way forward, technology and solutions do exist to recycle plastics and other waste materials. I can give you a long list of European recyclers who go beyond shredding e-scrap and carry out further processing, producing high quality consistent plastic regrind from e-scrap as well as pelletising. At the same time, the wider recycling industry needs to press the reset button before it's too late. Export markets for plastics to Asia are finished. Over. No more. So we need to invest and process at home rather than relying on unsustainable export markets. My focus is on e-scrap plastics but it is no different for shampoo, detergent bottles or agricultural films. Recycling of e-scrap has a bright future and it is still one of the world's fastest growing waste streams. E-Scrap plastics have a higher revenue after processing so income can be generated for the long term.' 

Now with the new
MAX CAB cab



COUNT ON GREEN

MODERN MATERIAL HANDLERS FOR SCRAP

830E



Telehandler
5,5 t

Balancer
130-300 t

Material Handling
17-160 t

Duty Cycle Crane
13,5-300 t

Crawler Crane
50-300 t

Telescopic Crane
16-120 t

Mobile Harbour Crane
300 t



Alfred Endl



SENNEBOGEN
Maschinenfabrik GmbH

Sennebogenstraße 10
94315 Straubing

➔ alfred.endl@sennebogen.de

SENNEBOGEN



Baxi: we are a step closer to global recycling success

Based on the success of this year's inaugural Global Recycling Day, the event is being expanded into a full-fledged Global Recycling Foundation. This unique, trade-backed, body will promote the best practices of the international recycling community while boosting social engagement and encouraging

businesses to make their own recycling pledges.

Global Recycling Day 2018 had the support of ten world leaders as well as 10.5 million social media impressions. 'We have truly sparked a movement,' says an enthusiastic Ranjit Baxi, creator of the initiative and president of the Bureau of

International Recycling (BIR). But he feels sure more can be done, preferably year-round, to ensure recycling gets the attention it deserves from consumers, entrepreneurs and legislators.

Baxi told delegates of the BIR gathering in London this October that he had secured a meeting with the United Nations Industrial Development Organization (UNIDO) before the end of the year. Ultimately, Baxi hopes Global Recycling Day will become an official holiday around the world.

The nine key objectives of the Global Recycling Foundation are:

- Support and celebrate Global Recycling Day on 18 March each year
- Promote recycling as the 'seventh resource'
- Foster the promotion of recycling across the world, and support and share best practices and innovation

- Protect biodiversity
- Commit to, and promote, eco-responsibility and the circular economy
- Encourage responsible, sustainable and inclusive environmental actions to the benefit of ecological developments
- Support statistical, economic and social studies in the field of recycling.
- Support research and innovation in the field of recycling.
- Support educational programmes, university and scientific research in the field of recycling.

Baxi also announced that the focus of Global Recycling Day 2019 would be 'the power of youth, education and innovation'. He described the theme as 'recycling into the future'. The foundation's growing team will further boost (online) engagement with youngsters via social media posts, blogs and videos.

RECYCLING HIGH SCORE

The latter includes an ice bucket-style challenge that is hoped to go viral. The challenge will be linked to next sports – especially soccer – to encourage people to 'score' many recycling points. A potential high profile affiliation with the Johan Cruyff Foundation (named after the famous Dutch soccer player/coach) was revealed in London. 'To truly harness the power of recycling we must come together to find the most innovative solutions and ensure we use these to engage young people across the globe,' Baxi said at the BIR assembly. 'The youth of today are our future, and we must ensure they develop a 'resource, not waste' mind-set in to order to look forward to a sustainable future.'

www.globalrecyclingday.com

REDWAVE®

RECYCLING & WASTE TREATMENT SOLUTIONS

- ++ sensor based sorting machines**
- ++ complete recycling plants**
- ++ waste treatment technologies**
- ++ process monitoring and control system**





REDWAVE 2i
The new generation of INTELLIGENT sorting

Visit us at: ECOMONDO (IT) | POLLUTEC (FR) | IE EXPO (CN) | CHINA GLASS (CN)

www.redwave.com

REDWAVE Headquarters Austria: 8200 Gleisdorf
Subsidiaries: Germany | US | China | Singapore

FUTURE RECOVERY: E-CAR BATTERIES WILL DELIVER BILLIONS IN RECYCLED METALS

Metals worth more than US\$ 20 billion (EUR 17 billion) will be extracted from electric car batteries every year 2028, according to Berenberg research. Three million electric cars were on our roads last year and that could increase to 125 million by 2030. Sales of e-cars in China represented half of the one million e-vehicles sold globally in 2017. Based on this trend, Berenberg expects metals recovered from spent car battery cells to be worth US\$22 billion a year within a decade. This benefit is because of strong demand for the battery materials lithium and cobalt. Cobalt prices have virtually doubled in the last two years with supply concentrated in the Democratic Republic of Congo.

Established recyclers may seem to have a head start, says Berenberg, but Chinese battery leaders 'can win the recycling race'. It points out that China has subsidised electric vehicles and promoted companies like battery manufacturer CATL. Beijing is also pressing for sales of e-cars vehicles to touch seven million by 2025.

NEW DATA: THE WORST RECYCLING NATIONS IN THE EU?

The European Commission says 14 EU Member States are 'at risk' of missing the mandatory 50% household recycling rate target set for 2020. It has released a new report ranking the 'worst recyclers'.

Poland is slowly climbing out of the lower tier of Europe's recycling ranks. The country currently recycles almost 45% of its waste while around 35% goes to landfills. This represents one of the lowest landfilling rates among the 14 low-performing countries. Another example of a country on its way up is Finland, which recycles 42% of its post-consumer materials. As in previous years, Malta is the worst recycler. Its recycling rate is stuck at only 7%, while 83% of its waste is sent to landfills. Malta thus boasts the lowest recycling rate as well as the highest landfilling rate.

A close second is Romania (recycling 13% of its waste while landfilling 69%), followed by Greece (recycling 17% and landfilling over 80%) and Cyprus (recycling 17%, with 75% going to landfill).

Estonia is a remarkable case. The country may not be doing brilliantly in terms of recycling (28%) but it manages to landfill only 10% of its material. The EU points out that Estonia still incinerates far more than it recycles. Spain and Portugal recycled around 31% of their material while landfilling 57% and 45% respectively. Hungary recycled 35% and landfilled 51% of its post-consumer materials.

'None of these countries is set to hit the EU recycling targets for 2020 as they currently stand,' says Adrian Gibbs, principal consultant at Eunomia, the consultancy firm that produced the report. The EU has compiled advice for each country and it is hoped these proposed changes may help boost recycling rates just in time.

WIELAND-AURUBIS DEAL STILL IN DOUBT

The proposed acquisition by Wieland Werke of Aurubis Rolled Products rumbles on. The last issue of Recycling International reported the deal would be reviewed by the European Commission. Now the regulators have told Aurubis and Wieland that the transaction cannot be approved in its current form.

A press statement from Aurubis said the EC has sought changes that Wieland was not obliged to offer under the agreed sale and purchase agreement, making a deal less likely. Jürgen Schachler, Aurubis executive board chairman, promised the support of his company.

Dr. Erwin Mayr, ceo of the Wieland Group, was quoted as saying: 'We do not share, in this form, the commission's current assessment that further conditions are necessary to approve the sale of Aurubis AG's flat rolled products segment to Wieland-Werke. In our estimate, both the customers and the entire industry would benefit from the merger.'

However, Reuters reported on 18 October that certain unspecified concessions had been made. A final ruling is due in January.



THE ORIGINAL WITH A NEW FORMULA

- + longer lifetimes
- + significantly improved stress resistance
- + noticeable reduction of the risk of chipping



www.stahlwerke-bochum.com

BRIGHT FUTURE FOR OPTICAL SORTING MARKET

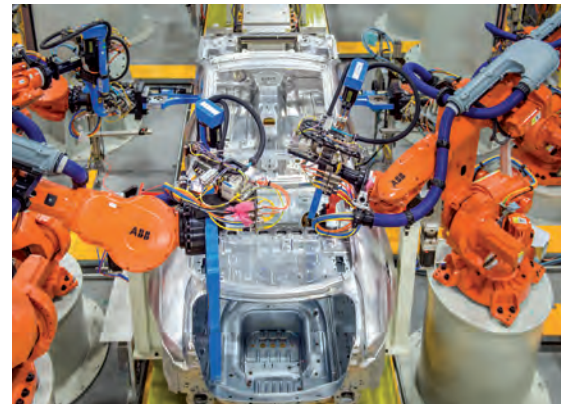


The worldwide optical sorter market will be worth at least US\$ 3 billion (EUR 2.6 billion) by 2024, according to Global Market Insights. 'The rising focus on automation to increase the productivity will provide an impetus to the optical sorter market,' analysts state in a new report. In Europe, demand for optical

sorters will grow more than 9% during by 2014, mostly because of the rapid generation of e-waste, which constitutes the fastest-growing waste stream on the continent. Modern-day sorting solutions employ advanced image-processing software and high-speed cameras to scan and sort materials more quickly, Global Market Insights observes. An example given is German firm ANDRITZ MeWa which has recently built a dedicated e-scrap recycling plant in the UK. The state-of-the-art site is equipped with the latest Sesotec optical sorters to process computers, refrigerators, and many other products.

NOVELIS AND TRAFIGURA SET UP NEW FACILITIES

Novelis has broken ground on the expansion of its automotive aluminum manufacturing facility in Changzhou, China. The US\$ 180 million (EUR 157 million) investment will double the



facility's production capacity of heat-treated aluminum sheet by 100 000 tonnes to better meet the growing demand for automotive aluminum in Asia. The facility will also be equipped with a high-speed slitter, and a fully automated packaging line. The expansion is expected to create approximately 160 jobs. The project is scheduled to be completed in 2020.

In another development, Trafigura is to establish an integrated copper, zinc and lead smelting-refining complex in Saudi Arabia. FastMarkets MB (formerly Metal Bulletin) reported that the multi-billion-dollar project in Ras Al-Khair Mineral City, will be jointly developed and equally owned by Trafigura and Modern Mining Holding - an affiliate of the Riyadh-based Modern Industrial Investment Holding Group. A binding agreement to finance and operate the complex has been backed by Saudi Arabia's Ministry of Energy, Industry & Mineral Resources.

On the other hand, Fastmarkets also reported that Alcoa is shutting its aluminium smelting operations at La Coruña and Avilés in Spain. The plants have a combined output of 180 000 tonnes per year producing primary aluminium, billet and slabs. The company blamed small production capacity, less efficient technology and high fixed costs for the closure. Alcoa said it had attempted to reduce costs and maintain jobs but the plants remained uncompetitive.

 ELECTRONIC SORTING

SEA OPTICAL SORTERS INNOVATION & EXPERIENCE



SEA CHROMEX
RGB FULL-COLOR TECHNOLOGY



SEA HYPERSORT
NIR HYPERSPECTRAL TECHNOLOGY

The best polymer and color sorting solution.
Available for PET, PE/PP, PVC, PS, PA, ABS, granules, pellet and other grinded materials.



CIMBRIA Srl a Socio Unico
Via Colombarotto 2, 40026 Imola (BO) Italy | Tel. +39 0542-361423
info@seasort.com | www.seasort.com | www.cimbria.com

**SOLUTIONS.
TOGETHER.**



AUDI AND UMICORE AIM TO RECOVER 95% OF BATTERY METALS

Audi and Umicore have successfully completed the first phase of their strategic research cooperation for battery recycling. They are developing a closed loop 'raw materials bank' for components of high-voltage batteries so valuable metals will not be wasted.

Audi analysed the batteries used to power its latest vehicle, the A3 E-tron plug-in hybrid car, and defined ways of recycling them before launching its collaboration with Umicore this June. The car manufacturer is determined to boost the recycling rates for battery components such as cobalt, nickel and copper. The outcome of this new partnership is said to be 'very promising'. Umicore, which is based in Belgium, says laboratory tests suggest that more than 95% of these elements can be recovered and reused. Audi manufactures vehicles at 16 locations in 12 countries. Last year, the group sold 1.878 million cars.

UK DISMANTLER TO SCRAP OFFSHORE GAS PLATFORMS

Vessel and oil drilling platform dismantler Able UK has been awarded the contract to recycle and dispose of natural gas platforms from the Sable Offshore Energy Project (SOEP) operated by ExxonMobil Canada off the coast of Nova Scotia. The project will be managed by the Able Seaton Port facility on the River Tees in north-east England and the first shipment of the structures is scheduled to arrive there in the second quarter of 2020. 'This contract reflects our reputation and the expertise we have built up over many years as leaders in the rapidly developing offshore decommissioning sector,' says Able UK ceo Peter Stephenson. The project will involve the removal of seven platforms and their jackets using one of the biggest crane vessels in the world, the Heerema Thialf, with the components being transported to Able Seaton Port by barge. The onshore dismantling, recycling and disposal work is due to be completed within ten months.



Commitment

Advanced global design, manufacturing and customer support.



N-Series™ Lindemann™ Texas Shredder™
Pre-Shredders • Shredders • Shears • Balers • Briquetters

Achieve Greater Efficiencies. Ask Metso.



metso.com/metal-recycling



Indonesia reaps the benefits from a volatile stainless market

Nickel price volatility has been ‘pretty intense’ over the last couple of months and that will not change in the foreseeable future, according to market analyst Jim Lennon. He expects the LME cash price to be around US\$ 16 000 per tonne next year, up significantly from the US\$ 13 800 price forecast for 2018.

Output for the world stainless steel sector increased more than 6.5% last year but that growth rate shows ‘signs of peaking’, Lennon told the Bureau of International Recycling’s convention in London. The Macquarie Group analyst said growth was predicted to be around 3.5% this year and 2.5% in 2019. The encouraging news was that nickel use in batteries, mainly in electric vehicle applications, was growing at 30-40% per annum – but ‘from a low base’. Regarding global stainless steel production, Lennon projected that the use of nickel scrap will increase from 904 000 tonnes in 2017 to 945 000 tonnes this year and perhaps 983 000 tonnes in 2019.

THE RISE OF INDONESIA

‘Overall, global industrial production of stainless steel is now slowing. There is huge growth in China and Indonesia but prices in these countries are being forced lower by overproduction,’ Lennon told delegates, with Chinese mills facing the onslaught of low-cost

Indonesian stainless steel. ‘And now Taiwan is feeling the heat,’ he added, explaining that 48% of Indonesia’s material had been diverted from China to Taiwan this summer. Indonesia has emerged as a powerful player in the nickel and stainless steel markets. It has been ‘a very large contributor’ to stainless steel production growth over the last 12 months, thanks mostly to the China-based Tsingshan company. Tsingshan added upwards of two million tonnes of annual stainless melt capacity in Indonesia last year and will add another one million tonnes during the second half of 2018. Historically, more than 80% of its exports had been shipped to China but Taiwan was now becoming the leading importer. Indonesia is believed to account for a quarter of global nickel supply in 2018.

STILL IN DEFICIT

New figures released by the International Nickel Study Group indicate that world usage of the metal will

reach 2.422 million tonnes next year, exceeding global production of 2.389 million tonnes.

Lennon said recent price correction for nickel ‘reflects trade war uncertainties between the US and China’, adding it was difficult to follow stock changes because half of the inventory was stored in cheaper non-LME warehouses, particularly in Europe, and that sector was growing.

WATCH OUT?

Lennon said the current ‘protectionist phase’ sparked by trade barriers put in place by US president Trump made it difficult for analysts to accurately forecast future developments. The international trade was leading to inaction, Lennon added, and recyclers and traders were adopting a wait-and-see attitude: ‘Which means they are mostly waiting to see how bad it will turn out.’ Meanwhile, European prices were under pressure from Asian exports diverted from the US to Europe ahead of the EU’s own ‘safeguarding tariffs’ kicking in. On the bright side, US stainless mills were able to maintain a high scrap melt ratio, said Omar Al Sharif of UAE-based Sharif Metals International. US stainless mills appeared confident of sourcing material as required ‘at continued historically high discounts applied to nickel values’, he added. ©



Non-ferrous market may recover if 'blunt' tariff axe is put away

Aluminium prices are predicted to be between US\$ 1 910 and US\$ 2 380 per tonne next year while copper will be around US\$ 5 600-7 200 per tonne - but only if the global trade war sees some kind of truce, Edward Meier told the non-ferrous division gathering of the Bureau of International Recycling (BIR).

'Many metals are not perceived as tight as earlier in the year,' the Commodity Research Group analyst told delegates in London, noting that interest rates in key recycling markets, notably the US, were being raised 'aggressively'.

SHUFFLE IN EXPORTS

Meier said China's trade was now at 18% of GDP, down from 35% back in 2006. Chinese exports to the US will exceed US\$ 500 billion this year, while it imports materials and products from the US worth around US\$ 130 billion. China imported 2.17 million tonnes of aluminium scrap in 2017. During the months April, May and June this year, figures show a decline of 40% over the same period last year (averaging 115 000 tonnes per month). Mexico, on the other hand, saw record imports of aluminium from the US, said Alejandro Jaramillo of Glorem SC. 'US exports to Mexico are running about 20% higher than last year,' he reported. Demand for Mexican copper and brass scrap is also 'robust' now that Chinese buyers are eager to find a tariff-free replacement market.

'A BLUNT INSTRUMENT'

'Politics are getting increasingly polarised,' Meier said, hinting at the tense relationship between the US and

China since president Trump issued a 10% import tariff on non-ferrous metals. 'Based on the persisting toxic climate, the trade war isn't going away. Although it's clear to see that tariffs are a very blunt instrument.' As Meier put it, China 'has bullets to hit back with': it can raise export taxes, slow down customs clearances, conduct more inspections, reduce foreign investments, or even cut back on its purchase of US debt. 'Tariffs will undoubtedly create more problems than they will solve,' Meier declared.

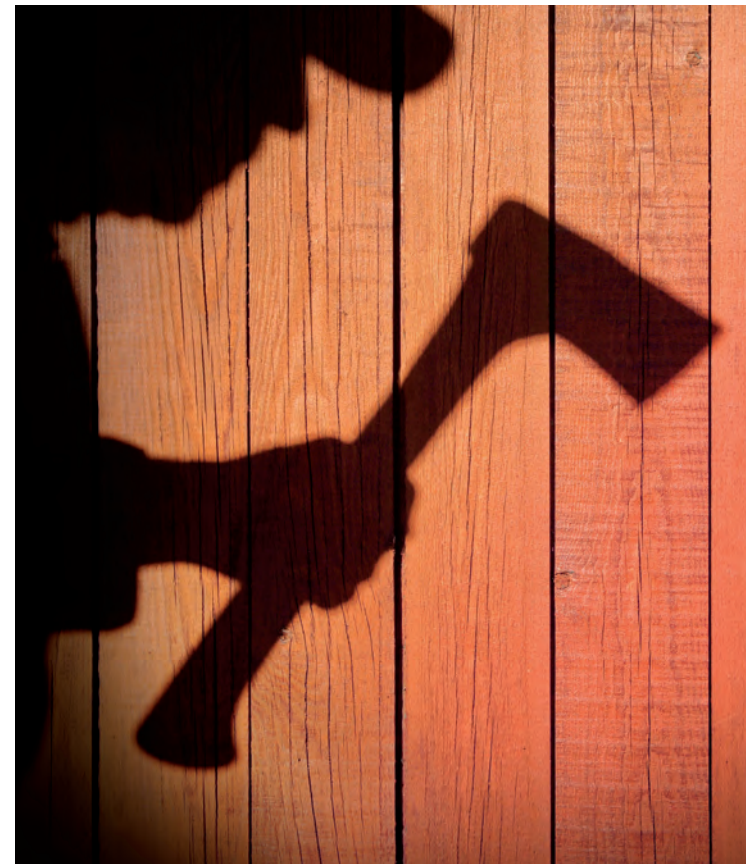
CLOSE TO THE FIRE?

Meanwhile, Indian exporters have been 'hit hard' by the devaluation of the rupee, Dhawal Shah of Metco Marketing told BIR. He was glad the 'frenzy' of material diverted from China to India was largely over and said the Indian metals market had turned out to be 'resilient'. Shah added that metal demand was 'stable', growing around 10% every year thanks to the top-performing automotive sector. Currently, the worldwide recycling industry is 'extremely unpredictable', concluded Michael Lion of China-based Everwell Resources. This was largely because 'there is too much scrap in the wrong places'. Lion's answer on how to deal with trouble-

makers is simple: 'Let's hold their feet to the fire'.

TALKS OF FULL-ON BAN

BIR's non-ferrous division president David Chiao believed it was 'very likely' that China would close its doors to non-ferrous scrap imports by the end of 2020. He warned delegates that the global metals sector had to brace itself for 'a perfect storm'. This also applied to China's domestic recycling market, Chiao said, as unemployment will go up, import volumes will be reduced and scrap prices will rise 'sharply'. Closures of smaller recycling enterprises down the line are inevitable, he added. 





Vezzani
Scrap Processing Equipment

Our Expertise Working for You





Billions of green bonds may benefit plastics recycling sector

'The production of plastics is growing so much that we could be producing 1 100 million tonnes by 2050,' was the view of plastics recycling expert Surendra Borad Patawari at the Bureau of International Recycling (BIR) conference in London. 'It seems we simply cannot live without plastics,' he said.

Today, almost 300 million tonnes of plastic is manufactured globally every year and only an estimated 20% is recycled through proper channels. But there is 'an enormous amount of funds' available for investment in plastics recycling, Patawari told delegates.

SURGE IN 'GREEN BONDS'

'Five trillion dollars will be divested from oil and coal-based industries this year,' the ceo of Gemini Corporation pointed out. Green products and services, on the other hand, are on the rise. 'US\$ 250 billion (EUR 220 billion) will be invested in 'green' bonds being issued this year. That's around 40% higher than in 2017,' the entrepreneur noted.

CONSTANT DEVELOPMENT

Patawari cited a recent article published by McKinsey & Company stating that the volume of plastics recycling is likely to increase from 55 million tonnes per annum to 230 million tonnes in the next 12 years. This

momentum is backed by the 'constant development' of innovative recycling systems, he said. As an example, it costs less than US\$ 100 000 (EUR 88 000) to establish a sorting line with a capacity of 1 200 tonnes per month.

PARTING WORDS

Borad Patawari shared with delegates that the London gathering was to be the last time he would serve as chairman of BIR's plastics division. During his 12 years as chairman, he said, he had seen commitment and 'bold steps' from recycling entrepreneurs across the world. As to the future, Patawari hoped that administrative burdens over exports would be reduced 'as much as possible' to ensure a free flow of goods. 'First it was China that placed restrictions on imports of plastic scrap. That was followed by Malaysia, Thailand, Vietnam and Taiwan. Now, India is being added to the list, primarily because import licences have not yet been extended

and they expire in November.'

The outgoing chairman remained optimistic that the licences would be renewed in November. Traditionally, India purchases roughly 200 000 tonnes of plastic scrap – mostly LDPE. Luckily, he said, imports of PET flakes are 'not hampered' as they do not require licences. 📌

MALAYSIA STRIKES BACK

Reuters data suggests that annual imports of plastic scrap into Malaysia reached almost 500 000 tonnes in 2017 – up from 288 000 tonnes the previous year. It was recently reported that some material sent 'for recycling' had actually ended up in Malaysian landfills. Until August this year, the UK exported over 88 000 tonnes of plastic scrap to Malaysia, representing more than a quarter of the UK's total plastic scrap exports. Malaysia also received an estimated 150 000 tonnes of material from the US during the first six months of the year. Researchers and journalists collaborating for Greenpeace's 'Unearthed' project reported they found multiple sites where UK household plastics bundled for recycling were being stored outdoors in tropical conditions, thus rendering them largely unrecyclable. Malaysia's environment minister Yeo Bee Yin has pledged to tackle the matter swiftly and announced on 16 October that the government had frozen the issuing of new licences to establish plastic waste recycling factories in Malaysia. He has also banned the import of such materials 'to ensure existing illegal factories do not continue their operations'.

Another big leap for e-scrap – will recyclers catch up?

E-scrap in India is expected to grow at an annual rate of 10% from 2017 to 2020, according to Surendra Borad Patawari of Gemini Corp in Belgium. But will recyclers be able to process this largely untapped pool of materials in a market still thwarted by dumping, scavenging and high compliance costs?

Mumbai ranks first in the top five of India's big cities that generate over 60% of the country's annual e-scrap waste flow. Other major contributors are Delhi, Bengaluru, Chennai and Kolkata. Televisions and computer monitors make up roughly 70% of all e-scrap in India. The Associated Chambers of Commerce of India believes that the demand of domestic electronic products will reach US\$ 400 billion in the next two years.

BIG BUSINESS IN INDIA

This year alone, the country is thought to generate 3 million tonnes of e-scrap, Patawari noted at the London assembly. He stressed that India's economy is 'one of the strongest' at the moment, growing 8.2% in the first quarter of this year.

E-SCRAP VOLUME RISING STEADILY

The international e-scrap market is anticipated to expand 5.6% by volume during the 2016-2026 period, new data by Transparency Market Research reveals. For example, the used printed circuit boards niche will exceed 3 million tonnes by 2026, up 7.3% from roughly 1.50 million tonnes processed in 2016.



The International Monetary Fund has even projected that India will become the world's fastest growing economy with a 7.3% increase in gross domestic product in the new financial year. Patawari observed that this could mean 'big business' for India's slowly maturing electronics recycling market.


TO COMPLY OR NOT...

Recyclers of cooling & freezing equipment as well as cathode ray tubes could potentially cut costs by at least 20% if they do not meet all quality and service requirements, reported Federico Magalini, managing director of Sofies UK. This includes opting out of doing audits, not reporting results to authorities and not conducting waste characterisation. Proper processing of a cathode ray tube screen are put at EUR 282, per tonne; EUR 226 for small household

appliances; and EUR 201 for cooling & freezing units. 'Ultimately, the effect of avoided compliance costs is much larger than margins,' the Magalini urged.

SCAVENGING LOSSES

Citing an in-depth market study by the European Electronics Recycling Association (EERA), he added that the 13 EERA affiliated e-scrap recyclers earned EUR 170 million less than they should have in 2016 because of an 'alarming' materials scavenging problem.

Especially the cooling & freezing sector is hit hard by scavenging, with product scavenging averaging 48% in 2016. In 22% of cases, the compressors (worth EUR 14 million) were scavenged. Roughly EUR 28 million worth of circuit boards were scavenged in Europe that year. 

US ferrous scrap exports to Turkey grow amid market tensions



The volume of US material among all Turkish ferrous scrap imports was 20.3% in August, up from the average of 17.6% seen in the first half of the year. 'Movements show that US scrap market prices remain largely dependent on Turkey,' says Fastmarkets metals analyst Lee Allen.

America's high-consumption scrap markets still rely on exports (almost 18%) and US President Trump's widely discussed Section 232 tariff measures have done little to change that, Allen told delegates at the London gathering of the Bureau of International Recycling (BIR). Despite political and economic pressure with the lira losing nearly 40% of its value in 2018, Turkey's reliance on US scrap imports has gradually increased over the last couple of months.

VIOLENT REACTIONS

'Indeed, the strong mutual dependence between the US and Turkey is a

critical factor in today's ferrous scrap market,' Lee said. The UK, however, had reacted 'most violently' to the Turkish downturn, with scrap exporters trying to diversify their customer base. On the whole, Lee expects tighter collection rates and the EU's safeguarding tariff to raise scrap prices at the start of 2019.

'US export prices, although up, appear to be levelling and should provide some comfort in the short term', remarked George Adams of SA Recycling. He believes domestic demand and decreased supplies could push up domestic scrap prices this

month. 'Demand remains strong as the mill capacity utilisation rate hovers in the 80% range and many electric arc furnace mills are running closer to 90%,' Adams stated.

CHINA USES 41% MORE SCRAP

Meanwhile, Turkey's overseas steel scrap purchases surged by more than 15% to 10.771 million tonnes in the first six months of this year, reported Rolf Willeke, statistics advisor of BIR's ferrous division. This performance reinforced its position as the world's leading importer of steel.

The EU-28 remains the biggest steel scrap exporter, Willeke added, and outbound shipments in the first half of 2018 rose by 7% to 10.714 million tonnes. There was also a surge of 41% in steel scrap used for crude steel production in China during the first half of 2018 (*not a surge of 105% as was previously reported). The total stood at 87.7 million tonnes produced, compared to 62.2 million tonnes during the same period last year. ©

ADDING VALUE

BENEFITING BRIQUETTING

- volume reduction**
- Simplified logistics - reduced transport costs**
- recovery of cooling lubricants**
- Defined scrap quality**
- Additional revenue for briquettes**

Briquette chips, dust and sludge from aluminium, cast-iron, steel, copper alloy and many other materials.

www.briquetting.com/contact/ Ruf Maschinenbau GmbH & Co.KG | Tel. +49 (0) 8268/9090-20 | info@briquetting.com

RUF

BRIQUETTING SYSTEMS

Will Bulgaria's textiles levy jeopardise European recycling?

The Bulgarian Government has drafted legislation for a levy on all used clothing put on the market in Bulgaria. The levy is being proposed under the auspices of an extended producer responsibility (EPR) scheme for clothing.

The Bulgarian Association of Recyclers Textiles and Second Hand Clothing (ARTSHC) has two concerns: whether the levy will be placed on new clothing as well and whether the funds raised will help finance the collection of used clothing and textiles in the country.

A LEVY OR A TAX?

If the latter is not the case, then it is argued this is simply a tax on used clothing in Bulgaria. Such a measure would directly contravene EU free trade regulations, which prevent individual member states from taking action to disrupt or distort the trade of products.


The association is also concerned that if such a law is introduced and the Government is not required to reverse the move, then other Eastern European countries might consider introducing similar levies. 'If this were to happen, this could significantly disrupt the used clothing markets,' ARTSHC says.

PREVENTING BURNING OF TEXTILES

Ministry officials have stated that the intention of the changes is to implement 2018 revisions to the EU Waste Framework Directive. They say the EPR fees are justified in order to pre-

vent the burning of waste textiles within Bulgaria as well as reducing imports of second hand clothing.

UNINTENDED CONSEQUENCES

Even so, ARTSHC is sceptical such a levy would lead to the intended outcome and fears 'unintended consequences' for recyclers. In the worst-case scenario, it could result in the closure of Bulgarian sorting companies with this additional direct cost on their businesses. 'This will also jeopardise other textiles industries across Europe that export second hand clothing to Bulgaria,' the association argues. Nor would collection systems and collectors across the EU achieve the value of the textiles they collect. 'These adverse effects will undermine the general credibility of EPR, and in particular the use of EPR for the Circular Economy,' according to ARTSHC. 



WILL THE RETAIL INNOVATORS PLEASE STAND UP?

How can the UK's fashion industry – that is worth £28 billion (US\$ 36 billion) a year to the UK economy – effectively reduce its environmental footprint? That's what Labour MP Mary Creagh has asked the nation's 10 leading retailers.

'The way we design, produce and discard our clothes has a huge impact on our planet. We want to hear what they are doing to make their industry more sustainable,' states Craegh, who is Chair of the Environmental Audit Committee.

Consumption of new clothing is higher in the UK than any other European country – 26.7kg per capita, she urges. This compares to a consumption rate of 16.7kg (Germany), 16kg (Denmark), 14.5kg (Italy), 14kg (Netherlands) and 12.6kg (Sweden). Meanwhile, clothing production has almost doubled in the last 15 years.

Creagh has pinpointed six major themes for the retailers to address. These include whether they use recycled materials; how long clothes are kept and how they encourage recycling; whether they incinerate unsold or returned stock; as well as what steps they are taking to reduce the risk of microplastics contaminating the ocean.

Hazardous or not? Rubber recyclers fight media claims

The American market for rubber infill has fallen nearly 30% in recent years because of negative media reports about potential safety concerns, it is claimed. But, according to Robin Wiener, president of the Institute of Scrap Recycling Industries, 'no safety risks existed' and that had been proven by more than 100 independent studies.

Despite this research and passionate and continuous efforts from the sector to promote rubber infill, the use of recycled rubber has slumped severely across the United States following media concern. The benefits of recycled rubber were well-known, Wiener told the London convention of the Bureau of International Recycling (BIR). And yet, decision makers were 'letting emotions take over' and not looking at scientific facts.

MORE STUDIES TO FOLLOW

Wiener pointed out that a multi-agency study in the US into potential risks was due to be made public next month. She emphasised the importance of presenting the conclusions in 'plain language' to help convince the public of the true properties of recycled rubber.




On a positive note, Wiener said the US Congress was currently discussing an infrastructure reform. She had therefore joined forces with other recycling stakeholders to 'push for incentives' for rubber asphalt.

FEWER OUTLETS AVAILABLE

Fazilet Cinaralp, secretary-general of the European Tyre & Rubber Manufacturers' Association reported that around 75% of Europe's end-of-life tyres – equivalent to more than 1.4 million tonnes per year – served the vast granulation market. Citing last available data (2016), she pointed out that 48% (2 million tonnes) of discarded tyres in the EU serve material recovery. Another 28% (1.1 million tonnes) serve energy recovery, with 10% being reused or exported, and around 7% and 6% being retreaded or landfilled. In the US, the lion's share (41%) of used tyres served energy recovery in 2017. Approximately 24% benefitted the granulation market, while 8% were

used in civil engineering projects, and 15% of tyres got landfilled.

CHANGES IN END-OF-USE

Sadly, end-use applications 'remained a challenge', Cinaralp stated. She told the assembly that 'many outlets for rubber infill have closed' and a growing number of municipalities were declining to use the material. Even successful markets like sports and playground surfaces saw a decrease in recycled rubber use from 48% and 20% in 2010 to 37% and 17% last year. The same trend is being observed for rubberised asphalt; this market used almost 7% of recycled rubber in 2010, which dipped to just 2% in 2017. Cinaralp added that the European Chemicals Agency was investigating the possible health and environmental impacts of substances contained in the granules and mulches derived from end-of-life tyres. This research is expected to be published in 2019 and could lead to restrictions on more substances in waste tyres. 

EUR 30 million test centre to make material handler manufacturer Liebherr future-proof

Ramping up capacity

These are exciting times for Liebherr. Within two years, the company has seen production at its material handling division grow by 100%. Moreover, Liebherr has recently unveiled a brand new test facility in Germany.

'This site strengthens the innovative power of our company, exactly as my grandfather and founder of Liebherr, Hans Liebherr, would have wished.' So said third generation Jan Liebherr during the official opening in early October of the company's new development and test centre at Kirchdorf an der Iller, south Germany. It is here that Liebherr manufactures and assembles, among other equipment, its scrap material handlers that are supplied to recyclers all over the globe. EUR 30 million was invested in the facility which consists of a huge

testing hall and a demonstration site, covering in total close to 130 000 m².

HIGH AND MIGHTY

The key component is the 4 500 m² test hall which stands 19 metres tall. The hall features a 13-metre high door that accommodates fully assembled machines, including the biggest material handlers often used at large scrap yards and in ports.

In the future, all prototypes from Liebherr-Hydraulikbagger GmbH's portfolio will be built and optimised in the test hall. The facility also boasts a

noise measurement site and a 1.2 km testing track with slopes and poor-quality roads for practical tests and live demonstrations.

'With the new development and demonstration centre we are making Liebherr fit for the future,' says the company. 'It enables us to optimise development and test operations.' The official opening was carried out by Jan Liebherr, manipulating a scrap shear from the cabin of an XXL excavator to cut a red band of iron.

ONE OF A KIND

Liebherr's technical manager, Haudraulikbagger (Excavator), Werner Seifried praised the Liebherr family's commitment. 'This test centre is unique in Europe,' he said, adding that the project was realised in 'a record time' of less than ten months. Rainer Langenbacher, the mayor of Kirchdorf an der Iller, paid tribute to the entrepreneurial courage of the

Officially opened: Liebherr's new test centre. Second from left is third generation Jan Liebherr.



View on Liebherr's testing track.



Andreas Scheurl: 'In 2018 alone we will manufacture 1 200 MH units and we are ramping up production capacity to reach even higher levels in 2019.'



Doug (right) and Lewis Kramer: 'When it comes to innovation, it is amazing what is being done here.'

Liebherr family, which he said had contributed to the positive development of the community. 'A farmers' village with 700 souls has developed into a modern industrial location,' he said.

'TERRIFIC JOB'

Some 1 400 invited guests and customers from all over the world had travelled to Kirchdorf to get a first glimpse into the heart of the development centre. Among them a handful of US customers, including Doug and Lewis Kramer of Los Angeles-based Kramer Metals. During a tour of one of the huge production halls, Kramer and his fellow recyclers could see the smart, in-house developed welding process used for the hydraulic cylinder production.

'When it comes to innovation, it is amazing what is being done here', says Kramer. 'Of course, as day-to-day users of material handlers, we know well what these pieces of equipment are capable of. But it is even more impressive now you know what it takes to put all components and technology together. Trust me, these guys do a terrific job.'

Edward Kangeter, ceo of the aluminium recycling firm Cass of Oakland, California, tells Recycling International he is looking for new equipment. 'We are building a new facility for which we obviously need to invest in technology and machinery. Here at Liebherr I hope to learn more about the latest products and options.'

SALES JUMP

Worldwide, Liebherr has seen spectacular demand growth for its material handling solutions, specifically in the scrap industry. In less than two years, production of material handlers has doubled, according to Andreas Scheurl, general sales manager, Material Handling Equipment. 'Orders are back in the books. On average, five material handlers roll from the production line every day', he says. 'In 2018 alone we will manufacture 1 200 MH units and we are ramping up production capacity to reach even higher levels in 2019.'

Scheurl says Liebherr's material handling division – which includes material handlers, wheel loaders, telehandlers and crawler loaders - expects to have close to a EUR 400 million turnover in 2018 'with further growth expected in 2019'. They are figures that certainly help boost the total results of the Liebherr Group. This year, the family-owned company of 45 000 employees expects a record high worldwide turnover of EUR 10 billion.

THE DARK SIDE OF GROWTH

Due to fast-growing demand, industrial equipment manufacturers have been facing delivery delays. For material handler producers such as Liebherr, it is no different. 'We're all experiencing the same situation,' Tim Doucette, general manager of sales & marketing at Liebherr USA, told Recycling International last April at the 2018 ISRI Convention & Expo in Las Vegas.

Production capacity is not the issue, according to Doucette. 'It's the supply of parts. The supply chain simply cannot keep up with demand; we cannot double-inventory overnight.' Compared to 2017, Liebherr USA has '60%-plus' orders in the book for the current year. 'Trust me, apart from the delivery delays, this is a welcome change for the whole industry,' said Doucette. 'Only two years ago, it was the other way around.'

To date, Liebherr has more than 7 000 material handling units in operation at scrap yards across the USA. 📍

SUPPLYING SCRAP RECYCLERS IN MORE THAN 50 COUNTRIES

Liebherr supplies recyclers in more than 50 countries on all continents. The main markets are still in Europe and North America where for many years Liebherr has claimed top position for material handling equipment.

'We supply material handling equipment that conforms to the latest legislation for individual countries,' says Liebherr's general sales manager, Material Handling Equipment, Andreas Scheurl. 'There is a strong focus is on efficiency, performance, comfort and safety, while the development of electrically driven machines will continue in the years to come.'

Liebherr has a factory in Dalian, northeast China. Here, various models of earthmoving machines like crawlers excavators, wheel loaders and re-handlers are produced for both domestic and several regional markets.

At Taipei-based Miniwiz, a team of young architects, material engineers and chemists together develop recycling solutions to create new products out of waste materials.



Asia's recycling role model?

Taiwan is performing well in terms of achieving its recycling goals, especially in incentivising companies to contribute to the overall goal of a circular economy. Recycling International spoke to the country's leading recycling expert and an innovative Taiwan-based recycling company.

Taiwan has always been a good example in Asia when it comes to concern for the environment and this is particularly true with its commitment to sustainability and a durable growth of its economy – both being crucial parts of Taiwan's national economic policy. One of the more important policy changes from Taiwan in the past decade has been the implementation of a Resource Recycling Act to achieve higher national recycling rates. According to Taiwan's Environmental Protection

Administration (EPA), the country achieved a recycling rate of 55% in 2015, although that figure is questioned in some quarters. But, whatever the rate, the EPA says it's vital to increase it because landfill sites are set to reach capacity within six years and real estate is scarce and expensive. Nonetheless, how does Taiwan achieve such a praiseworthy rate? A circular economy is the buzz phrase, promoting the optimal usage of resources. Examples of the country's

smarter approach include musical refuse trucks, pay-as-you-throw rubbish bags and neighbourhood watch schemes to report violators of local or national regulations. To encourage recycling, the authorities in the capital Taipei require disposal of all non-recyclable waste in official blue plastic bags, costing as little as three US cents for a small bag, or the equivalent of EUR6 for five large ones. Misuse can result in fines of up to EUR170.

ROOM FOR IMPROVEMENT
According to Hsiao Kang Ma, recycling professor at National Taiwan University, the level of recycling in Taiwan is something to be proud of but there is still much room for improvement. 'There are too many recyclers on the market competing for the wastes,' he says. 'Some of them

TAIWAN CRACKS DOWN ON IMPORTS

According to the Taipei Times, China's import ban resulted in the amount of waste plastics entering Taiwan between January and July growing by 150 000 tonnes while waste paper imports rose by 190 000 tonnes. Licensed local firms can only import waste plastics that originate in their own overseas production processes or are of a single material - but not from original production processes. The only waste paper allowed is kraft paper, corrugated paper or cardboard that is not bleached, or deinked paper. Only licensed paper makers can import such materials.



Some 60% of Taiwan's waste was recycled in 2016.

still use 15-year-old equipment. We need innovative technologies to recycle the solar panels and other modern electronic products.'

This means there are real opportunities to further develop recycling. According to Ma, 'the market needs to be opened for importing recyclable waste into Taiwan.'

Whenever talk turns to recycling, anywhere in the world, one of the biggest challenges is to make sure the production of plastic is reduced to an acceptable level, preventing waste in the first place. So what is Taiwan doing to reduce the volume of plastic? 'There is what we call a "restricted plastics" policy ensuring shopping bag reduction, limiting plastic particles from cosmetics and personal cleaning products, and so on,' says Ma.

Ma notes that Taiwan has a good recycling record. 'By looking at the 2016 data, I can say it does quite well. Of all general waste, over 60% was recycled whereas 77% industrial of waste was recycled,' he adds.

MINIWIZ MASTERCLASS

To understand the difference, it is crucial to take a closer look at the industry itself. One of the most interesting

companies here is Taipei-based Miniwiz, which was established in March 2005 by architect and structural engineer Arthur Huang and Jarvis Liu, an architect engineer. Miniwiz develops circular economy technologies. Sammie Tsou, who is responsible for the company's PR tells Recycling

International that Miniwiz' goals are to shift to a circular economy from a linear economy. 'We want to realise what we call a 'closed loop'. Let me give the simple example of buying water in the store. After drinking the water, the bottle is recycled and turned into raw materials to make new products such




The Trashpresso aims to tackle waste in remote communities around the world from a mobile, automated, and self-powered platform.

as fabric or tiles. It's a closed loop: you continuously recycle products into new materials, all the while reducing toxicity and our carbon footprint.' Miniwiz has a research department that experiments with new ways of recycling products and comes up with new materials. It is called 'Trash Lab'. 'It has proven to be an efficient way to deal with recycling in an innovative way,' says Tsou. 'Normally a company must go to an external laboratory to test certain chemical combinations: at Trash Lab we can do it ourselves. In Trash Lab, architects, material engineers and chemists all come together. We identify a waste stream, explore its transformation potential from different angles, then build a system that allows us to convert the trash into a high-performance material, demonstrating that circular solutions are a reality that can be applied across industries at different scales, today.'

WORLD-LEADING INNOVATION

A fascinating Miniwiz innovation is 'Trashpresso', claimed to be the world's first mobile plastic and fabric waste recycling plant. 'The Trashpresso aims to tackle waste in isolated communities around the world from a mobile, automated, and self-powered platform,' Tsou explains. 'Decentralising waste collection and remanufacturing in any location is an increasingly important "upcycling" solution to environmental pollution. For example, Trashpresso can transform waste into architectural tiles on site.' Trashpresso has been presented at events in Tianjin, Shanghai, Qinghai, London and Milan. One of the best-known Miniwiz creations is the EcoARK Pavilion in Taipei, the first functional public structure built with 'polli-brick', the company's patented translucent plastic building blocks that, for this project, ate up 1.5

million scrap bottles weighing 300 tonnes diverted from landfill. The nine-storey pavilion, made for the 2010 Taipei International Flora Exposition and now a museum, weighs 50% less than a conventional building. 'Although the EcoARK weighs so little, it's resistant to earthquakes and typhoons, and can withstand sustained winds up to 130 km per hour,' says Tsou. The building benefits from polli-brick's high insulation properties, natural ventilation and an exterior waterfall that bathes the structure in collected water. It is powered by solar panels. According to professor Ma, smart ideas such as these come about because of incentives from the Taiwanese Government. 'We have seen that some of the new regulations, including the forward-looking Infrastructure Construction Act in 2017, are actively encouraging innovations such as EcoARK.' 



the force within




cranes
mobile
on wheels & on tracks



birimmakina
balers • shears • cranes • shredders
phone. +90 232 877 1777 • info@birimmakina.com.tr
www.birimmakina.com.tr




cranes
fixed
light & heavy duty

ON A GLOBAL MISSION...STARTING IN TAIPEI

Taiwan-based Miniwiz turns post-consumer waste into high-performance materials. Miniwiz was founded in 2005 by architect and structural engineers Arthur Huang and Jarvis Liu who based their company purpose on a mission to address the great disparity between sustainability, recycling and eco-consciousness and 'the bleak market reality around its lack of financially feasible applications'. In 2007, Miniwiz developed its breakthrough project, the HYmini – a portable wind, solar and hand-crank power generator made from recycled electronic plastics and recycled paper. This device, a zero carbon footprint charging product, was the first in hundreds of Miniwiz projects to follow.

In 2015, the World Economic Forum had recognised Miniwiz as a Technology Pioneer in the category "Energy / Environment / Infrastructure", highlighting the positive impact that the company's activity has had upon the world's environment and economic development. Miniwiz has received extensive media attention and many awards for innovation in the recycling and building-material sectors.



Creating a world of difference



BOLLEGRAAF
| RECYCLING
SOLUTIONS



www.bollegraaf.com • info@bollegraaf.com

E-mobility is changing the game for battery recyclers



'The global market for lithium-ion cells is expected to triple in the next seven years,' according to Wassilij Weber of battery collection firm Simpli Return. Speaking at the International Congress for Battery Recycling (ICBR) in Berlin, he stressed the need to 'move away from project-based collection for recycling'.

Impressive quantities of batteries are currently swamping the recycling market, and will continue to do so, said Wassilij Weber, owner of the new collection service company Simpli Return. The numbers are getting bigger: approximately 30 000 tonnes of cobalt are used to manufacture small batteries for portable devices every year; an estimated 240 million lithium-ion batteries will have to be recycled in Europe alone by 2020.

The entrepreneur assured delegates at the ICBR that standardised global take-back systems for large-scale handling of post-consumer batteries 'were necessary'.

REVAMPING COLLECTION

That's why Weber established Simpli Return in October. He describes the company as a 'one-stop shop' for industrial battery recycling. The digital portal has a global reach and provides a full collection service for large batteries, including the 'cost effective' rental of containers, safe transport, shipping and ultimately being processed at a 'state-of-the-art' plant in Germany. 'We don't deal with small laptop or phone batteries. No, the bigger, the better,' Weber commented.

He was joined by recycling specialist Alain Vassart, general secretary of the European Battery Recycling Association (EBRA): 'Overall, existing recycling capacity exceeds the quantity collected, resulting in fierce competition among battery recyclers. The profitability margin is therefore under

pressure,' he said. 'We are open to reviewing the calculation method for the collection rate of secondary consumer batteries.'

'The net result needs to be a higher quantity of batteries collected for recycling,' Vassart reiterated during the two-day conference. Although the market is witnessing an increase in e-cars sold, he warned delegates that the figures and future projections relating to the recycling of such batteries were 'vague and contradictory'. Meanwhile, he advised against making changes to the term 'recycling efficiency,' as EU officials are rumoured to want to do. 'It is not wise,' Vassart asserted. 'It's a relatively new principle. We don't have ten years of experience to go on. There is simply not enough feedback available yet.'

VISION WORTH FUNDING

'There are many more battery recycling projects being undertaken today compared to, say, ten years ago,' Professor Kerstin Kuchta told the Berlin gathering. Around 4 590 battery dedicated R&D projects are currently being conducted across Europe and they have been boosted by more than EUR 80 million in funding, largely under the EU's Horizon 2020 innovation programme.

The largest number of these projects (934) is in Germany, followed by the UK (921), France (804), and Spain with 732. A notable project is being conducted in Slovenia has received EUR 1.3 million. Called 'NuovophA', it involves a unique lead acid battery





MILLIONS OF MOBILES

The growing interest in battery recycling solutions is 'not exactly surprising', Kuchta remarked, considering Europe consumes more than 20% of the global supply of battery-grade lithium. The automotive and telecom industries remain the top markets. In Germany alone, 124 million mobile phones are stored away at home. This is up significantly from approximately 100 million handhelds 'hoarded' in 2015, and 72 million in 2010. There were an estimated 465 million unique mobile subscribers in Europe last year. Some 70% of handhelds are lithium-ion powered smartphones and this segment is projected to grow to 83% by 2025.

In the first six months of 2018, 30.1 million mobile phones were sold but this is a decrease of almost 6.5% when comparing Q1 and Q2 figures. Russia, however, witnessed particularly strong

recycling technology aiming to reduce waste by 81% while cutting CO2 by 89%, thus 'transforming the battery recycling industry'.

'Barely a week goes by without me reading about new recycling equipment, investments or cutting-edge

research,' Kuchta said. 'So there is definitely light at the end of the tunnel. The circular economy is not just a romantic notion of academia.

Together, we can get secondary raw materials out of the dirty corner,' she declared.



Respect is the key to sustainable recycling

Our business model is based on respect towards our customers, their materials and the environment.

Customers know our system is transparent. It begins with a tailor-made sampling and assaying process. This is the basis for maximum, reliable yields at optimized costs.

Because we believe in a sustainable future, we keep fine tuning our processes. We want to be prepared for growing complexity. That way, our service will always be in sync with what our customers need.

growth with sales of 15.9 million (up 12.3%).

New data by GSMA Intelligence has revealed that mobile technologies and services generated 3.3% of GDP (EUR 550 billion) in Europe last year. This is expected to increase to 4.1% of GDP (EUR 720 billion) by 2022.

Despite steady overall growth in the mobile market, the recovery of metals from handhelds is a 'missed opportunity', according to Chris Heron of Eurometaux. 'There was 15 000 tonnes of cobalt inside the 1.5 billion mobile phones put on the market last year. Yet only 10% was recycled,' he explained. 'How many cars could this metal pool help produce? Let me tell you: Lithuania's entire fleet.'

URBAN E-BOOM

The conference heard that Volkswagen plans to release 10 new types of electric vehicles between 2019 and 2030

and leading manufacturers are not the only ones banking on e-mobility. The German Advisory Council on the Environment has

recommended that 25% of all new registered cars should be EVs by 2025.

Today, there are at least 35 000 e-vehicles on the road in Germany, according to Jorg Zimmermann of the Fraunhofer Institute. 'This is a big surge because there were less than 5 000 in use in 2010. Demand is very high, so the price of lithium is going up too,' he observed.

'Looking ahead, there will probably be more than 20 million e-cars on the road worldwide by 2030,' Kuchta told delegates. 'In China, there will already be five million such vehicles in use by 2020. Imagine the impact on the battery recycling market.'

Didier Marginedes, ceo of car sharing company Blue Solutions in France, confirmed this development. 'More and

more people are living in cities. In fact, 66% of the world's population will live in cities by 2050. We can already see that our inner-city infrastructure is becoming overloaded,' he said.

Cities cover just 1% of the world's surface but use 78% of the world's energy and produce 60% of the total CO₂, the businessman pointed out. There are roughly three million buses in the world today. 'About 400 000 of them are electric. Not a huge amount but legislators in Paris, for example, want all buses to be electric by 2025,' he added.

What's more, e-car batteries will be much more powerful in the future.

'The average EV battery capacity will go up from 20 kWh in 2017 to 80kWh in 2030,' predicted Francois Barsacq of easyLi. The French company transforms up to five million battery cells into advanced energy storage systems to power electric vehicles, on-board



VAN PEPERZEEL



James Wattlaan 6
8218 MB Lelystad

T +31 (0)320 - 401 400

E info@peperzeel.nl
I www.peperzeel.nl
www.n-ext.eu



*Your consumer & industrial
batteries, non-ferrous
metals and other residues
in safe hands.*

Van Peperzeel is market leader in the field of collecting, sorting, valuation and transportation of consumer and industrial batteries in the Netherlands. With years of experience and expertise in controlling and processing these difficult but valuable materials, Van Peperzeel is the expert and your reliable partner. We ensure a safe transport, storage and an environmentally friendly recycling throughout Europe.

*Your partner for
battery related
safety solutions*



and off-grid energy systems and 'smart' buildings.

FLEXIBLE TRANSPORT

As well as recycling the batteries of electric vehicles, car and bike sharing will be an essential part of the solu-

tion. 'Think about it: a car is one of the worst investments you will make in your life,' Marginedes said with a laugh. 'We use it, what, one hour a day? Maybe two? Companies like mine have realised this and are moving from delivering transport

to delivering transport solutions.' This 'sharing economy' relies on smart connections between vehicles and users to arrange for quick and nearby transport around the clock. Blue Solution's own e-fleet will exceed 1 000 vehicles by December 2019. 'In Europe, there are 455 people per million citizens who share a car,' the ceo reported. Front of the queue is the Germany city of Stuttgart with 1 450 cars shared per million citizens, with the Dutch capital of Amsterdam second with 1 250 people per million citizens sharing vehicles.

BRING YOUR E-BIKE

One can no longer talk about e-mobility without addressing e-bikes. 'A total of 33 million e-bikes were sold in China last year, and some 22 million across Europe,' reported Annick Roetyncck. The head of the Light Electric Vehicle Association said that Belgium currently has the biggest market share. Almost one out of every two bikes in this country is electric (45%).

'Germany is at the top in terms of total units sold annually – this was roughly 720 000 e-bikes out of 3.8 million bicycles sold in 2017,' Roetyncck said, pointing out that the latter represents a 19% increase compared to 2016. e-bikes with the label "Made in Germany" are gaining popularity quickly: the country's bicycle producers exported more than 290 000 e-bikes last year, a surge of 25% compared to 2016.

Sales of e-bikes are 'marginal' in Portugal, while Italy, Spain and France are listed as 'followers' due to consumer demand gradually increasing. 'We launched just last year, and the association already has 30 members in Europe as well as some members in China and South Korea,' Roetyncck added.

'It's clear to me that the light vehicle market is taking flight. I just hope we can help you find the way through the maze of EU regulations,' she told the Berlin assembly.

SAFER PUBLIC 'HOTSPOTS'

Gudula Schwan, of Germany's federal ministry of transport and digital infra-

MATERIAL FLOW IS 'SUFFICIENT'

Just like last year, the event organiser ICM conducted a survey to measure how the battery recycling sector is doing. The barometer results showed that there is widespread confidence among battery recyclers that the volume of waste batteries will remain high in the coming months. Delegates generally agreed (70%) that industry developments are currently 'positive' and will be in the near future. Approximately 50% of participants have a positive opinion of the current business situation. A further 30% assess the situation as 'unchanged' from the previous year. One in five is not satisfied with the current situation.

The 'Industry Barometer ICBR 2018' also reveals that the proportion of delegates who expect 'constant positive development' was approximately 35%, up slightly from last year's results. The number of pessimists is roughly one in five. Almost 300 battery professionals attended the 23rd edition of the annual event, which is the highest number of visitors since the ICBR's launch.

'All in all, the survey shows that the majority of players in the battery recycling industry are confident,' concludes Jean-Pol Wiaux, chairman of the ICBR Steering Committee. 'However, the results should not obscure the fact that in many cases the flow of used batteries is sufficient but not abundant,' he adds.

Wiaux points out that price fluctuations can quickly lead to a change in the volume flow. 'The greater the efficiency of collection and recycling, the greater the contribution that battery recycling can make to the circular economy. Therefore, it's necessary to harmonise existing EU-wide targets and definitions and their enforcement to secure a level playing field,' the chairman commented.

structure, was concerned that when regulations are drawn up to support safe recycling practices, they should also take into account the scope of their use, including everyday activities.

'Our life is portable. We need to keep this in mind when talking about the transport of dangerous goods' regulations,' she warned. 'Who doesn't take their phone with them when they leave the house? Or their laptop when travelling for work? Such items rely on lithium-ion batteries. So when we're talking about containing the hazards of batteries, all we can really do is reduce the risks, not eliminate them,' Schwan added.

She argued it made sense to have 'comprehensive' legislation regarding battery safety to avoid incidents at 'hotspots' such as cafes, stations and offices. This would take into account known substances of concern or those still being assessed for use. It was also important, she said, that emergency services knew how to respond, which materials were suitable for holding different types of batteries and battery producers took greater responsibility, particularly regarding the effective and standardised labelling of batteries.

Schwan added: 'At a recycling yard, the workers are trained to handle fires when they occur. Ordinary people are not prepared to deal with such dangerous situations.'

RISKY SUBSTANCES

Jos Mossink of the European Chemicals Agency (ECHA) said the REACH Regulations would be 'incredibly important' in the battery recycling debate. Referring to the example of cobalt oxide, which is used as an electrode in lithium-ion batteries, he said: 'Cobalt oxide is difficult to get rid of and it reduces the opportunity for further use.'

Several compounds, such as plastic additives and cobalt, lead and cadmium salts, are already on the 'candidate list' for inclusion in the REACH database. Other materials are still in development, Mossink noted, and the ECHA was actively conducting risk



There will be around 20 million e-cars on the road worldwide by 2030.

analyses on substances thought to be of 'high concern'.

The agency has recently launched its Public Activities Coordination Tool to offer companies an overview of information on substances that are on the authority's radar for potential regulatory risk management.


'We have investigated 200 substances that have been given the label "safe". Of the previously 3 000 substances labelled as "dangerous", we still have to analyse about 1 200 of them,' Mossink told delegates. 'They are waiting in the red zone, so to speak.' In his view, data on many metal compounds is still 'patchy' although several initiatives are underway to improve information. 'Preferably, we can find a way to substitute them with other chemicals that are safer,' Mossink suggested. The downside is that some chemicals have properties that are not easily replicated. 'I'll admit that substitutes not always as powerful or suitable for specific applications,' he said.

DON'T JUDGE A BATTERY BY ITS LABEL

Another issue that keeps coming up in conversation is the proper labelling of batteries, according to Katrien Busselot of battery recycler Sortbat in Belgium. 'We still have miles to go. We may think that lithium-ion means lithium-ion and nickel-cadmium means nickel-cadmium but in practice this

isn't always true,' she said. 'We've had batteries come in that say one thing on the outside and another on the inside. Or even labels that state two entirely different chemistry types,' she explained.

'On other occasions, the chemistry type may be visible – but only in very, very small print,' Busselot complained. 'It's easy to miss if you're not looking and causes a lot of confusion at the sorting stage.'

Additionally, safe and undamaged batteries will regularly turn up on-site in elaborate and dangerous packaging. Similarly, damaged and unrecognisable batteries will reach Sortbat's facility without any safety measures in place. 'This creates a bigger workload for our crew and raises costs,' Busselot noted. 'We've also seen the number of incidents go up in the last two years. By August, there had already been 25 incidents.' This represents 1.3 incidents per 100 tonnes sorted in 2018 compared to 0.4 incidents last year and 0.3 incidents in 2016. In 80% of cases, this involved rechargeable lithium batteries. 'Luckily, we are able to tackle any problem, like smoke or a fire, in under three minutes in seven out of 10 cases,' Busselot reported. She cautioned that, despite modern-day sorting equipment, recyclers had to remain vigilant. 'You cannot sort on auto-pilot.' 



ADVERTORIAL

Panizzolo: Italian quality recycling solutions

Panizzolo is an Italian company that boasts more than 150 pieces of plant and machinery dedicated to the recovery and reclamation of ferrous and metal waste worldwide. In order to cope with the constant increase in demand, in 2018 the company launched a project to reorganise and renovate many departments, adapting them for the added workload and making them even more efficient. It means that the owners, Mauro and Cristina Panizzolo, can move onto the next step at the end of this year – doubling the production area.

The extension of the second facility will be completed at the beginning of 2019 with the specific aim of enhancing the assembly and testing areas. An increase in specialised in-house personnel will follow, enhancing the assembly, final-testing, commissioning and after-sales support departments to be even closer to clients.

That's not all. Additions in 2018 also include patented mills, an important innovation for the refining plant. Several European companies have already shown great interest in the processing facility at the company's renowned headquarters. A plant has already been sold in Europe and many others are in an advanced stage of negotiation.

Unlike conventional processing methods, the Panizzolo refining plant allows the metals (copper, aluminium and stainless steel) to be fully recovered, reintroducing them into the market as secondary raw materials. The Panizzolo

refining plant allows larger input pieces (up to 30 mm) to be processed to a remarkable reduction ratio (equal to 5:1).


Only mechanical grinding systems are used with patented mills to ensure that the metal is granulated and the inert pulverised.

EXAMPLES INCLUDE:

- Fluff from flotation plants or the grinding of mixed metals (containing copper, aluminium, steel, glass, cement dust and so on)
 - A fraction of waste deprived of metal scraps and not selected by WEEE processing plants
 - Copper (contaminated by steel, plastic and so on) resulting from the grinding of electrical motors;
 - Printed circuit clippings from PCBs
- The patented RAF-M and RAF-F series hammermills make all the difference in the Panizzolo treatment cycle. Their design is based on the company's

direct experience to guarantee high productivity in the presence of steel and abrasive inert, both in the grinding and granulation of metals. The material is completely separated from the inert material received from waste dumps, reclaiming granulated copper and aluminium and recovering and separating stainless steel.

'Made in Italy' has without doubt always been synonymous worldwide with quality. Panizzolo knows this well and, thanks to 30 years of experience and designing patented products (such as the interchangeable cradle of hammermills), offers unique plant and machinery of high quality and completely 'Made in Italy'.

Thanks to the hammermills' patented cradle, the recycling solutions offered are also flexible in terms of the type of waste to be treated and are designed to be ergonomic, guaranteeing that operators work in complete safety. The design is intended to perform rapid assembly, so that the plant can be operational and run at full capacity within the shortest possible time. They are designed to operate in continuous cycles but still allow routine and essential maintenance. The processing logic reduces power consumption, even when treating particularly abrasive waste, such as tins and mixed waste from solid urban waste, electric motors up to 40 kg, aluminium casings and profiles, WEEE, mixed metals and much more. This ensures complete recovery of the metals, truly transforming waste into secondary raw materials. 



panizzolo
recycling systems

30 years' direct experience
more than 150 recycling plants in the world



POLLUTEC

Hall 3 - Alley C - Stand 214

27th - 30th November 2018
Lyon (France)

IERC

Stand 32

16th - 18th January 2019
Salzburg (Austria)



RECYCLING SOLUTIONS FOR THE COMPLETE METAL WASTE ENHANCEMENT

Flexibility in the treatment of waste (thanks to the patented cradle).

Fluff and WEEE refining with patented hammermills.

E-scrap experts warn:

It's diversify or die



A look inside the secured data destruction area at Electronics Recycling International (ERI) in Fresno, California. Foto: Martijn Reintjes

Basic electronics recycling will not go away but relying solely on traditional models would be a dead-end street, US industry leaders stressed at the E-scrap 2018 conference in New Orleans. Increasingly, new business models built around solutions for reuse and particularly data security have become crucial to survival.

For electronics recyclers in North America, the times are changing and they are changing fast: scrap import restrictions in Asia; wildly fluctuating commodity prices; ever-complex materials; ever stricter environmental rules. Continue doing what you have always done is no option, according to Gary Curtis, president of industrial recycling at the US-based Schupan & Sons. 'Companies should spread risks and diversify more of their business, as we have been doing,' he told the E-scrap 2018 conference.

Sims Recycling Solutions (SRS) has been following a similar route. In 2011, the company offered no refurbishing or reuse services but by 2016 they had grown to 25% of the company's total e-scrap activities worldwide. Around the globe, predominantly in the US and Europe, SRS has been busy exploring and incorporating new activities. A good example is its facili-

ty in the Dutch city of Eindhoven that specialises in a wide range of services, including IT asset recovery, refurbishment, data destruction, reuse and remarketing.

'NOT A CLUE'

According to Sean Magann, vice-president of sales & marketing at SRS, data destruction is 'definitely the number one new service' in our industry. 'We see more and more companies not having a clue how to handle data and that offers huge and ever-growing opportunities to our business,' he said.

Data is in almost everything; not only your laptop or mobile phone but even your fridge, noted Ken Ehresman of US-based Advanced Technology Recycling (ATR). 'The future of data security even includes your car.'

CUSTOMER IS KING

The potential of such recycling options may be big and growing bigger, but it is the customer who picks out a solution or service that suits them best. According to SRS' Sean Magann: 'The customer dictates. He can sell a whole unit for refurbishment and reuse or just recover the valuable materials,' he explained, adding there are limits to this choice. 'If a customer wants us to dump his material in the river, of course we have to say no. So the bottom line is we do a lot but never cross lines when it comes to environmental aspects.'

ATR's Ken Ehresman agrees: 'Sure, the customer dictates but we should always advise and educate on the most economical ways to process the materials.'

ERI'S APPROACH

The impact of scrap commodity prices on the business had become less crucial, said Kevin Dillon, co-founder and director, marketing & sales, at Electronics Recycling International (ERI). Commodities sales used to be around 75% of ERI's revenue, now it is below 20%. Does this reduction have an effect? 'Yes, but it does not mean the end of business,' Dillon said. 'Luckily for ERI, and hopefully for oth-

OHIO-BASED RECYCLER TRIES ITS LUCK IN THE NEVADA DESERT

Some 140 technology and recycling service providers occupied the trade area platform at E-Scrap 2018. Among them a true eye-catcher:

Environmental Reclaim showcased two coffins filled with scrap. 'I'm a marketing man,' the company's managing director Jeff Kamer tells Recycling International. 'I always come up with crazy ideas to pull attention. And since we are in the end-of-life electronics business, I thought why not bring coffins to New Orleans? People love it, especially now we're in Halloween time.'

Kamer and his business partner Mike Miller launched Environmental Reclaim in 2010 in Columbus, Ohio. What started as a 500 m2 facility has grown many times bigger. 'We process some 3 000 tonnes of electronics scrap per month,' he says. In November 2018, Environmental Reclaim will open a second facility in Carson City in north Nevada, 4 000 km from its home base. Combined, the operations will cover 32 000 m2 and the facilities will have a total of seven shredders: five in Columbus, two at Carson City. Nevada may seem a remote recycling outpost but Kamer says it offers major business opportunities. 'We are close to California, where most of the scrap is sourced. Why not settle there? California has too much environmental regulation. Another thing: California has 14% income tax whereas Nevada has zero.' Kamer expects the first load of 500 tonnes of e-scrap to arrive in Carson City by mid November.




ers, it does not have the impact that it had 15 years ago.'

ERI's customers pay the electronics recycler for the service they offer to protect their brand 'We are not in the commodity business. We are in the e-scrap recycling business,' he stressed. He suggested that an e-scrap business should operate similarly to waste management companies: generating income from service charges rather than commodity sales.

SERVICE VERSUS COSTS

The challenge for the e-scrap recycling industry is to develop from a material recovery industry into a ser-

vice-based industry, according Corey Dehmey, executive director of SERI, a company that manages US R2 e-scrap standards. He used the conference stage to call on electronics recyclers to change the conversation with customers to acknowledge that electronics recovery is indeed a service and that comes with a cost. 'Compare it to recycling fluorescent lamps. We don't start recycling fluorescent lamps by sharing how much money we make from the aluminium end caps,' Dehmey said. 'There is a cost to recycling fluorescent lamps and what we get back for the materials compensates that cost.' 

China's ban boosts start-up of new facilities in North America

Relocation wave rolling in

US headquartered Owl Electronic Recycling has relocated its plastics processing plant from China to the company's home base in East Greenville, Pennsylvania. The decision to move is a direct response to China's scrap import ban, Owl's president Jason Wen told Recycling International on the sidelines of the E-Scrap 2018 conference.

'Since China's restrictions came into force, our plant in Guangdong has used only a small part of its capacity,' says Wen. 'It would be a waste of

money, a lost investment, if I kept the facility there unused. The only way forward was to dismantle the equipment and ship it to the US.'

The entrepreneur is now concentrating on restructuring his business and bundling all its electronics and plastics recycling activities in Pennsylvania where some 25 000 tonnes of scrap is handled on a yearly basis.

The story of the Owl company is not the only one as China's ban has prompted more start-ups across North America recently. With exports to Asia becoming tougher – if not impossible – why not process and sell the materials at home, more and more recyclers argue.

NEW CAPACITY

One of these is Bo Zhang, president of the Bomet Group, which operates

an e-scrap facility in the state of New York and is about to open a plastics facility near Toronto, Canada. Bomet Polymer will take in shredded and baled e-plastics, sort and process them, and produce a commodity-grade pellet.


The operation, in Brantford, Ontario, will be supplied by various scrap processors, including Bomet's own electronics recycling division. The 5 500 m² facility can handle up to 2 000 tonnes of e-scrap plastics per month, according to Zhang, who says he has recently carried out successful pilot tests.

'Production will begin before the end of 2018,' he told the New Orleans conference. Zhang sees huge opportunities for the recycling of coaxial cable which is half-plastic, half-metal.

THE WORLD IS OUR MARKET

While most US-based electronics recyclers tend to focus on domestic activities, others now look across international borders. 'The biggest opportunities are global,' says Kevin Dillon of Electronics Recycling International (ERI), which claims to be the biggest e-scrap recycler in the country. At the E-scrap conference, ERI announced a partnership with EnviroServe, a Dubai-based recycling provider. EnviroServe's facility will link the Middle East, Africa and the Caucasus region. 'For us, the marketplace is not the United States alone, it is much bigger than that,' Dillon adds.

'THE BIGGEST'

At home, ERI has recently opened a new recycling facility in Plainfield, Indiana, claimed to be the biggest plant of its kind in the world. The 30 000 m² facility has the capacity to handle 23 000 tonnes of e-scrap per month. 



Jason Wen: 'The only way forward was to dismantle the equipment and ship it to the US.'

PUCKETT'S 'SMART EYE' TO 'SHAPE UP THIS INDUSTRY'

The Basel Action Network (BAN), an organisation that combats the illegal scrap trade and questionable recycling practices across Africa and Asia, has released the results of a year-long study which reveal that Canadian e-waste is still being exported to developing countries.

43 Pieces of computer equipment with GPS trackers were handed to official collection depots and processors across Canada. One sixth of these devices were exported, BAN's director Jim Puckett told the E-Scrap conference. The BAN study, entitled "Illegal Export of e-Waste from Canada: A Story as Told by GPS Trackers" found that the seven devices were exported in what were likely to be illegal shipments. Four of the devices went to developing countries (Pakistan and Hong Kong) in transactions that are 'likely' to be in violation of the Basel Convention to which Canada is a party. A single recycler, the Electronics Recycling Association, handled three of the seven items. Based on this small sample, BAN estimates as much as 116 000 tonnes of e-scrap could be exported illegally. Puckett said a new study was underway to track and trace e-scrap flows out of Europe.

Meanwhile, electronics manufacturers, Dell and Samsung have teamed up with BAN to voluntarily monitor their downstream e-scrap flows with a GPS tracking service named EarthEye. 'EarthEye will shape up this industry even more,' its initiator announced in New Orleans.

COWBOY COUNTRY

In 2016, Puckett launched his first tracking project by using GPS technology to follow around 70 electronic devices exported from the USA. More than half of these had Hong Kong as their destination, ending up at 'hidden sites' in the New Territories. Puckett is concerned about poor recycling practices 'increasingly moving' from mainland China to Hong Kong, which he describes as 'cowboy country' housing dozens of 'dirty dismantling organisations'.



817 boulevard Marius Berliet
66000 PERPIGNAN - FRANCE
+33 (0)4 68 61 02 28
seramsa@seram.net
WWW.SERAM.NET

130 years of Terex tech: 'fit for the future'

With two rows of material handlers giving a 'standing ovation', a large crowd was welcomed at the Terex Fuchs production centre in Bad Schönborn, Germany in October to mark the company's 130th anniversary. Managing director Dominik Vierkotten said it was an impressive milestone but 'we are keeping our eyes ahead.'

By any criteria, Terex is a thriving company and turnover increased 31% this year. Fuchs has become a go-to brand for recyclers and scrapyard operators alike, serviced by more than 60 distributors around the world. Over the past two years, the German facility has created more than 100 new jobs, most of which are in engineering and production. And Terex Fuchs has seen its sales grow more than 80% over the past five years.

TAKING BIG LEAPS

'We are investing more and more in R&D every year to deliver new, robust

and intelligent solutions,' Dominik Vierkotten told Recycling International. 'Innovation is taking bigger and quicker leaps, after all.' By investing a significant sum in new technology, and also expanding its global workforce, Fuchs hopes to be 'fit for the future'.

E-mobility, big data and artificial intelligence are three major themes that will play an important role in the company's R&D efforts in the years to come. 'It's not just Google and Apple that have to think about these developments. Such trends will have a huge impact on recyclers and recycling tech companies as well,' Vierkotten argued. 'We have to be proactive.'

MATCH FOR MEGA SHREDDERS

Down the line, Fuchs material handlers will be designed to be even more modular. This will enable engineers to customise the best features of each type and create 'hybrid' solutions on demand. 'A recycler in America may want a different engine or other tyres, for example, to suit the terrain and a specific business model,' pointed out Fuchs operations director Matthias Bürkel. This approach could even be applied to individual components.

It takes about three days to complete the production of a single Fuchs handler at the Bad Schönborn site. Bürkel says a 'big series' MHL 370 F unit, which is in 'very high demand right now', can be finished in less than two days. Thanks to its solid undercarriage combined with the XXL tyres and increased engine power, the model is 'the perfect workhorse' at large scrapyards and 'a great fit' for mega shredder plants.

'Of course, no machine leaves our site without first passing a rigorous round of testing,' Bürkel notes. 'This takes about a day, then our crew gives the green light for shipping.'

He adds with a grin that 'unique colours' like lime green, purple and pink are sometimes requested for the booms and undercarriages. These custom paint jobs are done in-house so Fuchs has full control over the entire production process.

EXCITING NEW MARKETS

So where are the material handlers off to? 'We have just delivered another unit to a loyal customer in Spain. But we're also growing our customer base in South America,' said Vierkotten. 'And Asia is definitely a very exciting region for us. We've been focusing more on that market for two years now.'

North America is already well represented by Fuchs and various German recyclers have been placing orders for over 60 years. 'Ultimately, we want long-term partnerships and steady, sustainable corporate growth,' Terex company president Kieran Hegarty emphasised. 

MADE FOR RECYCLERS, WITH RECYCLERS

The MHL250 E is the first machine Fuchs developed especially for the recycling industry. Its engineers worked intensively with customers on optimising this next-generation machine for heavy-duty scrap handling. The unit has a maximum operating weight of 16 tonnes, two different loading systems with a maximum reach of nine metres, a high performance cooling system and 'the most comfortable cab in its class'. The MHL375 closes the gap in the 60+ tonne class.



The production hall of Terex Fuchs back in the 50s.



PIRELLI CREATES E-BIKE TYRES FROM CAR TYRES

Pirelli has launched a series of e-bike tyres that includes recycled content from end-of-life car tyres. Pirelli revealed its Cycl-e range of three models at the annual Eurobike expo in Germany in September.

The new range was developed with sustainability in mind as it incorporates crumb rubber sourced from used Pirelli tyres. They are available in a 'sport' or 'standard' type. The Milan-based company says the tyres are constructed with two different compounds for the tread and carcass, to optimise grip and puncture protection.

Pirelli's focus on city bike tyres is not wholly surprising. Global sales of e-bikes are forecast to reach almost 40 million units by 2023, according to market analysts. China is likely to remain the most important market – with over 34 million bikes sold there. Even in a smaller e-bike market like America, sales are starting to take off. More than 260 000 units were sold in 2017, reports the Light Electric Vehicle Association.



REFERENCE WORLDWIDE

MAGNETIC FERROUS SEPARATORS
 ECCENTRIC EDDY CURRENT SEPARATORS
 HIGH-INTENSITY SEPARATORS
 TRANSVERSAL ECS FOR VERY FINE MATERIAL
 HEAVY-DUTY ELECTROMAGNETIC DRUMS
 RECTANGULAR & ROUND LIFTING MAGNETS

Phone: +34 985 324 408
 Fax: +34 985 324 226
felemamg@felemamg.com
 GIJON- SPAIN

Solutions since 1970

FELEMAMG
 magnetism



www.felemamg.com

'FRAUD WITH PLASTIC SCRAP FROM UK HAS DUTCH CONNECTION'

A major fraud investigation is underway in the UK focusing on the British plastics recycling industry. According to the Guardian newspaper, illegal shipments of plastic waste are being routed to the Far East via the Netherlands.

The British Environment Agency (EA) has set up a special team following complaints that organised criminals and firms are abusing the system. In the past quarter, six recycling companies lost their licence in the past quarter. On separate occasions over the past three years, one firm had 57 containers stopped at UK ports. Containers reported to be carrying plastics were, according to the environmental department, contaminated with other waste. Due to concerns about contaminated plastic waste, China, Malaysia and Vietnam have blocked waste from the UK. As a result, the waste flow to Turkey and the Netherlands has increased considerably, it is said. For example, imports of plastic waste to the Netherlands in the past two years rose from almost 29 000 to over 38 000 tonnes.

According to the EA, British recycling companies do not want to recycle the waste at all in the Netherlands. It would be 'laundered' into Dutch plastic waste, after which it would still go to East Asia, to countries that have recently stopped accepting British plastic. The Netherlands does not even have the capacity to process all the exported British plastic, the Dutch company Kunststof Recycling told Dutch media. 'Dutch recycling companies cannot even handle all Dutch plastic. We do not import British plastic ourselves, but we find that Europe is being flooded with British plastic,' says a company spokesman.

In Britain, recycling companies earn financial credits through the producer responsibility system of Packaging Recovery Notes. Waste producers, such as manufacturers and retailers, buy the notes in proportion to the amount of packaging materials they place on the market. These certificates fluctuate but are currently around €70 per tonne for plastic. This summer, a report from an official UK audit body concluded this system was susceptible to fraud. The Guardian says information has been passed to the regulators which shows British export firms claim to have shipped 35 135 tonnes more plastic than the tax authorities had recorded leaving the country.



‘ENOUGH CAPACITY TO SCRAP EU FLAGGED SHIPS’

Claims there will be not be enough EU-approved recycling yards when new rules are introduced next year are being disputed in a new report. Research by two non-governmental organisations, Shipbreaking Platform and the European Federation for Transport and Environment, rejects attempts by the shipping industry to extend the list of facilities around the world where EU-flagged ships at their end of life can be dismantled. Their report accuses the industry of wanting to use lower-cost ship-breaking yards ‘with dangerous working conditions and poor environmental standards’. Ship owners argue that those on the list of 20 currently approved facilities will not be able to meet demand when regulations change on 1 January 2019. But the report argues: ‘Yards operating in Italy, Norway, Turkey and the US are further expected to be included on the list ... adding additional capacity for clean and safe recycling. This report demonstrates that the argument presented by the ship owners on the lack of capacity under the EU Ship Recycling Regulation No 1257/2013 is simply another poor excuse to justify the continued use of the low-cost and substandard method of beaching.’



VIRIDOR INVESTING MORE THAN £3 MILLION IN MRF UPDATE

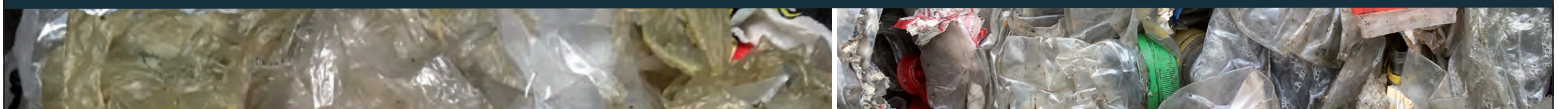
UK firm Viridor is investing £3.7 million (US\$ 4.7 million) in enhanced paper purity and fire protection systems at its Crayford recycling site near Dartford. The facility processes upwards of 300 000 tonnes of co-mingled content from 28 local authorities each year. Materials including paper, cardboard, plastic scrap, cans and glass are converted into a variety of high quality recyclable outputs. The decision was mostly ‘an investment in quality’, says Viridor’s head of recycling assets, Colin Richardson. It involves the installation of two optical sorters into a new building adjoining the main site at Crayford. Additional screening, metal removal and quality controls will also be installed. Viridor will specifically target contaminants in the sorted mixed paper after processing from the ballistic separator lines. Richardson says Crayford produces around 140 000 tonnes of combined paper grades annually. Most of this was previously sent to China. Viridor is putting £1 million of the investment towards fire protection.

UK TO DRIVE UP RECYCLED CONTENT IN PLASTIC PACKAGING

The UK Government plans to introduce a tax on the manufacture and import of plastic packaging with less than 30% recycled content. The move, effectively a tax on virgin plastic packaging, has been generally welcomed by the UK recycling industry but some organisations have insisted the measure must be part of a wider strategy on resources and waste. The announcement was made in the Autumn statement by the Chancellor Philip Hammond who said he would consult on the details and timing, although he indicated 2022 as a starting date. This echoes similar plans in France where ministers have said that from 2019 products not using recycled plastic packaging will cost 10% more.

Packaging: Get it sorted

- Sorting of films and paper (2D) with NIR technology
- Sorting of plastics (3D)
- Recovery of ferrous and non-ferrous metals with magnetic and eddy current technology
- Special tasks for dark polymers



steinert.de



TWO NEW RECYCLING CONTRACTS FOR SUEZ IN CHINA

SUEZ has won two significant waste contracts in China, including the operation of a waste facility in Chengdong province. The successful bids have come from SUEZ NWS, a joint venture between SUEZ and NWS Holdings which serves the greater China region.

One contract is to operate and maintain a waste treatment plant in the Jianghe Tianrong area, maintaining the group's activity in the area since 2006. SUEZ NWS will be responsible for the transfer and disposal of construction and demolition waste, industrial waste and domestic waste produced in Jianghe Tianrong. The expectation is that the recycling rate for the C&D waste will exceed 70%.

The second is a EUR 413 million, 30-year contract to build and operate a wastewater treatment plant in Changshu and to look after the sewer network in Chengdong. Construction of the facility will begin this year and it is due to be operational by 2021 with a capacity of 60 000 cubic metres per day. A planned second phase will double capacity by 2023.

BAN ON SELECTED SINGLE-USE PLASTICS PROPOSED FOR UK

The UK Government has announced plans to ban the distribution and sale of plastic straws, drinks stirrers and cotton buds. A public consultation has been launched by the environment secretary Michael Gove to tackle the 4.7 billion plastic straws, 316 million plastic stirrers and 1.8 billion plastic-stemmed cotton buds used in England in a single year. The ban would come into force at some point between October 2019 and October 2020, subject to the views collected during the six-week consultation, although exemptions may be allowed for medical and other reasons.



Driven by magnetism

**Pollutec
Stand
3-C-195**



Mobile Eddy Current separator separates fine and coarse fractions and include the largest internal magnet rotor on the market. It can be used at different locations.



Compact and priceworthy permanent overbelt magnets.



Strong Eddy-Current separator removes NF metals from 0,5 mm and up from incineration slag.



The EddyCan® sorter is a new way of separating aluminium from recycling streams, costeffectively and with a high separation yield.

GOUDSMIT
MAGNETIC SYSTEMS



Petunialaan 19 • 5582 HA Waalre • The Netherlands • Tel: +31 (0)40 221 32 83
e-mail: systems@goudsmit.eu • www.goudsmitmagnets.com

US CARTON RECYCLER LOOKS WEST

A new facility in Colorado for an innovative manufacturer is set to expand the end markets for recycled food and beverage cartons in the western United States.

The plant is due to open in April 2019 and will be operated by the ReWall company which makes high-performance, sustainable building and construction materials out of the recovered cartons through a proprietary process that uses neither chemicals nor water.

Once operational, the Colorado facility will process around 9 000 tonnes a year of aseptic and gable top cartons into roof cover board, exterior sheathing, wallboard, underlay and other building materials. It takes about 400 cartons to produce one sheet of roof cover board. Every truckload of finished ReWall products means nearly 600 000 cartons have been diverted from landfill.

RECYCLED FRIDGES DELIVER SUSTAINABLE 3D PRINTING

Plastic recovered from discarded fridges is being re-purposed into a resilient material that can be used in the 3D printing of scale models and similar outputs. The development follows a partnership between two Dutch specialist, Coolrec, a subsidiary of Renewi, and filament manufacturer Refil.

Refil already makes a range of different coloured filaments from recycled car dashboards and PET bottles. Now it is taking the interior of fridges supplied by e-scrap specialist Coolrec to make High Impact PolyStyrene (HIPS) filament that has a neutral off white colour which is easy to paint or glue, making it a perfect material for the 3D printing of scale models. The filament comes in the two standard diameters of 2.85mm and 1.75mm and has successfully been tested on 3D printers.

The filament is manufactured at a facility in Rotterdam and delivered to customers on a fully recyclable cardboard spool. Refil and Coolrec are also working on a black filament from the same type of plastic but using old televisions. It is expected to be available in the beginning of 2019.



NOVAMONT UNVEILS ALTERNATIVE TO MICROBEADS IN COSMETICS

The Italian plastics company Novamont has announced a range of bio-based and biodegradable ingredients for cosmetics in response to concern over a build-up of micro-plastics in our oceans. The company's Celus-Bi Feel is a texturising agent developed in collaboration with Roelmi, an Italian company specialising in sustainable cosmetics. The research has also produced exfoliants and emollients from renewable bio-materials.

Novamont says Celus-Bi Feel biodegrades rapidly and totally in the environment in accordance with the guidelines of the Organisation for Economic Co-operation and Development (OECD). Roelmi's first product is a blusher without plastic microbeads and manufactured at a cost said to be comparable to standard products.

'It is fully biodegraded in just a few days in a purifying plant, ensuring that no residues end up in rivers and seas and with the enormous advantage that the resulting sludge has no microplastics,' the company adds.

**STAHLWERK
AUGUSTFEHN**

Forged wear parts
– unbreakable –

**HAMMERS, PINS,
BLOW BARS, GRATE BARS**

www.stahlwerk-augustfehn.de
info@stwa.de

Nanomaterials: a new threat to the recycling industry?



A large variety of nanomaterials is used in consumer products and industrial applications, and many of these products have reached the end of their life. However, studies have shown that various types of nanomaterials cause toxic effects, which makes the development of appropriate recycling strategies imperative.

‘Every 18 months, we see a doubling in consumer products that claim to contain nanomaterials in Europe,’ says Steffen Foss Hansen, associate professor at the Technical University of Denmark and co-founder of The Nanodatabase, which was set up in 2012.

Carbon nanotubes are used in electronics, batteries, sporting goods, composite plastics, concrete and ceramics. Nano-titanium dioxide is used in an equally varied amount of products: paints, coatings, building materials, textiles, electronics and metals, whereas nano-silver is mostly used in textiles, kitchenware and coatings.

The global nanomaterials market is expected to exceed US\$ 55 billion by 2022 from US\$ 14.7 billion in 2015, according to a report of Allied Market Research. The largest application for nanotechnology is electronics, followed by energy applications. Many of these materials and products have already reached their end of life. So the development of appropriate waste management strategies is critical, according to a report of the Organisation for Economic Co-operation and Development (OECD) about waste containing nanomaterials, that was published in 2016.

This is especially important since more than 11 million tonnes of nanomaterials are entering the market a year. But this number is a rough estimate according to several experts.

‘There is a lack of access to information about how much nanomaterials are produced, how much is used, by whom, and wherein,’ explains Hansen. ‘We have been calling for regulation for a long time in this area, as any kind

of risk assessment starts with knowing what is out there.’

SERIOUS RISKS

Most nanomaterials are based on metals that are shrunken to a molecular scale: one nanometer is one billionth of a meter, which is 10 000 times smaller than the diameter of a human hair. At this scale, the material is no longer seen as a metal, but as a chemical that may have novel properties compared to their bulk form.

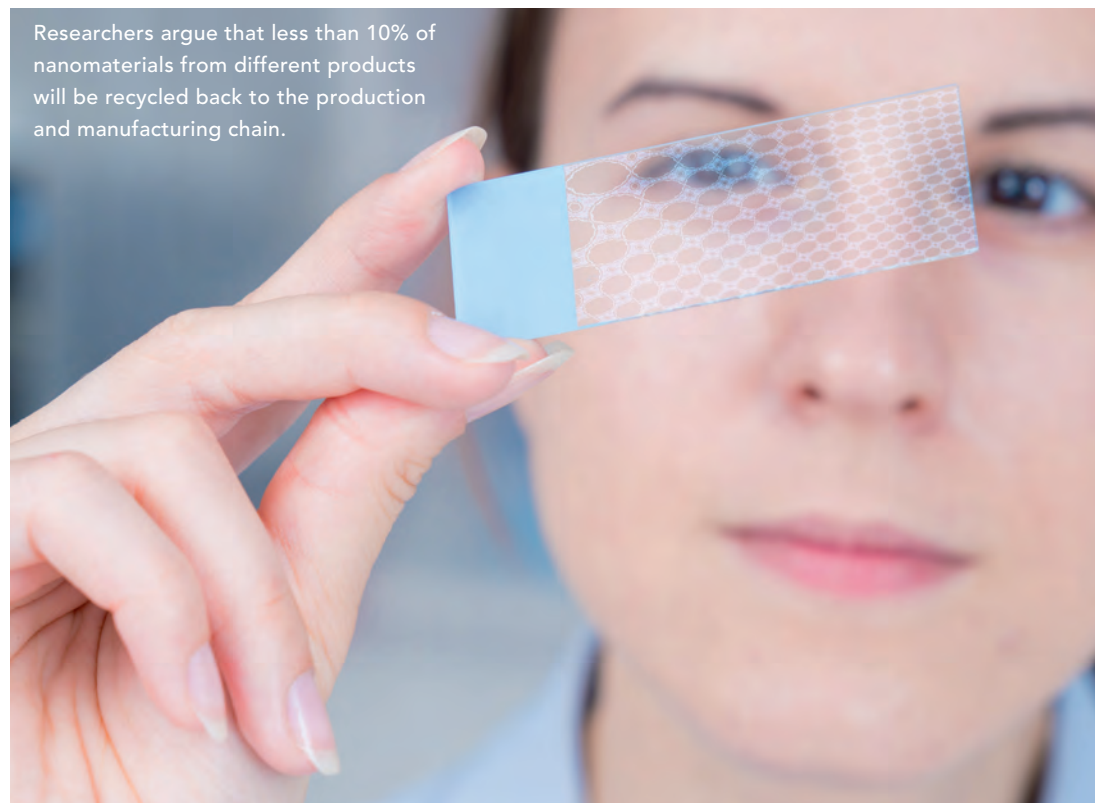
That is also the reason why nanomaterials have become so popular to use. Wind turbine blades with a coating that contains carbon nanotubes produce 30% more wind power than con-

ventional blades. Nano-silver acts as an anti-bacterial agent in textiles, but this function makes these particles also deadly to micro-organisms in the soil.

Studies have shown that various types of nanomaterials cause toxic effects not induced by their chemically similar but larger particles, such as inflammation or fibrosis of the lungs or cancer as an analogy of the carcinogenicity of asbestos.

Other adverse health effects: interfering with the ability to reproduce, toxic effects on the liver, kidney and nervous system, cell death, chromosomal aberrations and DNA damage.

‘Nanomaterials tend to be much more reactive, because they have much more surface area per unit volume than larger particles,’ explains Kai Savolainen, research professor at the Finnish Institute of Occupational Health and the coordinator of Nanosolutions, a project that was created to develop a safety classification for nanomaterials, to which 500 scientists contributed worldwide.



Researchers argue that less than 10% of nanomaterials from different products will be recycled back to the production and manufacturing chain.



Steffen Foss Hansen is calling for regulations specifically for nanomaterials.

Also, the extremely small size of nanomaterials makes it possible that they penetrate parts of the body that are not reachable by their larger counterparts, such as the alveoli in the lungs. Nanomaterials can transfer through the lymphatics and blood into internal

organs, and are able to pass the blood-brain barrier. Some nanomaterials surface often in toxicity studies, such as carbon nanotubes, nano-silver, nano-copper oxide, nano-cobalt, nano-cadmium and nano-titanium dioxide. But experts agree that much more research is needed about the effects of nanomaterials on human health and the environment.

DUST EXPLOSIONS

At the moment, waste containing nanomaterials is recycled along with conventional waste, with no special precautions. Recycling facilities simply don't know which end-of-life products or materials contain nanomaterials and guidelines have not yet been developed.

During recycling processes, nanoparticles might be released into the workplace atmosphere or emitted into the

environment, according to the OECD. Furthermore, unknowingly storing or processing waste with nanomaterials increases the risk of dust explosions. Nanoparticles might also end up in recycled materials.

'For the moment, we don't know enough about risk and exposure, so there is not a sufficient scientific basis to undertake action,' says Peter Börkey, team lead circular economy at the OECD.

WORLDWIDE REGULATIONS

Recently, the first steps have been taken to regulate the use of nanomaterials worldwide, which may lay the foundation for proper guidelines to recycle waste containing these materials.

Since 2017, the U.S. Environmental Protection Agency (EPA) requires information about manufactured, imported or processed nanomaterials.

Experts in WEEE Engineering



FRIDGE DISPOSAL



- VFC and VHC recovery
- Selective VHC treatment
- Best fraction resulting
- VHC and VFC online destruction

PRINTED CIRCUIT BOARDS



- Shredding, sorting, sampling
- Pyrolysis concepts
- Minimized losses of precious metals
- Added value from low grade PCBs

IT & SMALL DOMESTIC APPLIANCES



- Optimized fractions resulting
- Worldwide references
- Tailor-made solutions
- Plastics sorting

TONER CARTRIDGES



- Explosion proof treatment
- Fraction recovery
- Low man-power
- References available

**WEEE
KNOW HOW**



URT Umwelt- und Recyclingtechnik GmbH

Am Hammersteig 5a • 97753 Karlstadt, Germany

☎ +49 (0) 9353 90 68-12 • www.urt-recycling.com

New chemical substances manufactured at the nanoscale must be submitted to EPA for review before they can enter the market, according to Tricia Lynn, spokesperson of EPA. In Australia, the existing regulatory framework for chemicals will be reformed, to cover the registration of nanomaterials. Canada is developing a risk assessment framework for nanomaterials in commerce. This year, experts are consulted about the draft of this framework.

Taiwan has set up a verification system, named nanoMark, to classify, certify and regulate products that claim to make use of nanotechnology or nanomaterials, as some of these claims have been proven false. Thailand has developed a similar system: the NanoQ label. This voluntary scheme might be expanded to imported raw nanomaterials. Several experts name France as the

leading country worldwide, where it comes to the registration of nanomaterials. In 2012, it was the first country to adopt a mandatory reporting scheme for produced, imported or distributed nanomaterials in quantities above 100 grams per year.

Around 2,600 companies have made 14,000 registrations of 300 different nanomaterials, which equals a volume of about 500,000 tons. Carbon black, nano-silicon dioxide, nano-calcium carbonate and nano-titanium dioxide take up around 35% of this amount. About 65% of registrations were for nanomaterials produced or imported in volumes of less than 1 ton.

Other European countries that have set up a registration system for nanomaterials or products containing nanomaterials are, for example, Belgium, Denmark, Norway and Sweden.



Kai Savolainen: Nanomaterials are able to pass the blood-brain barrier.

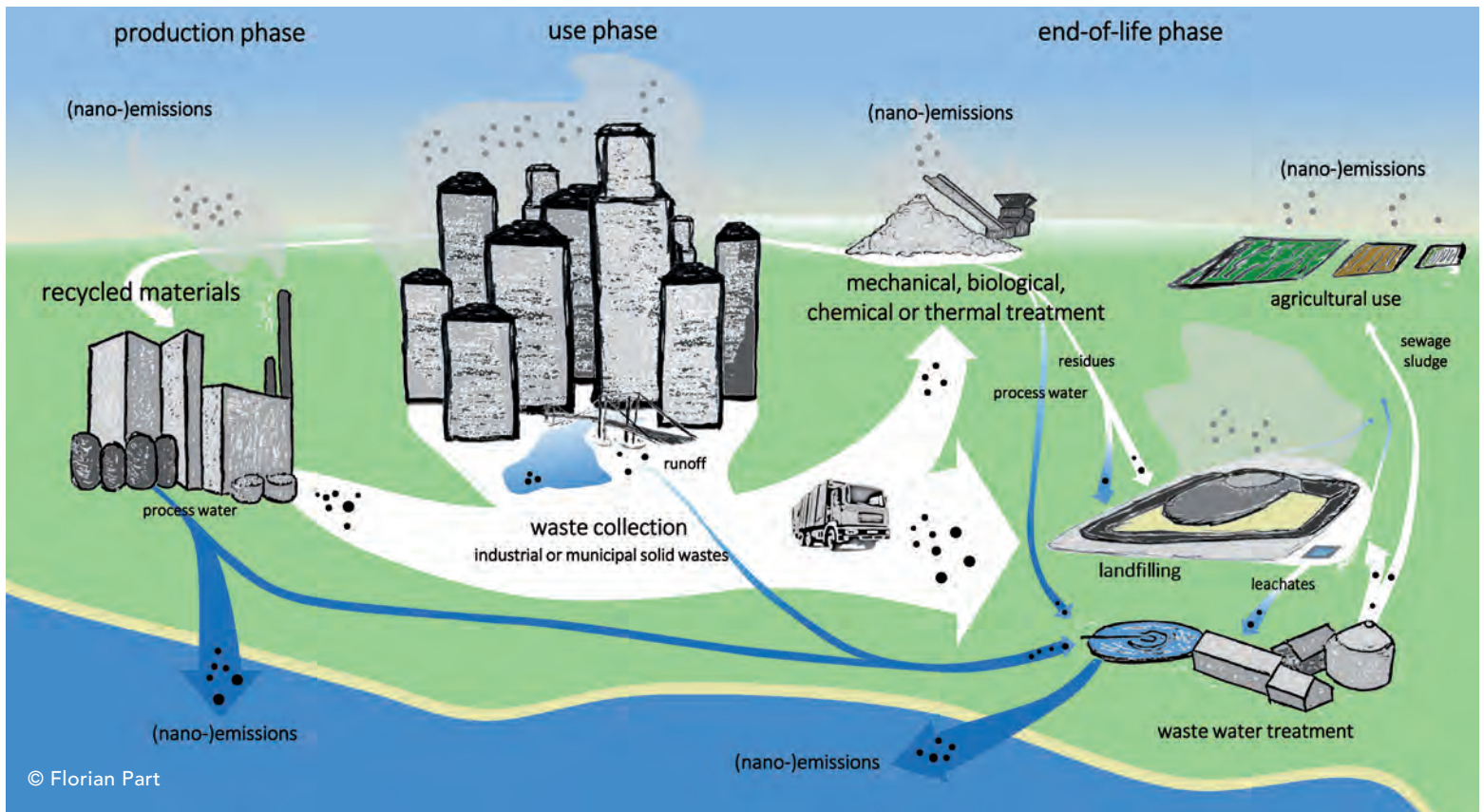
REACH AMENDMENTS

The European Union is planning to make large strides regarding the registration of nanomaterials. Just before the summer, EU member states reached an agreement on proposed amendments to clarify

PLASTIC
RECYCLING
TECHNOLOGY

www.hermion.nl
info@hermion.nl | +31 (0)416 - 820 218

Keurweg 16
5145 NX Waalwijk
The Netherlands



REACH registration requirements with regard to nanomaterials, From January 2020, it will be mandatory for companies to give information about basic characteristics of produced or imported nanomaterials, what risks they might pose to human health and the environment and how to use them safely, among others. 'We are quite happy with those amendments,' says Gregory Moore,

scientific officer at the Swedish Chemicals Agency. 'More information needs to be given about the properties of nanomaterials. For example, about the shape and size of a nanomaterial and whether it bio-accumulates in the body.' 'But some member states, including Sweden, would have preferred mandatory registration for nanomaterials that are produced or imported in

quantities of 100 kilograms or more per year as many come in very small quantities. Currently, it is set at 1 ton or more per year.' Another point of critique is that still nothing will be known about which products and materials contain these nanomaterials. This information is necessary to develop guidelines for recycling and other forms of waste management.

BRONNEBERG
recycling machines & services

*With over 70 years of experience
your partner for all
scrap recycling solutions!*

www.bronneberg.nl
info@bronneberg.nl
+31 (0)492 59 19 00

IMPACTS FOR WORKERS

In the past years, a few dozen studies have examined the release of nano-materials during recycling processes. Some studies show that during shredding and re-granulation of PET-bottles nano-titanium dioxide and carbon nanotubes are released, but other studies provided dissimilar results. Another study indicated that waste tires are a problematic waste stream as they contain different types of nanomaterials. The recycling of construction and demolition waste has also been studied, and this showed that nanomaterials may become airborne during crushing, shredding and milling.

‘The most serious risks is to workers,’ says Börkey. ‘These risks can be mitigated through classic workplace security measures, such as wearing masks and ventilation systems that clean the air in a factory. But in emerging countries, like India and China, those standards are often not upheld and they take in a lot of our waste.’

One of the latest research projects seems to confirm this viewpoint. The German project ProCycle investigated the toxicological risks of dust emissions that occur during the recycling of plastic nanocomposites, among others.

‘Grinding of nanocomposites resulted in a lot of particles that were too large to penetrate the alveoli of the lungs, whereas a small amount of material changed into the gaseous state,’ says Eric Marioth, research coordinator at the Fraunhofer Institute for Chemical Technology, which is participating in ProCycle.

‘We have monitored the deposition of dust and aerosols on different cell media, such as artificial lung cells, to look for stress indicators in cells. These effects mostly occur by gaseous substances, and that might have an effect on health,’ according to Marioth.

His preliminary conclusion would be that ‘the current health and safety regulations for recycling facilities in the EU should be sufficient to mitigate these risks.’ The project has ended in September and early

2019 a workshop will take place to discuss the final results with stakeholders in the recycling industry, among others.

RECYCLED MATERIALS

Even fewer studies have been dedicated to the presence of nano-materials in recycled materials. One study concluded that ‘less than 10% of nanomaterials from different products will be recycled back to the production and manufacturing chain.’

Another study predicted that ‘about 40-47% of nanomaterials in construction materials ends up in recycled materials.’

‘We still know far too little even of the production of nanomaterials, and their use,’ comments Börkey. ‘It is a big leap forward to look all the way into the end-of-life of products containing nanomaterials. And then to the use of secondary materials.’

‘I think that the problem with nanomaterials is similar to the issues with other hazardous substances, such as flame-retardants, that have found their way into recycled materials. These recycled materials are applied in products that result in significant exposure. For example, plastic toys that are imported from China.’ But, again, much more studies are needed to confirm this hypothesis.

RELEASE INTO THE ENVIRONMENT

The release of nanomaterials into the environment surrounding recycling facilities is also an issue that hardly has been studied worldwide.

However, the H2020 project NanoFASE, that runs for four years until August 2019, will change this. ‘The project is still in progress and major findings and reports are due to come out in the next year,’ says Lee Walker, who manages this project on behalf of the UK Natural Environment Research Council.

‘We are conducting modeling exercises to see whether nanoparticles stay embedded in products or are released in the environment at some point. Size is a factor, but also what a nanoparti-



Peter Börkey: ‘There is not a sufficient scientific basis to undertake action.’

cle is composed of. Some materials are more soluble than others.’ ‘They can be transformed as well. For example, nano-silver has a tendency to be sulfurized during waste management processes which slows down the dissolution of these particles,’ explains Walker.



Buyers of all Ferrous & Non-Ferrous Metals

Tel: +44 141 440 0424
Fax: +44 141 440 0874

E-mail: sales@jradam.co.uk
Website: www.jradam.co.uk

Riverside Berth, King George V Dock
Renfrew Road, Glasgow, G51 4SD









IS YOUR GLASS YIELD CRYSTAL CLEAR?

WITH TOMRA'S AUTOSORT COLOR IT WILL BE.

PRECISE FREE-FALL DETECTION REGARDLESS OF
MATERIAL TYPE

EASY MAINTENANCE

SELF-CLEANING FUNCTION

PATENTED FLUID COOL® TECHNOLOGY



Coupled with our
pioneering AUTOSORT
LASER you will receive the
best clean glass fraction
from household- and
commercial waste.

Contact us for more information:
TOMRA Sorting GmbH
+49 2630 9652 0
info@tomrasorting.com

'Other parameters are the surface chemistry of the compound and how they are embedded in the product, because that also might determine their release.'

The project is intended to support REACH regulation. Walker: 'Within the NanoFASE framework, there will be a guide to generate parameters and model those parameters, to enable companies to complete the registration of nanomaterials within REACH.'

WHISTLE-BLOW

The next step would be to monitor the release of nanoparticles in real recycling plants, instead of modeling these effects in laboratories, according to Florian Part, senior scientist at the University of Natural Resources and Life Sciences in Vienna and co-organizer of the Task Group on Engineered Nanomaterials in Waste. In 2014, the International Waste Working Group formed this task group to respond to the emerging challenge that nanomaterials form to waste managers. Its aim is to develop proper guidelines for end-of-life management strategies for waste that contain these materials.

For real-life monitoring tests, Part would prefer a plant that recycles e-waste, plastic or construction materials. He estimates that 'it would take at least three to four years to conduct tests.'

'The first two years, you have to establish a method and adapt your equipment to the circumstances in a plant. You also have to develop new protocols for sampling, because standard protocols are not applicable to nanomaterials, and new instruments since nanoparticles are too small for many instruments.'

'It will be necessary to work together with many different experts from various fields to execute tests, such as engineers, environmental chemists, analytical chemists and toxicologists. The budget needed would be around 1 million euro,' estimates Part. He adds: 'In environmental chemistry

and waste management, we are used to dealing with substances that have been brought onto the market years or decades before. It would be great if producers whistle-blow in-depth information about material and elemental compositions. This would be the basis for design-to-recycle concepts, as well as for risk assessments.’



Used tyres are a problematic waste stream as they contain different types of nanomaterials.

Lydia Heida is an independent journalist who is specialised in recycling, renewable energy and resources.
www.terratechmedia.com



江苏华宏科技股份有限公司
JIANGSU HUAHONG TECHNOLOGY STOCK CO., LTD.

Huahong Technology is one public listed company in China stock market with experience of 30 years in recycling industry, stock code is SZ002645. It's exported recycling machines to more than 60 countries, specialized in producing BALER FOR METAL AND PET, ALLIGATOR SHEAR, GUILLOTINE SHEAR, SHREDDER, BALING SHEAR, BRIQUETTING PRESS, etc.

金属破碎 Scrap Metal Shredder

PSX Series Scrap Shredder Lines
系列废金属破碎线



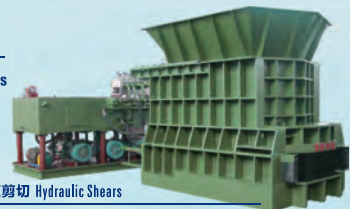
液压剪切 Hydraulic Shears

Q91Y Series Hydraulic Scrap Shears
系列液压废钢剪切机



液压剪切 Hydraulic Shears

QW Series Hydraulic Container Shears
系列箱式剪切机



金属压缩打包 Scrap Metal Baler

Y81 Series Hydraulic Scrap Balers
系列液压金属打包机



金属压缩打包 Scrap Metal Baler

Y83 Series Briquetting Presses
系列金属屑压块机



非金属压缩打包 Non-metal Baler

HPA Series Fully Automatic Horizontal Balers
系列全自动卧式打包机



Huahong Technology, China

www.asiabaler.com

info@asiabaler.com

Tel: +86 510 80629680



Markets still hope for growth despite tariffs

Traders are finding their feet through volatile times as the ferrous sector copes with trade wars and currency changes. Latest shipment rates for HMS I/II 80/20 from Europe to Turkey reached a three-month high in October.

Ferrous scrap prices in Turkey have recovered further since the last report, while some other global markets faltered. Demand for scrap in the Turkish markets cooled during September and into October as sales of finished steel products remained weak in the



domestic and export markets. Deep-sea cargos booked towards the end of September valued HMS I/II 80/20 from Europe and Baltic origin to Turkey at around US\$ 322 per tonne cfr, up from US\$ 313 per tonne reported in the last issue.

At the time of writing, Turkish steel mills, having returned to the deep-sea scrap markets in mid-October, were buying 71,000 tones of HMS I/II 80/20 from European and Baltic origin with prices ranging from US\$ 324 to US\$ 328 per tonne cfr, nearing a three-month high, according to Fastmarkets, the price reporting agency formerly known as Metal Bulletin.

Mills had temporarily halted purchasing any deep-sea cargoes while awaiting the decision and subsequent release of the detained American pastor whose arrest had resulted in the doubling of US tariffs to 50% on steel. Some were hoping this would lead to the tariffs being returned to the original Section 232 levels of 25% but this has not yet happened and there have been no solid indications they will. The Turkish lira has been regaining some of its losses since this event, reaching a two-month high, and scrap prices have regained US\$ 10 per tonne over the past month. The Indian scrap market continued to weaken in September and into October as the Indian rupee remained volatile, reaching near historic lows against a strengthening US dollar,

SHARP REVISION IN CHINESE DATA

A remarkable increase in steel scrap usage for crude steel production in China reported by the Bureau of International Recycling (BIR) has now been modified downwards because of a technical problem with the Chinese data. The recent BIR convention in London was told that China's usage over the first six months of the year was a 105% surge on the same period in 2017. Now BIR says it was actually 41%. 'Unfortunately, the figures on Chinese steel scrap consumption we received for our half-yearly update were erroneous due to a technical problem,' says BIR's statistics advisor Rolf Willeke. According to the new information from China's Association of Metalscrap Utilisation, steel scrap usage for crude steel production in China increased to 87.7 million tonnes – hence the +41% rise. Other data from China put industrial production in September up 5.8% year-on-year, below the projected 6% growth. Figures on Chinese GDP growth (+6.5%), fixed asset investment (+5.4%), and retail sales (+9.2%) are largely in line with expectations.

making imports less attractive and bringing prices down further. Rates for India ferrous scrap HMS I/II 80/20 came down more than US\$ 20 per tonne in six weeks, from US\$ 325-350 per tonne cfr at Nhava Sheva in mid-September to current prices of US\$ 315-330 per tonne cfr. Prices for Taiwan HMS I/II 80/20 gained pace in September, reaching a peak of US\$ 335-340 per tonne cfr at the start of October on the back of good demand, before losing momentum as this demand waned at local mills, with prices edging down to US\$ 325-330 per tonne cfr in late October. Supply of available material for import was increased as US cargoes were

diverted from Turkey to Asia, following a softening in the Turkish market.

STEEL ROUND-UP

The latest crude steel production figures from the 64 countries reporting to the World Steel Association (WSA) show a global total of 151.7 million tonnes (Mt) in September, a 4.4% increase compared to September 2017.

That means world crude steel production was 1,347 Mt in the first nine months of 2018, up by 4.7% compared to the same period in 2017. The eight producing countries in Asia produced 946.8 Mt of crude steel, an increase of 5.5% over the first nine



SHREDDERS & SYSTEMS FOR WASTE RECYCLING

Pollutec - Lyon 27 - 30 November 2018
Hall 3 Stand C156
Ierc - Salzburg 16 - 18 January 2018
Booth 28

forrec.eu



MARKET ANALYSIS

months of 2017. The EU produced 128.0 Mt, up by 1.3%; North America's total was 89.7 Mt, an increase of 3.4%; CIS produced 76.2 Mt up by 1.8%.

The October short-range outlook from the WSA indicates global steel demand will reach 1.66 billion tonnes in 2018, an increase of 3.9% year-on-year. For 2019, it is forecast that global steel demand will grow by 1.4% to 1.68 billion tonnes. Demand for steel is expected to remain positive into 2019, according to Saeed Ghumran Al Remeithi, chairman of the worldsteel economics committee.

'In 2018, global steel demand continued to show resilience supported by the recovery in investment activities in developed economies and the improved performance of emerging economies,' he said. The risks have increased due to increasing trade tensions and volatile currency movements.

Figures for steel production from the 64 countries show year-on-year increases in September for the US (+9%), China (+7.5%), Spain (+5.1%), Brazil (+2.5%) and France (+1.4%). But there were falls for the comparable periods for Turkey (-5.9%), Japan

(-2.4%) and Italy (-0.8%).

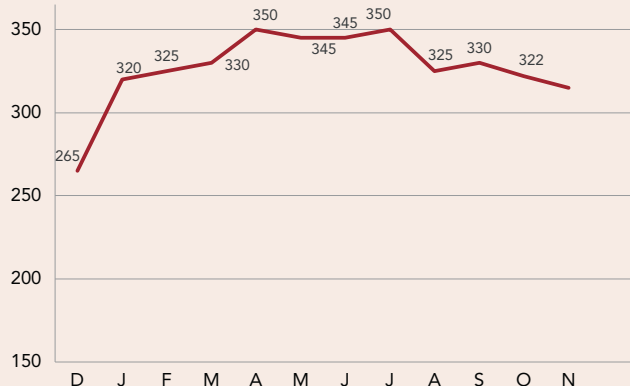
Meanwhile, the global long steel products market remains in equilibrium in terms of supply and demand, according to the short-range outlook from IREPAS. 'The steel trade is becoming more and more regional and so different supply and demand situations may be observed in various regions,' a statement said. As ever, the trade disputes involving the US, China and Turkey are never far from most people's minds. 'Competition is tough in the market but is not on a fair basis. Protectionism and trade cases all over the world are disrupting

Ferrous Scrap Prices

Reference date: November 1, 2018

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

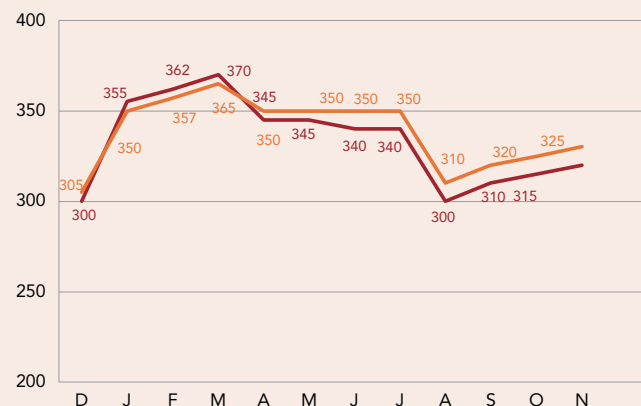
HMS 1 heavy steel scrap (1/4 Inch) composite price delivered at mills



CFR Prices for shipments from EU to Turkey (US\$/t)

HMS 80/20 heavy steel scrap

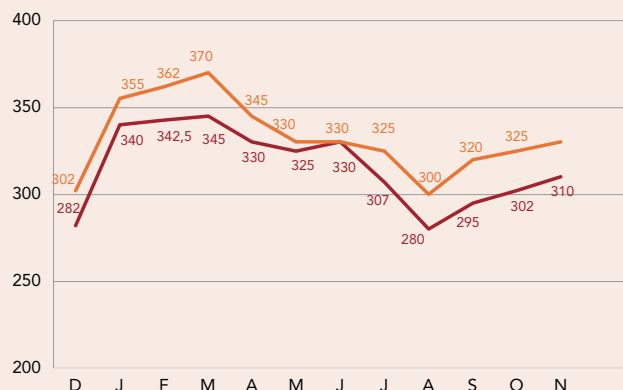
– Highest price
– Lowest price



USA Export Prices* (US\$/GRT)

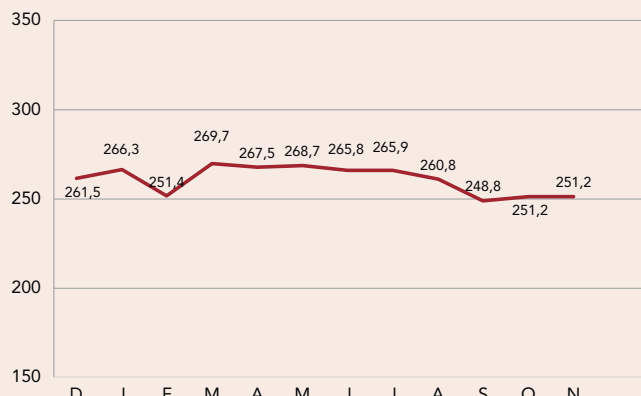
HMS 1, heavy steel scrap (1/4 Inch)

– Fob East Coast price
– Fob West Coast price



Composite Sales Price ex Yard in Germany** (€/t)

E3/European Standard Quality No. 3, heavy old steel scrap (>6mm)



historical trade flows and many suppliers are forced to search for new paths. As a result, conditions for fair competition are worsening.

'Global trade is constantly being tested by political measures, tariffs and quotas, which are making predictions on flows difficult. It is indeed very difficult to make any forecast today since just one early morning tweet can change everything and as there is no guarantee that anyone is exempt from the next tweet.'

The European Steel Association (EUROFER), expressed concern that steel demand growth would level out in the EU and in other regions over the coming quarters against the backdrop of persisting excess capacities in the global steel sector and proliferation of distortionary steel trade actions worldwide. Axel Eggert, director general of EUROFER, said: 'Various challenges facing the sector will impact us in the coming months. Trade tensions could clearly upset the market's balance, as could slowing demand in other parts of the economy'. EU apparent steel consumption is forecast to rise by 2.2% in 2018 and by 1.1% in 2019. EUROFER forecasts EU GDP growth of 2% in 2018 and of 1.8% in 2019.

COMPETING COMMODITIES

Prices in September remained stable throughout the month, according to the Metal Bulletin 62% Fe Iron Ore Index, published by Fastmarkets, inching up to US\$ 70 per tonne at the start of October and reaching US\$ 73 per tonne at the time of writing.


Chinese market participants were absent from trading during the country's annual holiday, Golden week, at the start of October.

Local authorities in various Chinese provinces have ordered steel makers to reduce their output in a bid to combat air pollution and winter production restrictions are also affecting the market. China's iron ore imports dipped in August to 89.35 million tonnes, down 0.7% from July, but up from 88.66 million tonnes in August 2017, according to Chinese customs data. Imports rebounded in September however, rising to the

US ECONOMIC INDICATORS ARE BRIGHT

The economic outlook for the US seems generally rosy and this has been confirmed by recent economic data. The Conference Board reported that US consumer confidence hit an 18-year high in September and the Bureau of Economic Analysis confirmed that real GDP grew 4.2% in the second quarter. US durable goods orders surged 4.5% higher in August and personal income and spending were both up 0.3%. The Federal Reserve reported US industrial production increased 0.3% during September and improved by 3.3% as an annual rate in the third quarter. Manufacturing output increased 0.2%, while mine production rose 0.5% and utilities output was flat. On the other hand, slowing housing market numbers are becoming a source of concern given rising interest rates higher real estate prices. Markets have also been reviewing some of the major changes as a consequence of the new US trade agreement with Mexico and Canada. The new rules require that 75% of a new vehicle content be made in North America to qualify for tariff-free imports, up from current level of 62.5%. In addition, 70% of steel and aluminium must be produced in North America.

highest level in four months due to planned winter output restrictions China took in 93.47 million tonnes in

September, up 4.6% from August, but down 9.1% year-on-year. 

MOROS



3 DIFFERENT PRECOMPRESSION BOXES FOR DIFFERENT GRADES OF SCRAP:





H-P RANGE
Scrap shears with lateral precompression box and adjustable angle system





H-B RANGE
Scrap shears with lateral precompression box





H-A RANGE
Scrap shears with opposite precompression wings



Pol. Malpica, C/ E 54-55 - 50016 Zaragoza, Spain | T: (+34) 976 573 410 | web@moros.com www.moros.com

Surging stainless steel production, price volatility, and trade wars loom large

Asian markets are coming to terms with the growth of Indonesian production and European producers face new competition from would-be exporters to the US diverted by new tariffs. All are having to cope with sharp price movements.

Since early September, LME three-month nickel prices have traded from as low as US\$ 12 080 per tonne to as high as US\$ 13 300 per tonne. Other key raw material inputs for stainless steel production have experienced even greater price volatility. Cobalt prices at the London Metal Exchange dipped as low as US\$ 55 500 per tonne in early October, down from its second quarter average of more than

US\$ 87 000 per tonne. The downtrend in cobalt prices has been associated with a saturated Chinese sulphate market, along with higher exports of concentrate from the Democratic Republic of the Congo, according to Uwe Dierkes from Siegfried Jacob Metallwerke GmbH & Co KG in Germany. Given the uptick in commodity price volatility, rising stainless steel production in

China and Indonesia, and an expanding list of global risk factors, stainless scrap recyclers are faced with heightened uncertainty and myriad challenges.

COMPETITIVE ASIAN MARKET CONDITIONS

According to figures from the International Stainless Steel Forum in Brussels, China produced 13.64 million tonnes of stainless steel in the first half of 2018, an increase of 13.2% on the first half of 2017. However, market participants report that stainless producers in China and elsewhere in Asia are growing increasingly concerned about rising output from



Indonesia (see box). In the latest edition of the BIR World Mirror on Stainless Steel & Special Alloys, Vegas Yang from HSKU Raw Material Ltd reports that 'China's stainless mills - once the lowest-cost producers - have thrown in the towel. State-owned Tisco and Baosteel, among others, have taken an anti-dumping case to the government in the hope of blocking imports of Indonesian stainless.' Taiwanese and South Korean stainless steel mills have also indicated that they are losing market share to Indonesia's low-cost stainless steel coil production.

'A DOUBLE-EDGED SWORD'

The depreciation of emerging market currencies in Asia this year has created both challenges and opportunities. For stainless steel producers in India, the depreciation of the Indian rupee is 'a double-edged sword' according to Andre Reinders from Nicrinox Fze. 'While a lower rupee may reduce costs (in US dollars) for India's stain-

less steel producers that export in dollars, this also increases domestic, rupee-based sales prices of stainless steel such that growing domestic consumption may slow down,' Reinders reports in the BIR Mirror.

In addition, there are concerns that Indonesian nickel pig iron (NPI) may become an increasingly attractive raw material input in India, potentially displacing some Indian stainless scrap consumption in the near future. 'On the whole, NPI output from Indonesia is expected to reach 290 000 tonnes in 2018, approximately 100 000 tonnes higher than the previous year,' according to Andy Farida from MB Fastmarkets in London.

TRADE DISPUTES IMPACTING MARKETS

In Europe, the influx of stainless steel finished product imports has raised concerns across the European stainless supply chain. As stainless steel shipments are diverted from the US market due to the Section 232-related import tariffs,

European producers are facing increased import competition. The potential impacts of new EU combustion engine regulations on demand for stainless applications within exhaust systems have only compounded those concerns, according to Joost Van Kleef from Oryx Stainless B.V. In the United States, Rick Dobkin from Shapiro Metals and Barry Hunter of Hunter Alloys LLC indicate the continued decline in finished stainless imports resulting from the 232 tariffs has contributed to rising US stainless mill output.

The International Stainless Steel Forum reports stainless steel production in Europe increased 1.4% in the first half of 2018 to more than 3.9 million tonnes while production in the USA increased 1.6% over the same period to more than 1.4 million tonnes. As stainless steel production in the United States has improved, stainless scrap (including revert scrap) may now account for 80-90% of the feedstock for US stainless mills, according to some industry analysts. At the same time, US exports of stainless steel scrap increased 56% year-on-year during the first eight months of 2018 to 476 000 tonnes as improved import demand from Canada, India, and Vietnam more than offset weaker Chinese demand, according to trade data from the US Commerce Department.

NICKEL FUNDAMENTALS LOOKING UP?

The International Nickel Study Group in Lisbon is now forecasting that world nickel usage will increase to 2.422 million tonnes in 2019, outstripping global nickel production of 2.389 million metric tonnes, a supportive feature for nickel prices going forward. Meanwhile, nickel stocks in LME warehouses have declined by more than 147 000 tonnes so far this year. At the recent Bureau of International Recycling convention, Jim Lennon, from Macquarie Capital (Europe) projected that the nickel in scrap component of global stainless steel production could increase to 945 000 tonnes in 2018 and 983 000 tonnes in 2019, up from 904 000 tonnes last year. 

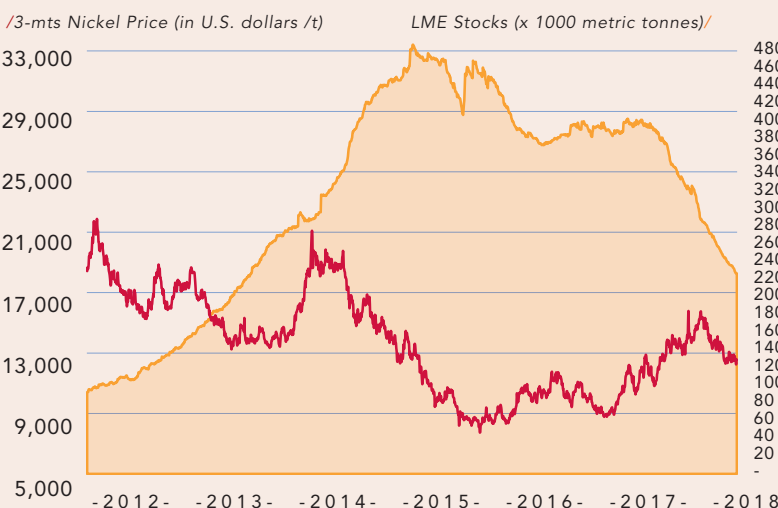


The lowest price for the year is still ahead

Despite lower than expected NPI production in China (due to environmental inspections), the downside price pressures prevail. Demand has been weakening around the globe as stainless steel stocks will be trimmed and the risk of a stronger US dollar may impact the Ni price until the end of the year.

Nickel

Reference date: 1 November



Survey gloom as traders grapple with global challenges

The international trade war between the US and China continues to beset an uncertain sector which appears to be in a more pessimistic mood now than in recent months. Few scrap markets are able to look on the bright side.

The situation on the European non-ferrous metal markets remains difficult. Prices on the London Metal Exchange and scrap prices have been moving in a fairly manageable range for quite some time but the markets are burdened by growing investment uncertainty. The sanctions policy of US President Donald Trump, as well as the environmental legislation in China, have had a massive impact on the metal and metal

scrap markets in Europe in recent months. This is confirmed by a recent survey of European metal trading companies.

For example, a majority of respondents (52%) rated their business situation worse at the beginning of October than in the past three months, with only 5% reporting a positive development. Surprisingly, the companies commented mostly on the supply of non-ferrous metal scrap.

Only 33% of the companies reported a good supply situation and 30% rated the current supply situation as bad. Three months earlier, this had been only 10%. Some 37% of the respondents see a balanced market situation. However, two-fifths of business people surveyed (41%) expect the scrap supply to stay at the current level or improve and one in five (21%) think it

will rise again. By contrast, only 38% expect further supply shortages. Scrap is clearly reaching the market quite quickly as only 28% of the companies surveyed reported high inventories. A strong majority of 64% consider their inventories balanced with only 8% reporting low inventories.

A major uncertainty in Europe is the German automotive industry. Almost all major car manufacturers have been criticised in the wake of the exhaust gas scandal and high diesel pollution concerns and, as a result, European sales are stagnating. This means factories are placing their orders more carefully than before, which has impacted the entire cycle of non-ferrous metals.

ALUMINIUM

By mid-October, the London Metal Exchange's high grade aluminium price



es stood on a solid note between US\$ 2 023 – 2 223. Alloy was valued around US\$ 1 400 - \$ 1 420.

As mentioned above, the automotive crisis is omnipresent, and that ultimately reduced the quantities of aluminium being ordered. Another question is how Russian producer Rusal will cope if full-blown sanctions are imposed by the US. And because China no longer imports European scrap for environmental reasons, the business of many market participants is being affected. Stock levels were in mid-October were 1 082 600 tonnes for high grade

aluminium and 13 580 tonnes for aluminium alloy. Prices for primary aluminium 99.7 were around US\$ 2 397. Wire Scrap (Achse) reached US\$ 1 991 and aluminum turnings (Author) were worth US\$ 903 on the Continental scrap market. In the UK, commercial pure cuttings fetched between US\$ 1 450 - US\$ 1 530 and loose old rolled cuttings averaged US\$ 1 054 - US\$ 1 094.

LEAD

The lead business has been unspectacular. In mid-October, LME quotations

were around US\$ 2 027 for the three-month contract while stocks in its licensed warehouses were 115 875 tonnes.

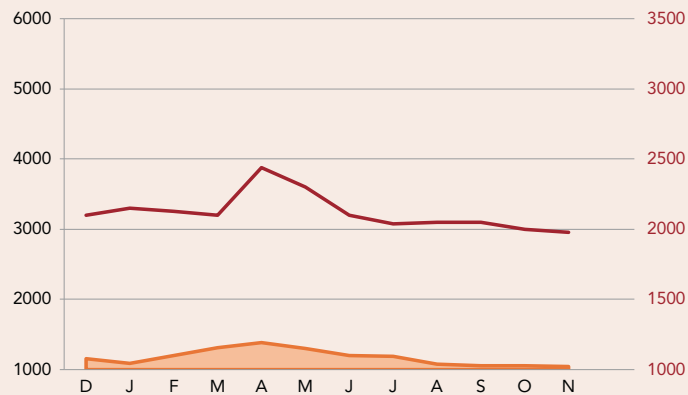
Demand was restrained with the long warm summer in Europe leading to a decline in lead-acid battery sales, which may not pick up if the winter is rather mild, as expected. As a result, battery factories are tending to order for the medium-term and refrain from building up larger inventories. The mid-October prices for new soft lead were US\$ 2 240 and soft lead Scrap (Paket) was at US\$ 1 893.

LME Non-Ferrous Prices & Stocks

Reference date: November 1, 2018

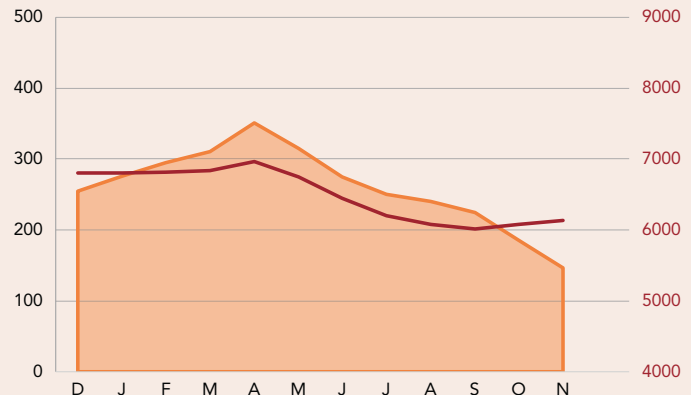
/ Aluminium

– LME prices (in U.S. dollars/MT)
– LME stocks (x 1000 metric tonnes)



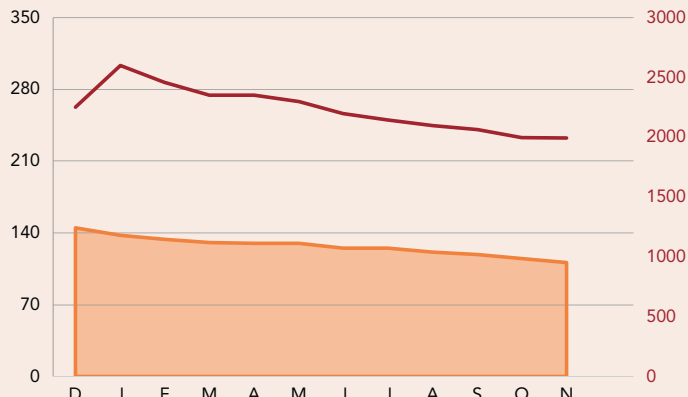
/ Copper

– LME prices (in U.S. dollars/MT)
– LME stocks (x 1000 metric tonnes)



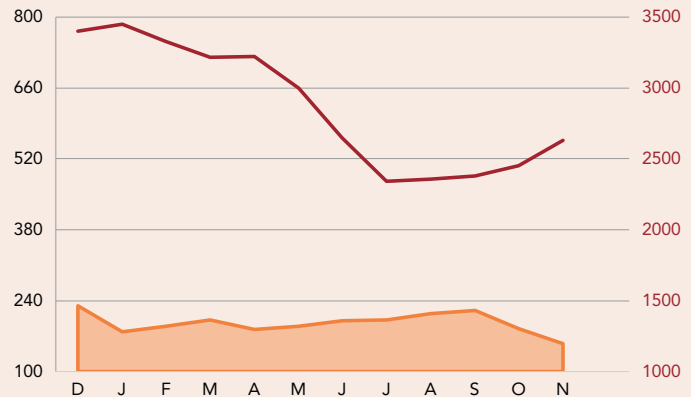
/ Lead

– LME prices (in U.S. dollars/MT)
– LME stocks (x 1000 metric tonnes)



/ Zinc

– LME prices (in U.S. dollars/MT)
– LME stocks (x 1000 metric tonnes)



COPPER

The copper market recovered noticeably during this reporting period. While grade A was quoted at around US\$ 5 870 on the LME in early September, it reached around US\$ 6 245 as Recycling International was going to press. But observers sense that volatility is dominating the market. On the other hand, prospects for the market are not bad. According to the most recent calculations of the International Copper Study Group (ICSG), the market will end this year with a deficit of around 92 000 tonnes and for 2019 it expects a deficit of 65 000 tonnes. World mine production increased by about 4.5% in the first seven month of 2018, with July being the last month under report. World refined production is estimated to have increased by 1.5% in the first seven months of 2018 with primary production (electrolytic and electrowinning) rising by 0.5% and sec-

ondary production (from scrap) increasing by 6%. Secondary refined production could well beat the four million tonnes reported in 2017. The ICSG total for the first seven months of 2017 was 2 348 million tonnes, while in 2018 it grew to 2 496 million tonnes. The last four months of this period all recorded totals of around 350-360 000 tonnes. Not to be overlooked are economic-political uncertainties, which are likely to drive investors out of currencies and into the commodities markets. Bankers report that the number of funds investing in the copper market has risen again. European metal trading companies also expressed their optimism in early October in the latest survey of sentiment. Around 39% of traders expect rising copper prices over the next three months, while as many anticipate steady price levels. Only 22% expect copper prices to decline. Copper scrap prices were also significantly higher

than at the beginning of September. Bright wire scrap (Kabul) was at US\$ 6 108, granules 1a (Kasus) US\$ 6 125 and non-alloyed bright wire I scrap (Kader) US\$ 5 894. LME inventories remained at a low level of 160 900 tonnes.

NICKEL

Overall, the nickel market remained stable, with three-month LME prices ranging from US\$ 12 500 to US\$ 12 550. Outside the stock market, nickel cathodes sold for about US\$ 11 000. Alloy scrap prices also remained at close to the same levels, with V2A scrap generating US\$ 1 198 and V4A scrap US\$ 1 812.

ZINC

Zinc remains the best-performing metal. During the period under review, prices rose noticeably, with zinc SHG currently selling at around US\$ 2 617 over the three months on the LME. LME stocks are down to 181 200 tonnes. Outside the LME, known stocks are becoming smaller while, at the same time, production of zinc metal is decreasing in China. Prices for special high grade zinc had increased from US\$ 2 628 to US\$ 2 871 since the beginning of September. Old zinc scrap (Zebra) was worth US\$ 2 050. As always with rising prices, purchasers within the zinc processing industry are holding back on their orders. Business deals were therefore taking place on a routine scale and only to cover short-term needs. Longer-term contracts have become extremely rare. And the assessment of the zinc market is extremely balanced among the metal dealers surveyed at the beginning of October. The proportion anticipating rising, falling or stagnating zinc prices was much the same. This makes it clear that there are apparently enough variables in the zinc market at the moment to make a reliable forecast difficult for the coming months. ©

**We buy
Magnesium
Scrap
Worldwide**

AlliedMagnesium
 Veerweg 9
 5145 NS Waalwijk
 The Netherlands
 T: +31 416 673 854
 sales@alliedmag.com

CONTRIBUTED BY
 * Ralf Schmitz, German non-ferrous trade association VDM (Europe)
 * Robin Latchem

ilg

INTERNATIONAL

ilg International GmbH
Forstweg 5
52382 Niederzier
Germany

T: +49 (0) 24 28/94 33-0
F: +49 (0) 24 28/94 33-33

E-Mail: rs@ilg-international.com
Internet: www.ilgmbh.de

Job safety for the recycling industry



Member of  BDSV  BIR

- 40 years experience & know-how
- patented engineering
- noise protection enclosures & walls
- explosion-resistant
- splinter protection for your staff



Get the Scrap Advantage

If you aren't reading *Scrap*—the official magazine of the Institute of Scrap Recycling Industries (ISRI)—you're missing out on a competitive advantage. That's because *Scrap* provides the information you need to achieve greater success.

Every bimonthly issue of *Scrap* offers in-depth articles on market trends, new equipment and technology, management issues, and more, while its columns and departments keep you up-to-date on industry news, meetings, new products, and personnel moves.

A subscription to *Scrap* is a small investment that can yield large rewards for your company. Don't miss a single information-packed issue of *Scrap*.

Subscribe today! Visit scrap.org to view our subscription rates and to subscribe online.



Chinese buy US businesses to side-step ban

The number may not yet be large but there have been significant recent investments by major Chinese paper companies in North American counterparts – with the UK also being eyed.

With potential bans on imported recovered paper looming over the next couple of years, Chinese containerboard producers are taking steps to move some production into the United States. The most significant among a handful of US purchases this year is the acquisition of two mills in

Maine and Wisconsin by ND Paper, a subsidiary of China's Nine Dragons Paper. In October, ND Paper announced that those mills would use old corrugated (OCC) and mixed paper to make almost 3 100 metric tonnes of unbleached recycled pulp per day. About 2 400 tonnes of pulp

per day will be shipped to China for use in Nine Dragons containerboard mills. The remaining 700 tonnes per day will be used to feed a converted containerboard machine at the Wisconsin mill. The fibre likely to be used by those two mills represents about 9% of the average amount of recovered paper shipped from the US to China in 2016.

For those sending to China, good clean quality fibre still secures high prices, and that applies to both the brown and de-inking grades. Prices for OCC to China are said



HOT SUMMER LINKED TO EUROPEAN GLUT IN USED CLOTHING

International markets are seeing an over-supply of used clothing currently being put onto the markets, particularly in Western Europe.

Some reports have suggested that the influx of clothing currently being experienced by collectors and sorters in this part of the world can in part be explained by the long hot summer experienced throughout most of Europe. During this period, in areas where they are used to hot weather, this encouraged more people to donate throughout the summer, whereas in areas where good weather is usually less predictable, people were less likely to donate their clothing. But by the end of the summer they more than made up for it by donating the items they would have otherwise got rid of in the summer on top of

those normally deposited in the autumn. An alternative suggestion could be that people in Europe are buying more new clothing in increasing amounts and therefore need to get rid of older clothing. Whatever the explanation, European collectors and sorters have a glut of used clothing. One European industry leader predicts that in the short to mid-term, markets for sorted goods destined for Eastern Europe and Africa will remain stagnated, and the oversupply of unsorted original used clothing from Western European collections will last until at least mid-November. This is likely to result in a substantial decrease in the value of used clothing and suppliers such as charities and local authorities/municipalities will probably see their incomes drop. Values have already fallen

significantly this year in the UK and it looks as if this trend is set to continue throughout Europe. Reports from Ghana, the biggest market in West Africa and one of the biggest used clothing markets in the world, have cited the weakness of the Ghanaian currency (the Cedi) and high tariffs as seriously affecting the economic activities of the sector. As the Cedi has decreased in value against European and other hard currencies, the prices that are ultimately paid for by the public in Ghana in Cedis have increased significantly with sales decreasing dramatically as people find it difficult to afford even second-hand clothing. It has got to the point where some dealers are asking their Government to reduce their import tariffs to sustain them in business. ☒

to be on average US\$ 80-90 higher than to other countries. In India, strong demand in early October pushed up prices by about US\$ 30 but later in the month they had dropped again. This is caused by the news that the Chinese mills have not yet received their new import permits.

US TO SUPPLY PULP

During the first eight months of 2018, US recovered paper exports to China were down 47% compared to the same period in 2016 - equivalent to about 10 700 tonnes per day. According to ND Paper, 'These moves are consistent with our goal of environmentally-sustainable paper-making and further support Nine Dragons' company-wide fibre sourcing requirements. The addition of recycled pulp lines will provide a stream of supply to our Asian mills, as well as support internal requirements in the US.' ND Paper followed that announcement with the purchase of another bleached Kraft pulp mill in Maine. In August, Nine Dragons purchased a recycled pulp mill in West Virginia, capable of 220 000 tonnes a year, while a subsidiary of China's Anhui Shanying International, took over a mothballed pulp and packaging paper mill in Kentucky.

OCC PRICES CHECKED

Meanwhile, curtailed exports have kept domestic OCC prices in check despite continued strong demand from North American mills. Some mills in south-eastern USA were impacted by hurricane-related flooding - notably Sonoco Products' complex in South Carolina, which was temporarily closed, costing the company 20 273 tonnes of uncoated recycled paperboard and corrugated medium paper production. The market for chemical deinking grades remained strong, and recently received a further boost by a set of lucrative contracts for the purchase of shredded office paper from Shred-It Inc. The national average mill buying price for sorted office paper (SOP) in October improved by 3%, to US\$ 233.75 per ton (FOB seller's dock) based on surveys of buyers and sellers by The Paper Stock Report. That represents a 39% improvement relative to a year earlier.

DEMAND FOR VIRGIN

RISI vice-president of fibre economic analysis David Fortin told the organisation's 33rd annual North American conference in San Francisco in mid-October that demand for US market pulp would rise 5% in 2018 and by around 2.5% in 2019 'as a relatively strong global economy, and China's

aggressive import policy changes in the recovered paper sector, drive additional demand for virgin pulp'. According to ISRI, Fortin noted that 'Further (pulp) gains are likely to be marginal due to the much higher price of virgin pulp compared to even the elevated domestic (recovered paper) prices in China.'

CHINESE EYE UK

Fibre dealers in the UK believe the Chinese strategy to acquire businesses in the US applies equally to the UK. Partly because of the quality pressures on the Chinese market, the major three Chinese mill groups which have traditionally imported used cardboard from Europe and America are said to be actively looking to develop mills in the UK. Concerns are also growing that quotas issued by the Chinese government for the first part of 2019 may not be announced until the end of this year. That could drive an excess capacity of used cardboard in the UK market, hitting processing. ☒

CONTRIBUTING TO THE RECOVERED PAPER MARKET ANALYSIS:

Ken McEntee, publisher of The Paper Stock Report, paperstockreport.com



Traders forced to change tack or go out of business

Ports closed to plastic scrap by China and other south-east Asian countries have prompted exporters to switch their business models towards recycled granules.

The plastic scrap market in Europe is still struggling and values have not recovered in the absence of sufficient demand and recycling capacity. Slowly, the exporting of plastic scrap to Asian countries is dying with most of the material now remaining in Europe for recycling. New investments have been forthcoming to increase the capacity of existing plants and to kick off the construction of new ones but the available volume of plastic scrap remains much higher than demand. This means prices keep falling. For example, those for LDPE mix colour film collected from retailers and industry, have hit negative levels at the collection point. Most of the new recycling plants in Europe have adapted to export their recycled granules because they cannot find enough customers within Europe to take all of their products.

High demand from Asia is supporting them in this new business. Malaysia, which had put a temporary ban of three months on the import of plastic scrap, announced in the middle of October that it will continue for another three months. Exporters who had been waiting to resume business at the end of October must now wait until the end of January 2019 to find out if Malaysia will reopen the door to scrap imports. On the other hand, most of the Indian recyclers whose licences expired at the end of October were still hopeful of better news that permission would be renewed in November. This expectation is sustaining the price of LDPE natural clean grade in the European market.

Vietnamese ports are still flooded with scrap containers. But in a positive development, a review of those recyclers with licences and adequate facilities to treat plastic scrap is expected to mean they will be allowed to clear cargoes that have been waiting at the ports for a long time. We are hearing that Vietnam will be re-opening soon and this should bring back some energy into the European market. Some containers were cleared from port in

mid-October and that has prompted exporters to buy and hold the material for Vietnam.

Prime plastics prices were under pressure because of the USA-China trade war. USA and China had both imposed a duty of 25% on import of goods from each other. No direct exports to China created overstock in the US and the pressure of moving out the goods brought down the value of prime plastics. At the time of writing, crude oil prices in October were down by almost 8%. At the beginning of the month, Nymex-listed WTI Crude oil was over US\$ 75 per barrel. By the third week, it was down to US\$ 69, bringing further pressure on the price of prime plastics. Shipping lines are trying to increase freight by stimulating demand. Having announced no sailings for some vessels in October, citing less cargo to move, they are trying to increase rates in November for freight from Europe to Far East destinations by US\$ 50 per TEU. ☐

CONTRIBUTED BY

Surendra Borad Patawari, ceo of Gemini Corporation

Plastic could be fantastic for innovative eco-concrete

Wherever you look, plastic waste seems to be lying around on every street corner. A group of UK researchers, however, argues that the construction industry could easily use this material in green concrete.

Plastic waste can be crushed and used in concrete, researchers at the University of Bath and the University of Cambridge in the UK have concluded. The academics are convinced that plastic scrap is a 'viable ingredient' for the construction industry. Their research focussed on India, which is currently facing a twin challenge of a national sand shortage and the blight of plastic litter (40% of India's plastic waste is sent straight to landfill). Collaborating researchers at Goa University have confirmed the breakthrough offers a two-fold solution.

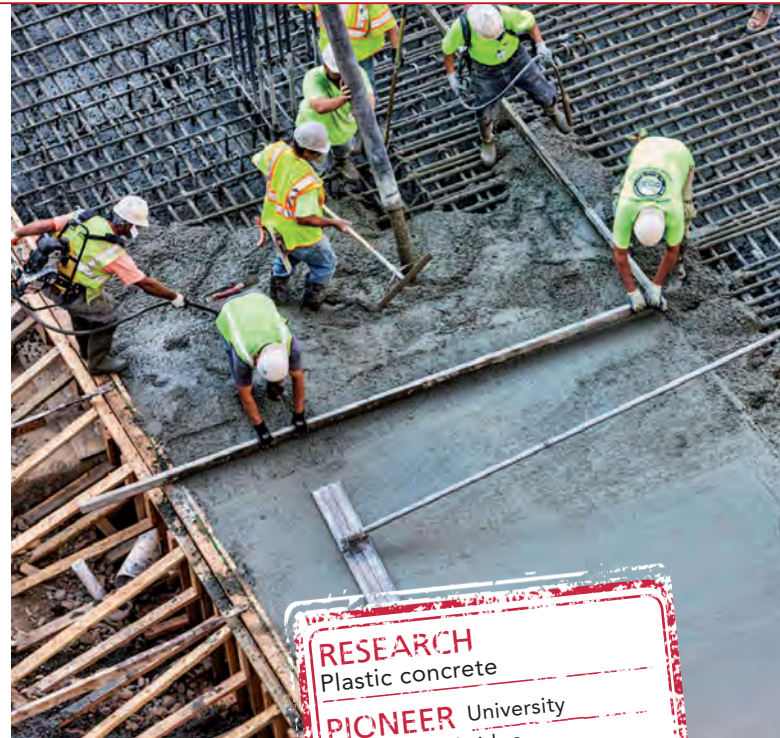
TOO MUCH PLASTIC, TOO LITTLE SAND

Sand traditionally makes up about 30% of concrete but, by incorporating 10% of fine plastic residue, the researchers believe India could save 820 million tonnes of sand a year. This is great news for a nation experiencing a rapidly growing urban population and 'booming' construction sector. In 2014 alone, an estimated 280 000 tonnes of cement was manufactured in India. The sand shortage is said to be so acute that it has sparked unregulated sand extraction from riverbeds, a

practice that has recently been banned in many Indian states. Civil engineering specialist Dr John Orr, who led the research project, says India currently produces 15 000 tonnes of plastic waste daily and the lack of recycling facilities is a major challenge.

A BALANCING ACT

'Typically, when you put an inert, man-made material like plastic into concrete, you lose strength,' Dr Orr points out. 'This is because the plastic material doesn't bond to the cement paste in the material in the same way that sand particle does.' In order to improve that bonding, the flakes were subjected to a 5% hypochlorite solution and a 4% sodium hydroxide solution. The key element in the research was to balance a small loss in strength with the using worthwhile amounts of plastic. Dr Orr reports that his team created and



tested 11 different proportions of plastic to get the right mix.

ONLY 12% LESS STRENGTH

The material used consisted of irregularly shaped PET particles between 2.6 mm and 11.4 mm, in quantities between 10% and 20%. The loss in tensile strength was only about 12% and the researchers succeeded in achieving a target compressive strength of 54 MPa to replicate that of traditional structural concrete. Dr Orr underlines: 'We have proven that end-of-life plastic really is a viable material for use in some areas of construction that might help us tackle the issues of not recycling the plastic and meeting the demand for sand.' This innovative research project was supported through funding from the British Council under the United Kingdom India Educational Research Initiative programme. ©

For more information, contact Dr Orr at: jjo33@cam.ac.uk

If you know of an innovative recycling-related project, contact: kirstin@recyclinginternational.com

27-30 NOVEMBER LYON
Pollutec
Reed Expositions
☎ +33 1 4756 5097
✉ vincent.roumeas@reedexpo.fr
www.pollutec.com

16-18 JANUARY SALZBURG
**International Electronics
Recycling Congress**
ICM
☎ +41 62 785 1000
✉ info@icm.ch
www.icm.ch

30-31 JANUARY AMSTERDAM
7th Ship Recycling Congress
ACI (Europe)
☎ + 44 (0)203 141 0607
✉ mlampropoulou@acieu.net
www.acieu.net

3-4 FEBRUARY KOCHI
**6th International Indian
Material Recycling Conference**
Metal Recycling Association of
India
☎ +91 22 65754321
✉ mail@mrai.org.in
www.mrai.org.in

10-11 MARCH DUBAI
8th BMR International Conference
Bureau of Middle East Recycling
☎ +971 4 437 5744
✉ info@bmr.ae
www.bmr.ae

21 MARCH DÜSSELDORF
Altpapiertag
Bvse
☎ +49 228 98849 25
✉ info@bvse.de
www.bvse.de

20-22 MARCH VIENNA
**International Automobile
Recycling Congress**
ICM
☎ +41 62 785 1000
✉ info@icm.ch
www.icm.ch

6-11 APRIL LOS ANGELES
ISRI Convention & Expo
ISRI
☎ +1 202 662 8500
www.isri.org

MAY SINGAPORE
World Recycling Convention & Expo
Bureau of International Recycling
☎ +32 2 627 5770
✉ bir@bir.org
www.bir.org

1-3 JULY TOKYO
E-Mobility & Circular Economy
ICM
✉ info@icm.ch
www.icm.ch

7TH SHIP RECYCLING CONGRESS 2019

30th - 31st January // Amsterdam, The Netherlands

More Information or Registration: Mado Lampropoulou
Tel. +44 (0)203 141 0607 E: MLampropoulou@acieu.net

SPONSORED BY

- J.R.D. INDUSTRIES
- GALLOO
- SEA 2 CRADLE
- ISRA
International Ship Recycling Association

SUPPORTING PARTNERS

- VDR German Shipowners' Association
- EDA EUROPEAN DEMOLITION ASSOCIATION
- Alang Info The Maritime Solution

India's metal scrap scene to gather in the land of coconuts

More than 1500 recycling professionals from all over the world are expected to go to Kochi, south India on 3-4 February for the 6th International Indian Material Recycling Conference.

The two-day event will deliver comprehensive market-driven information on metals recycling and trading in India, while also focusing on a variety of aspects of the ferrous and non-ferrous scrap industries, both within India and worldwide.

There will be presentations on government policies, quality standards and inspection procedures that impact the importation and trading of metal scrap in India. Experts will also discuss business opportunities.

Kochi, also known as Cochin, is a major port city in the state of Kerala on India's south-west coast. Known for its places of worship and world heritage architecture, Kochi is surrounded with rivers, flora, and fauna.

With a total urban population of more than of 2.3 million within an area of 440 km², Kochi is the largest and the most populous metropolitan area in Kerala. Coconut production plays an important role in the state economy and culture of Kerala. 'Kera' means coconut so the state is named after the coconut tree. Venue for the International Indian Material Conference will be the Grand Hyatt Hotel in Kochi.

www.mrai.org.in



Upcoming ICM Events

www.icm.ch

IERC
2019



18th International Electronics Recycling Congress IERC 2019

January 16 – 18, 2019
Salzburg, Austria

IARC
2019



19th International Automobile Recycling Congress IARC 2019

March 20 – 22, 2019
Vienna, Austria

EMCE
2019



E-Mobility & Circular Economy EMCE 2019

July 1 – 3, 2019
Tokyo, Japan

ICM AG, Switzerland, www.icm.ch, info@icm.ch, +41 62 785 10 00



Metso's modular N-series provides extra flexibility

In response to growing market demand for site-to-site and on-site mobility, Metso Metal Recycling has developed the new N-Series Modular Shear / Baler / Logger (SBL).

The Metso N-Series Modular Shear (NMS) solution provides scrap facilities with a robust and reliable shear available in their choice of stationary, transportable, mobile or track-mounted styles to best meet their facility requirements.

'Application opportunities provided by this category of machine's high mobility include the ability to take the equipment to a remote job site or facility or relocate it to minimise scrap movement,' says Bob Pfeffer, Metso's product manager, shears & balers. 'Mobile or transportable SBLs are also increasingly being used for demolition projects to reduce material volumes for transportation efficiency.'

The unique modular design is ideal for small and mid-size scrap facilities where flexibility, low operating costs, ease-of-maintenance and durability are required. 'We evaluate market trends and survey our customer base to provide the desired equipment to satisfy

processing demands throughout the industry,' says Pfeffer. 'SBLs can open markets for small to mid-size processors for selling prepared scrap. There seems to be a good future as feeder yards are being tapped to provide material to larger yards.'

He says the right SBL for the application can provide improved operational uptime and he advises potential buyers to carefully compare, evaluate and understand the features and benefits of different machines.

Standard NMS features, such as Hardox 450 wear surfaces, superior blade slide guidance and a dual-articulating clamshell charge box provide the durability needed for increased performance and reduced equipment downtime.

Pfeffer added that 'quality service and parts support network are also very important considerations for the Shear, Baler, Logger investment.'

The NMS-series is equipped with a state-of-the-art PLC control system and includes a remote control for convenient and efficient operation.

Furthermore, online diagnostics and pump & cylinder test modes provide maintenance-friendly operation. 'Our electronic control system and high-efficiency hydraulics assure one of the lowest operational costs per tonne,' explains Pfeffer.

Additional options include an operator cab with air conditioning, tank heating, oversize cooling and a discharge conveyor system on the stationary model. Produced in state-of-the-art manufacturing facilities to ensure consistent quality with dependable, long-term and efficient site operation, the NMS-series is designed for a wide range of applications such as shearing, baling and logging a variety of HMS 2, select HMS 1, auto bodies, white goods and other metal scrap materials.

Metso holds an enviable reputation worldwide for its highly reliable and productive scrap processing equipment, including scrap shears, balers, briquetters and shredders from the Lindemann and Texas shredder brands. Remaining consistent with the quality of the first Lindemann stationary shear designed and built in the 1950s, Metso's NMS-series shear is the latest high-quality machine introduced to the industry. From the initial design, process and site plan, through to the commissioning phase, and beyond; Metso's centralised engineers and field service engineers around the globe provide ongoing support and system enhancements. 

#RecycleWithMetso
Discover more:
www.metso.com/recycling



As me and my friends don't have our own man cave, we use our local pub as our special hideaway. There we can be ourselves, which means that we can be presumptuous, shameless, free and easy.

Ostrich in the man cave

Once again, my best friends and I found ourselves in our favourite hang-out The Paranoid Parrot. This time however, it was not because our beloved wives had decided to join some soft-skill gatherings and courses such pelvic floor exercises, aura & chakra energy healing or advanced aroma therapy. No, some time ago, I read an article about 'men caves'.

A man cave or man-space is a male retreat, usually in the home, typically a specially equipped garage, spare bed-

'The Paranoid Parrot is our self-proclaimed man cave'

room or basement. The term is a metaphor describing a room where guys can do as they please, without any distractions.

Man caves have multiple purposes: they are a place to be alone, to indulge in hobbies, and to hang out with male friends. It is, loosely, a male-only space to retreat to watch sports matches or play video games or activities like that. Rules are relaxed; it is a place where other people's sensibilities about standards of cleanliness are not necessarily observed. It is, one might say, the last bastion of masculinity.

As none of us owned a man cave - our wives had forbidden it and we are such pussies - The Paranoid Parrot was our self-proclaimed man cave. So there we were, sitting at the bar with beer and whisky, as usual, and having a good time. After discussing politics, global warming, melting ice caps and

married life - in that order of importance - we inevitably started cracking jokes, which lasted until closing time. The best joke told that night came from Fritz.

A man walks up to the bar with an ostrich behind him. He sits down and orders a beer for himself and the ostrich. The bartender pours the beer and says: 'That will be US \$3.40 please'. The man reaches into his pocket and takes out the exact change.

The next day, the man and the ostrich come again the man again orders a beer for himself and the ostrich. Once again the man reaches into his pocket and pays with exact change. This became a routine until late one particular evening, they entered again. 'The usual?' asks the bartender. 'Well, it's close to last call, so I'll have a large Scotch for me and one for my mate', says the man.

'That will be US \$7.20', says the bartender. Once again, the man pulls exact change out of his pocket and places it on the bar. The bartender can't hold back his curiosity any longer. 'How do you manage to always come up with the exact change every time?' 'Well,' says the man, 'Several years ago I was cleaning the attic and I found this old lamp. When I rubbed it a genie appeared and offered me two wishes. My first wish was that if I ever needed to pay for anything, I just put my hand in my pocket and the right amount of money will be there.' 'That's brilliant' says the barkeeper, 'you'll always be as rich as you want for as long as you live. You're a genius! But one other thing sir, what's with the ostrich?' The man replies: 'Oh, my second wish was for a chick with long legs.' 🍷

Manfred Beck

ANALYZERS, HANDHELD

HITACHI
Inspire the Next

Hitachi High-Tech Analytical Science

Tubney Woods
Abingdon
Oxfordshire OX1 5QX
United Kingdom
☎ +44 1865 393 200
☎ +44 1865 393 333
✉ contact@hitachi-hightech-as.com
www.hitachi-hightech.com/hha



Rigaku Analytical Devices

30 Upton Drive, Suite 2
Wilmington, MA 01887
USA
☎ +1 781 328 1024
☎ +1 781 328 0119
✉ handhelds@rigaku.com
www.rigaku.com/handhelds

Thermo Scientific Portable Analytical Instruments

2 Radcliff Road
Tewksbury, MA 01876
USA
☎ +1 978 670 7460
☎ +1 978 670 7430
✉ pai.inside.sales@thermofisher.com
www.thermoscientific.com/niton

AUTOFLATTENERS / CRUSHERS

Granutech-Saturn Systems

201 East Shady Grove Road
Grand Prairie, TX 75050
USA
☎ +1 972 790 7800
☎ +1 972 790 8733
✉ sales@granutech.com
www.granutech.com

BALER, FERROUS

Harris/IPS Balers

315 W 12th Avenue
Cordele, GA 31015
USA
☎ +1 229 273 2500
✉ info@harrisequip.com
www.harrisequip.com

Jiangsu Huahong Technology Stock Co., Ltd



Huahong Industrial Park,
Zhouzhuang town, Wuxi, Jiangsu,
China
☎ +86 510 80 62 96 80
☎ +86 510 80 62 96 81
✉ info@asiabaler.com
www.asiabaler.com

Sierra Intl. Machinery

PO Box 1340
Bakersfield, CA 93302
USA
☎ +1 800 343 8503
☎ +1 661 327 7073
✉ info@sierraintl.com
www.sierraintl.com



Vezzani

Piazza Nevi 1
15076 Ovada (AL)
Italy
☎ +39 0143823069
✉ info@vezzani.biz
www.vezzani.biz

BALER, FERROUS



ZDAS, a.s.

Strojirenska 6
PO Box 145
59171 Zdar nad Sazavou
Czech Republic
☎ +420 566 643 212
☎ +420 566 642 850
✉ stanislav.pelikan@zdas.cz
www.zdas.cz

BALING PRESSES



HSM GmbH + Co. KG

Austrasse 1-9
88699 Frickingen
Germany
☎ +49 7554 2100 0
☎ +49 7554 2100 160
✉ info@hsm.eu
www.hsm.eu

BRIQUETTERS

RUF GmbH & Co. KG

Hausener Str. 101
86874 Zaisertshofen
Germany
☎ +49 8268 9090 20
☎ +49 8268 9090 90
✉ info@brikettieren.de
www.brikettieren.de

CABLE STRIPPERS

Bronneberg recycling machines & services

Branchweg 3
NL-5705 DR Helmond
The Netherlands
☎ +31 492 591 900
☎ +31 492 543 045
✉ info@bronneberg.nl
www.bronneberg.nl



Wrights Recycling

Machinery Ltd
Nethermoor Works
Otley Road, Guiseley
Leeds LS20 8BT
United Kingdom
☎ +44 1943 875 104
☎ +44 1943 870 961
✉ sales@wrightsltd.co.uk
www.wrightsltd.co.uk

CATALYTIC CONVERTERRECYCLERS

BASF Metals Recycling Limited

Forest Vale Road Cinderford
Gloucestershire GL14 2PH
United Kingdom
☎ +44 1594 821 314
☎ +44 1594 826 013
✉ louisa.reynolds@basf.com
www.converter-recycling.basf.com



Hensel Recycling GmbH

Mühlweg 10
63743 Aschaffenburg
Germany
☎ +49 6028 12 09 0
☎ +49 6028 12 09 20
✉ info@hensel-recycling.com
www.hensel-recycling.com



affinia Metals GmbH

Alleestrasse 8
50354 Hürth
Germany
☎ +49 22 33/80 80 10
☎ +49 22 33/80 80 199
✉ info@affinia.group
www.affinia.group

GRANULATING EQUIPMENT

MTB

Quartier de la Gare
38460 Trept
France
☎ +33 474 928 768
☎ +33 474 929 346
✉ info@mtb.fr
www.mtb.fr

MOBILE, SHEARS



DANIELI CENTRO RECYCLING

Danieli Centro Recycling

Henschelplatz, 1
34127 Kassel
Germany
☎ +49 561 801 5816
✉ germany@danieli-henschel.com
www.danieli-centro-recycling.com



Lefort SA

Rue Tahon, 1A
6041 Gosselies
Belgium
☎ +32 7135 1609
✉ info@lefort.com
www.lefort.com



ZDAS, a.s.

Strojirenska 6
PO Box 145
59171 Zdar nad Sazavou
Czech Republic
☎ +420 566 643 212
☎ +420 566 642 850
✉ stanislav.pelikan@zdas.cz
www.zdas.cz

NOISE PROTECTION

ILGmbH
Forstweg 7
52382 Niederzier
Germany
☎ +49 24 28 94 33 0
☎ +49 24 28 94 33 33
✉ info@ilgmbh.de
www.ilgmbh.de

SHEARS, GUILLOTINE



C. E G. SRL
Via Cesare Battisti, 77
21020 Daverio (VA)
Italy
☎ +39 0332 947242
☎ +39 0332 948245
✉ info@ceg-group.it
www.ceg-group.it

SHREDDERS



ZB Group
Zamabilde s/n - APDO, 40
20100 Erreterria - Gipuzkoa
Basque Country (Spain)
☎ +34 943 515 500
☎ +34 943 515 562
✉ info@zbgroup.es
www.zbgroup.es

SOFTWARE SERVICES

Recy Systems AG
Weihenstephaner Strasse 1
85716 Unterschleissheim
Germany
☎ +49 (0) 89 327 15 40
☎ +49 (0) 89 327 15 44 4
✉ info@recy-systems.com
www.recy-systems.com

RECYCLING EQUIPMENT



ELDAN RECYCLING A/S
Værkimestervej 4
5600 Faaborg
Denmark
☎ +45 6361 2545
✉ info@eldan-recycling.com
www.eldan-recycling.com

TIRE RECYCLING EQUIPMENT



Eco Green Equipment
425 North 400 West
Building 4 A
North Salt Lake, UT 84054
USA
☎ +1 801 505 6841
☎ +1 801 438 6340
✉ sales@ecogreenequipment.com
www.ecogreenequipment.com

SCREENS



ECOSTAR srl
Via L. da Vinci, 3
36066 Sandrigo (VI)
Italy
☎ +39 0444 750 942
☎ +39 0444 659 951
✉ info@ecostarsrl.it
www.eco-star.it
We produce and sell disc screens patented since 1997 for waste and recyclable materials From 10 to 200 t/h. 350 references worldwide.

SHREDDERS (SLOW-SPEED, HIGH-TORQUE)



KompTech GmbH
Kühau 37
8130 Frohnleiten
Austria
☎ +43 3126 505 0
☎ +43 3126 505 505
✉ info@komptech.com
www.komptech.com

WEEE RECYCLING EQUIPMENT



ANDRITZ MeWa GmbH
Herdweg 4
75391 Gechingen
Germany
☎ +49 7056 9250
☎ +49 7056 925 119
✉ info.mewa@andritz.com
www.andritz.com/mewa

Highlight your info here!
Reach out to your clients today!

Sign up to the Recycling International Buyers' Guide (print & online) and showcase your company's details under the heading of your choice.

Combine the power of print with the reach of the internet. The Buyers' Guide (print & online) is a cost-effective and efficient way for your company to make connections with the global recycling community.

Order now and submit your entry, which will be printed in every issue of the Recycling International magazine and posted online at www.recyclinginternational.com

To include your company in the Buyers' Guide (print & online) or for more information, please contact Judith Wanjala at judith@recyclinginternational.com





IN THE JANUARY/FEBRUARY 2019 ISSUE

- The year 2019: what will be in store for the global scrap scene?
- Highlights from the Pollutec and Ecomondo trade shows
- Family business: Schuy Recycling of Germany
- Conference reports: latest trends in paper and plastics recycling

And, of course, our regulars:

- Viewpoint • News • Products • In the laboratory • In-depth market analysis covering ferrous and non-ferrous metals, nickel & stainless, paper & textiles, plastics
- Beck's

CLOSING DATES

Editorial closing date:
Monday January 21
 Contact Martijn Reintjes
 ☎ +31 882 944 800
 ✉ martijn@recyclinginternational.com

Advertisement closing date:
Monday January 21
 Contact Judith Wanjala
 ☎ Mobile: +31 655 689 947
 ☎ Office: +31 882 944 739
 ✉ judith@recyclinginternational.com

EXTRA CIRCULATION!

Additional copies of the January/February 2019 issue will be on display at:

Identiplast
 London (UK)
7-8 March

8th BMR International Conference
 Dubai (UAE)
10-11 March

IARC
 Vienna (Austria)
20 - 22 March

Alt Papiertag
 Düsseldorf (Germany)
21 March

Weekly Newsletter
 Delivered directly to your inbox every Friday
 So sign up now!

www.recyclinginternational.com/newsletter/subscribe

ADVERTISER INDEX

ACI (Europe)	68	ICM AG	69	Seram Group	39
Allied Magnesium	62	ILG Industrielärmschutz	63	Stahlwerk Augustfehn Schmiede	45
Bano Recycling	75	Jiangsu Huahong Technology	53	Stahlwerke Bochum	11
Birim Makina	26	John R. Adam	51	Steinert	43
Bollegraaf Recycling Machinery	27	Lefort SA	2	Terex Fuchs	76
Bronneberg	50	Metso Germany	13 /70	Tomra Sorting	52
Cimbria Srl	12	Moros (Industrias Hidráulicas)	57	Umicore Precious Metals	30
Exodus Machines	4	Panizzolo	34/35	URT Umwelt-und Recyclingtechnik	48
Felemang	42	Redwave	10	Van Peperzeel	31
Forrec Srl	55	RUF	19	Vezzani	16
Goudsmit Magnetics	44	Scrap Magazine	63		
Hermion	49	Sennebogen	8		

For advertisements please contact:
Judith Wanjala (Sales Manager)
 Informaticaweg 3
 7007 CP Doetinchem
 ☎ + 31 882 944 739
 ☎ + 31 655 689 947
 ✉ judith@recyclinginternational.com

How to get your message across to more than 33 000 decisionmakers in 125 countries worldwide? Contact us!

RECYCLING INTERNATIONAL

The go-to source of global recycling information

Address
 Eisma Industriemedia
 Informaticaweg 3
 7007 CP Doetinchem
 The Netherlands

☎ +31 882 944 800
 ✉ info@recyclinginternational.com
www.recyclinginternational.com

Publisher
 Rens Sturuss
 r.sturuss@eisma.nl

Chief Editor
 Martijn Reintjes
 martijn@recyclinginternational.com

Associate Editor
 Kirstin Linnenkoper
 kirstin@recyclinginternational.com

Editorial Consultant
 Robin Latchem

Art Direction
 ZeeDesign
 ☎ +31 517 34 30 00
 ✉ info@zeedesign.nl

Printing Company
 Veldhuis Media
 Kanaaldijk OZ 3
 8102 HL Raalte
 The Netherlands

Subscriptions
 ☎ +31 882 266 649
 ✉ subscription@eisma.nl
 € 149 a year (excl. V.A.T.)

Advertising Sales
 Judith Wanjala
 ☎ + 31 882 944 739
 ☎ + 31 655 689 947
 ✉ judith@recyclinginternational.com

Recycling International is a publication of Eisma Industriemedia

ISSN 1387-8700
 Copyright 2018©

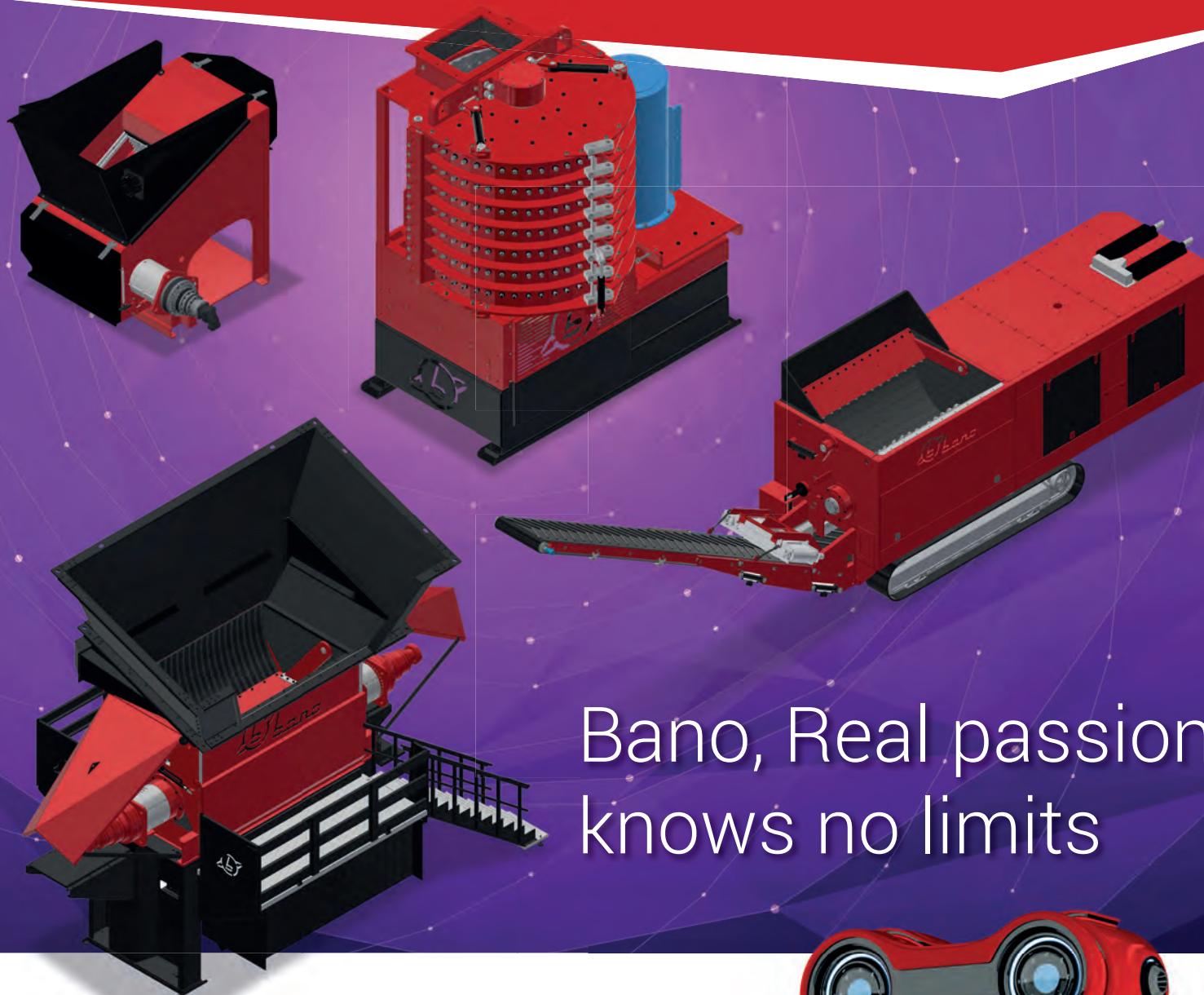
All rights reserved. No part of this publication may be reproduced or transmitted by any means without written permission of the publisher.

Member of





A modern technology for an intelligent recycling



Bano, Real passion
knows no limits

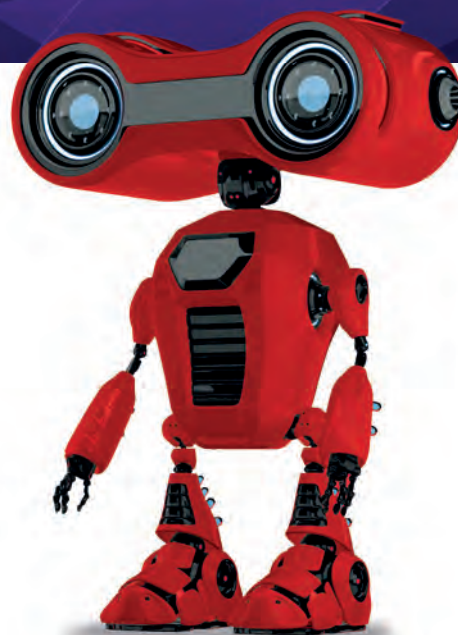
Every day is a new day in our eternal pursuit of innovation.

Every day is a new challenge, a new opportunity to develop a new solution.

This is our company philosophy driving our attitude, galvanizing our creativity and skills.

A lot has been done: now we are able to offer a wide range of products and solutions to meet market requests and customers' expectations.

We believe we have lots more to do. **See you tomorrow.**



Bano Recycling s.r.l.
via Marcello, 24
35011 Campodarsego
Padova - Italy

tel. +39 049 9200757
fax +39 049 9200172
info@banoeco.com
shredder-bano.com

**POL
LU
TEC**
2018
40 ans

**STAND
3-E218**

27-30
November
2018

Lyon

INNOVATION

TRADITION



Fuchs cab receives
IF DESIGN AWARD

ALWAYS OUT FRONT – WITH SPIRIT AND SKILL

The most successful mini excavator of its time, along with other inventions that set the standard in material handling today – all from a highly approachable company with a long history. Outstanding quality thanks to constant further development and a high degree of innovation – the solid foundation on which Fuchs has established its leading technological position worldwide. For more than 130 years, one aspect of material handling has remained constant – Fuchs. We set the standard for system solutions and customer proximity – and will continue to do so in the future.

www.terex-fuchs.com



FUCHS[®]
A TEREX BRAND

