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GLOBAL RECYCLING

*The Magazine for
Business Opportunities
& International Markets*



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Recycling and Trade: Win-Win Situation for Enterprises and Environment



Brigitte Weber
Editor-in-Chief

Nowadays, it is a well-known fact that recycling bears immense advantages all over the world. Recycling materials not only extends the lifecycle of – finite – resources but also avoids the emission of millions of tons of CO₂. At the same time, the use of secondary raw materials saves money by saving work steps – and thus costs – compared to the production of primary raw materials. Recycled raw materials are not traded globally for nothing.

This favorable constellation seems to be at stake as international trade is adversely affected. That was an important issue during the latest World Recycling Convention, organized by the Bureau of International Recycling (BIR). At the BIR Convention's kick-off meeting "The Challenge" (special edition), Michael Lion, Chairman of the BIR International Trade Council and host of "The Challenge", addressed the issue of "Chronic Container Chaos", where "surging freight rates, lacunae of container availability and shipping space confronts and disrupts BIR members' trading, marketing and supply chain capabilities". According to Andrew Hoad from DP World, rapid relief cannot be expected. Especially given the three months halt of container box production leading to a potential shortfall in restocking on an annualized four million TEU's (Twenty-foot Equivalent Unit).

There is also another problem: The European Commission is considering changes to EU waste shipment regulations, which could prove to be of "tremendous importance" and potentially highly damaging to export flows of many recycling materials, warned Olivier François, Chairman of the BIR's International Environment Council (IEC). One of the priorities established for the revision of the regulations was to restrict exports of materials designated as "waste", including many of the high-specification materials produced by the recycling industry. Europe would generate surpluses of "quality secondary raw materials" that could not be absorbed by its domestic market. In the opinion of Olivier François, such a move could lead to "tension" given that "many developing countries need the raw material".

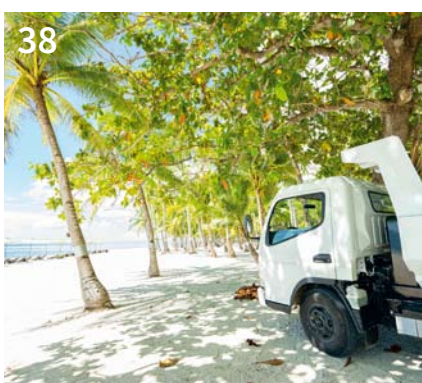
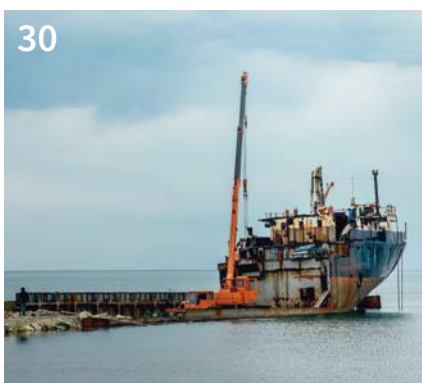
It is illustrated by China's latest import policy that secondary raw materials are sought-after. In January, the country has relaxed somewhat its tight import restrictions for scrap materials. Furthermore, it has announced a "provisional zero import tax rate" on some materials for steel production. These measures are part of the country's strategy to reach carbon neutrality by 2050 (Page 6). In contrast, the Philippines is facing a garbage crisis (page 38).

Regarding ship recycling, you find an interesting article from page 30 onwards. And the provider of commodity trading and recycling software, cieTrade, presents its software spectrum in an interview (page 24).

We hope you get a lot of new and useful information from reading this current magazine.

Yours

Brigitte Weber (weber@msvgmbh.eu)



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UNLOCKING PRIVATE CLIMATE FINANCE IN EMERGING MARKETS

A new report highlights the opportunities for policymakers to accelerate private climate finance ahead of COP26. The 2021 United Nations Climate Change Conference is scheduled to be held in Glasgow from 1 to 12 November this year.

The report “Unlocking Private Climate Finance in Emerging Markets: Private Sector Considerations for Policymakers” was launched in April this year by the Climate Finance Leadership Initiative (CFLI) in partnership with the Association of European Development Finance Institutions (EDFI) and the Global Infrastructure Facility (GIF). The publication “outlines key factors for fostering the public-private collaboration necessary to close the climate finance gap in emerging markets,” a press release said. “It also highlights policies governments in emerging markets can advance to attract investment to projects in key areas: clean energy, low-carbon mass transit, climate-friendly water and waste systems, green buildings and sustainable land use.”

According to CFLI, founded by Michael R. Bloomberg at the request of the United Nations Secretary-General António Guterres, emerging markets are working to build back from the Covid-19 pandemic. These markets are planning the reconstruction in ways that would accelerate investments in the low-carbon transition and help meet nationally determined contributions (NDCs) as outlined in the Paris Agreement. With energy transition finance topping 500 billion US-Dollar in 2020, this new report would provide emerging markets with potential policy considerations to help attract private capital, the initiative emphasized. “These considerations reflect the experience of investors that have



deployed billions in clean energy in emerging markets and the progress countries around the world have made in stimulating investment in support of sustainable growth.”

As stated by Michael R. Bloomberg, the report outlines steps emerging markets can take, with support from business and the international community, “to attract more private capital

for green projects, create new public-private partnerships, and ensure a strong recovery from the pandemic”. Private Sector Considerations for Policymakers would explain the factors that investors consider when evaluating investments in sustainable infrastructure projects in emerging markets. “These factors – the Policy Considerations – offer a menu of potential policy changes available to all countries, regardless of their current investment environment, or position on the path to a low-carbon, resilient economy.” The report also offers examples of how different enabling environment mechanisms have succeeded in accelerating the transition across a diverse range of economies, CFLI and its members – Allianz Global Investors, AXA, Bloomberg, Enel, Goldman Sachs, Japan’s Government Pension Investment Fund (GPIF), HSBC and Macquarie – described the benefits of the information.

Further actions

Private capital plays an important role in continuing the support of the creation of robust and lasting low-carbon climate-resilient markets, the initiative stressed the contribution of the private sector. To go forward, the CFLI would seek to design, launch and coordinate a series of “country pilots” in collaboration with local governments and leading private international and domestic financial institutions. “The first pilots are planned for India and Indonesia, with the goal of replicating this model in other countries in the years ahead.”

Example: Waste and the circular economy

Governments are moving to implement circular economy policies to tackle plastic waste and make better use of resources, the authors of the report underlined. As a result, public

investment in recycling, waste reduction and sustainable packaging had accelerated. In 2020, several important deals were signed, including a 300 million US-Dollar loan facility put in place by the Asian Development Bank targeting plastic recycling in Southeast Asia and Circulate Capital's 19 million US-Dollar funding for Indian waste management companies.

Strategic research provider BloombergNEF (BNEF) had tracked circular economy policies in 26 markets that together account for 88 percent of world GDP (gross domestic product), the report informed. Typically, such policies cover landfilling, recycling, key materials including plastic bags and extended producer responsibility schemes. "Increasing globalization means that circular economy policies affect not only materials sustainability but also international trade flows." Countries that count on waste prevention, reuse and recycling would perform better than those that prefer recovery and landfilling. "Current circular economy legislation suffers from weak implementation measures, especially in emerging markets," the report said. "Countries with enforceable policies such as taxes and content mandates tend to do better than those that only rely on 'soft' targets where progress is slow." Increasing the circu-


larity of the global economy could be a key part in reducing carbon emissions, with materials responsible for roughly 20 percent of worldwide emissions. Reducing material demands by reusing as much as possible could avoid the emissions that derive from the primary production. "Recycled steel generates 84 percent less emissions than new steel, and recycling plastics typically saves 50-60 percent of greenhouse-gas output compared with virgin production." However, alternatives for primary production, such as hydrogen, bio-based feedstock or carbon capture and storage, were early-stage, costly, or both. "The recycling industry is well-established for metals, plastics, glass and paper, and can be the first step in driving down emissions from industrial energy use."

Example: Considerations regarding solid waste

The Policy Considerations result from a public consultative process and direct outreach to over 6,000 global experts and stakeholders representing business, government and civil society perspectives, the report stated. Regarding solid waste, municipalities could attract private capital by creating "a holistic plan for solid waste management that incorporates goals and policies to support investment,"

the authors gave advice. Since transportation is the main cost driver of waste management, localized materials recovery stations would make a significant difference. "A clear picture of the regulatory approach and timeline for waste infrastructure development can also provide reassurance to investors." Further items are the empowerment of a capable authority and governmental programs to integrate informal sector workers. In addition, recycling campaigns could help to reduce landfills, improve the circularity of waste materials with associated environmental benefits, and provide revenues to investors.


Finally, yet importantly, the report highlights the ability to achieve economies of scale by aggregating waste flows. That includes developing regional waste management approaches, adopting new waste-to-energy technology, and partnerships with neighboring cities and governments. Furthermore, the government "can remove a major pain point for investors by instituting a transparent and uniform e-procurement system for bundling waste contracts".

 https://assets.bbhub.io/company/sites/55/2021/03/CFLI_Private-Sector-Considerations-for-Policymakers-April-2021.pdf

INDUSTRIAL WASTEWATER TREATMENT MARKET

According to USA-based company Meticulous Research, the market is expected to reach a value of 77.6 billion US-Dollar by 2027 at a compound annual growth rate (CAGR) of 7.2 percent during 2020-2027.

The growth of this market is mainly attributed to rapid population growth & urbanization, rising industrialization, growing emphasis on water quality & public health, and increasing prevalence of waterborne diseases, a press release said. Additionally, the growing demand for energy-efficient and advanced water treatment technologies is projected to have significant growth opportunities for industrial wastewater treatment system providers in the coming years. The market report emphasizes countries like the USA, China, and India to provide opportunities for market players. However, the high installation, maintenance and operational costs could hinder the growth of this market to a certain extent, the research company underlined. "The aging of existing water infrastructure is also one of the major challenges for the growth of the industrial wastewater treatment market."

 www.meticulousresearch.com/product/industrial-wastewater-treatment-market-5170

T. ROWE PRICE LAUNCHED FIRST IMPACT FUND

The new Global Impact Equity Fund is the American investment management organization's first strategy allowing investors to pursue both financial gain and their environmental and social equity goals.

In March this year, T. Rowe Price launched the product allowing investors to pursue their financial goals and to have a positive impact on the global environment and social equity issues. The fund will rely upon the firm's research platform as well as its responsible investing team to identify "compelling investment opportunities around the world". It will initially be offered to US investors, but T. Rowe Price intends eventually to introduce the strategy to clients in other countries. As stated, the firm's Global Impact Equity Fund recognizes the significant, secular changes afoot in financial markets as many investors seek to marry these goals and as corporations, investors and other stakeholders increasingly appreciate the link between societal good and financial performance. The fund would employ an active management approach to seek companies that are on the right side of these changes.

According to the American publicly owned global investment manage-



ment firm, the fund will seek out companies that can potentially provide excess returns over its benchmark, the MSCI All-Country World index. The intention is that it will focus on three pillars:

- Climate and resource impact
- Social equity and quality of life
- Sustainable innovation and productivity

It will exclude certain industries and companies that the manager believes

do not conform to the fund's impact mandate, such as fossil fuels, tobacco, gaming and for-profit prison companies. As underlined, the fund will be aligned with the United Nations Sustainable Development Goals (UNSDGs), a globally recognized framework designed to end poverty, ensure prosperity, and protect the planet.

 www.troweprice.com

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CHINA: ON THE ROAD TO “ZERO-CARBON”

The Government of the People’s Republic of China (PRC) is determined to steer the country to carbon neutrality by 2050. The circular economy – realized through national waste management and using recycled materials – is an important element on this strategic path.

The direction to more sustainability and a greener economy was clear since September last year. Back then, Chinese President Xi Jinping had announced to the United Nations General Assembly that the country would expedite its carbon emissions reduction targets ahead of its pre-existing voluntary commitments. However, sustainability objectives have been laid down in the country’s Five-Year Plans for at least two decades, German-based Mercator Institute for China Studies (MERICS) stated in the publication “‘Greening’ China: An analysis of Beijing’s sustainable development

strategies”. According to the independent research institute focusing on contemporary China, one of the key concepts to reach more sustainability is the circular economy – along with the key concepts “Ecological Civilization” (added to the constitution in 2018) and “Beautiful China” (long-term vision by 2049).

Even during the pandemic, the People’s Republic pursued its course of action: In April 2020, the “Law on the Prevention and Control of Environmental Pollution by Solid Waste” was revised and adopted; it came into effect in Sep-



Smart eco trash cans in China segregate waste. Municipal computerized automatic system for recycling

tember the same year. The rule prohibits inter alia importing solid wastes – unless subject to a specific import license – and hazardous wastes. Furthermore, it contains stricter regulations on waste control, management and disposal.

Imports of secondary raw materials

In January this year, China imported the first batch of overseas recycling iron and steel materials after implementing the national standard on such raw materials, the Chinese state news agency Xinhua reported referring to the China Iron and Steel Association. About three thousand tons were shipped from Japan to Shanghai. The country's move to make full use of overseas high-quality recycled iron resources would help "alleviate the irrational price rise of iron ore and scrap steel in the domestic market, as well as meet market demands", an association's official was quoted. The PRC had officially released the national standard on recycling iron and steel materials in December 2020, specifying the definition, classification, technical requirements, inspection methods and acceptance rules for recycling iron and steel materials.

In April this year, the imports of steel materials leaped by 67.3 percent to 76,250 tons, a special service for the steel sector informed referring to the country's General Administration of Customs (GACC). As underlined, the higher volume would reflect the Chinese steel mills' demand "now that import restrictions have been relaxed". In the same month, Xinhua published that China would adjust tariffs on some steel products to lower import costs as part of efforts to push the domestic industry's upgrading and transformation. From May on, the country intended "to apply a provisional zero import tax rate on pig iron, crude steel, recycled steel raw materials and ferrochrome". According to the news agency, the adjustment aimed at supporting domestic producers to cut crude steel output, guiding the industry to reduce energy consumption, and pushing industrial upgrading and high-quality development in the sector.

Regarding non-ferrous metals, the demand is also high: The country's January-April imports of copper materials totaled 531,261 tons, up by 81.7 percent from a year earlier, information provider Fastmarkets referred to the then-latest Chinese customs data published on May 20 this year. Malaysia, Japan and the USA were the top three suppliers of the material to China in April – imports from these three countries amounted to 76,382 tons – or 45.5 percent.

According to the website chinapaperonline.com, the imports of fibers grew strongly as well. In the first two months of this year, the country imported about 320,000 metric tons of paper-grade recycled pulp, 43.12 percent more than in the same period of the prior year. In January alone, more

than 170,000 tons were received from abroad. As reported, the consistent price rise did not slow down active purchases from Chinese buyers, the special service provider referred to market analysts. Experts expect that the PRC's recycled pulp demand will continue. Imports from overseas, including those supplies from Chinese investment in North America and Asia, were also set to rise significantly.

The volume of required financing

According to studies, the amount of money needed to realize China's carbon-neutrality goal would be huge. At the same time, experts are convinced that the economic spin-off would be enormous. Therefore, many analysts regard implementing objectives and targets as the main investment opportunity for the next decades.

The Rocky Mountain Institute (RMI) and the Investment Association of China (IAC) share this view. The authors of the study "Zero-Carbon Investing: Opportunities from China's Carbon-Neutrality Goal" are convinced that the country's ambition "will activate the market and encourage more long-term value investors to focus on zero-carbon development and invest in zero-carbon assets, projects and technologies". According to their estimation, the market size of seven key investment areas – resource recycling, energy efficiency, demand-side electrification, zero-carbon power generation, energy storage, hydrogen and digitalization – will reach nearly 15 trillion Yuan (converted 2.32 trillion US-Dollar) by 2050. These seven areas would also contribute 80 percent of China's total emissions reductions by 2050, a RMI press release said.

Focus on green investments

Another example for the governmental course in PRC: As reported by independent non-profit organization China Dialogue (<https://chinadialogue.net/en/>), in October 2020, the "Guidance on promoting investment and financing to address climate change" (Climate Finance Guidance) was jointly issued by the Ministry of Ecology and Environment, the National Development and Reform Commission, the People's Bank of China, the CBIRC and the China Securities Regulatory Commission. According to China Dialogue, the country had also initiated and participated in several international forums promoting green finance.

However, the mentioned zero-carbon technologies were currently at different phases regarding market expectations and industrial maturity, the institute stated. “They, therefore, face different challenges and opportunities, which require different policy and market enablers to become more bankable.”

Resource recycling and projected market size

According to RMI and IAC, resource recycling could create a market value of 2.8 trillion Yuan (or 430 billion US-Dollar) by 2050. Concerning the goal of carbon-neutrality, the country would be able to reduce 40 billion tons of carbon emissions between 2020 and 2050, “meaning over 30 percent carbon reduction contribution for the zero-carbon transition”. The study identified three key areas:

- **Products recycling in energy-intensive industries:** By 2050, the reduction in demand for products in steel, cement, aluminum and plastic industries may reach the range of 16 to 53 percent with the potential of product recycling being fully unleashed, the authors of the study estimated. The share of recycled products is anticipated to reach 60 percent of total production.
- **Waste as an energy source:** Crop straw, forestry waste, domestic waste and animal manure would represent at least 370 million tce (tons of standard coal equivalent) energy potential per year, with straw accounting for 64 percent of the total, the authors of the report reckon. RMI’s analysis revealed that waste as an energy source could reduce carbon emissions by more than 13 billion tons between 2020 and 2050.
- **Recycling of EV batteries for energy storage:** With the pending market boom by 2050, it will become one of the main energy storage forms in the power system, the study predicts. RMI expects a market size of at least 114.5 billion Yuan (or 17.7 billion US-Dollar).

“Though the investment opportunities are clear, the complexity and diversification of the utilization of recycled resources determines that investors need to accurately grasp

the market context for investment and act fast due to the rapid outbreak of the market,” RMI and IAC advised. Among the mentioned key areas, product recycling in energy-intensive industries and waste as an energy source were both at a relatively mature stage. These would require investors to seize the market trend that combines technology breakthroughs and business models and explore solutions that can scale rapidly. “However, recycling of EV batteries for energy storage is in a relatively early stage, with the focus still on technology breakthroughs and the establishment of industry standards.”

🌐 <https://rmi.org/insight/zero-carbon-investing/>

Investment opportunities

In March this year, the World Bank expected that China’s economy would expand by 8.1 percent in 2021.

The practice of Dezan Shira & Associates, which assists foreign investors into China, shares positive prospects. “2021 will be a promising year by most accounts, punctuated by the release of the 14th Five-Year-Plan in March and the 100th anniversary of the CCP in July,” the authors of the “China Briefing” wrote in January this year. Dezan Shira & Associates have also released a study into the foreign investment opportunities created by China’s Belt & Road Initiative. The report is available at 🌐 www.china-briefing.com/news/new-china-plus-investment-guide-identifying-opportunities-within-the-belt-and-road-initiative/.

For parties interested in doing business in China, the national investment promotion agency is the right contact. It is in charge of investment promotion work in line with China’s economic strategies and is engaged in cooperation with international economic organizations, foreign investment promotion agencies, chambers of commerce and business associations on behalf of the Ministry of Commerce of the PRC.

🌐 <http://fdi.mofcom.gov.cn/EN/CIPA.html>

More information can be found here:

🌐 <http://fdi.mofcom.gov.cn/EN/come.html>

Tenders are published on several websites:

🌐 www.tendersinfo.com/global-china-tenders.php

🌐 www.dgmarket.com/tenders/

🌐 www.globaltenders.com/tenders-china.php

🌐 www.tenderdetail.com/china-tenders/1?ci=44

**To achieve carbon neutrality,
new extensive investments
will be necessary.**

GLOBAL NET ZERO ASSET MANAGERS INITIATIVE GROWS


The initiative now has a total of 73 signatories representing 32 trillion US-Dollar in assets under management (AUM). Following the launch of the initiative in December 2020, 43 additional asset managers are making new, enhanced commitments to support the goal of net-zero greenhouse gas emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5 °C. As reported, the breadth of signatories signals the determination of investors to play their part in achieving a net-zero and resilient future and the global significance of the Net Zero Asset Managers initiative.

The signatories have committed to set interim targets for 2030, consistent with a fair share of the 50 percent global reduction in greenhouse gases identified by the Intergovernmental

Panel On Climate Change (IPCC), the press release said. "Supporting the acceleration of action, signatories will submit an interim target, within a year of joining the initiative, for the proportion of assets to be managed in line with reaching net zero emissions by 2050 or sooner." Asset managers joining the initiative commit to transparent and rigorous accountability. They would annually report progress against the Task Force for Climate-related Financial Disclosures (TCFD) recommendations, including setting out a climate action plan and submitting this to The Investor Agenda via its partner organizations for review to ensure the approach applied is based on a robust methodology, consistent with the Race to Zero criteria, and action is being taken in line with the commitments.

Investor networks

The initiative is managed globally by six founding partner investor networks: Asia Investor Group on Climate Change (AIGCC), CDP, Ceres, Investor Group on Climate Change (IGCC), Institutional Investors Group on Climate Change (IIGCC) and Principles for Responsible Investment (PRI). In turn, the initiative is endorsed by The Investor Agenda, of which the investor networks are all founding partners, along with the United Nations Environment Programme Finance Initiative (UNEPFI). Furthermore, the initiative is now accredited by the United Nations Framework Convention on Climate Change (UNFCCC) Race to Zero campaign.

 www.netzeroassetmanagers.org

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BOOSTING METAL RECYCLING IN EUROPE

EuRIC, representing the interests of the European recycling industries at EU level, has a “Circular Metals Strategy” prepared and submitted.

“Metal recycling is indispensable to reach EU’s climate neutrality objectives by 2050 (EU Green Deal) and shifting from a linear to a circular economy (Circular Economy Action Plan 2.0),” the confederation wrote in April this year. Metals could – thanks to their intrinsic properties and market value – be indefinitely recycled, and for this reason, they would play a key role in Europe’s sustainable transition. “Metal recycling is not only the most resource-efficient option but also the most climate and energy-efficient route when compared to the production of metals using primary raw materials*),” EuRIC argued. “Last but not least, given their high value, metals are not littered but collected and recovered to close new material cycles. As a result, metal ores and metal scrap, meeting quality specifications, are commodities priced and traded globally, which could help the globe to further close the loop of materials in global value chains and avoid littering related problems.”

Europe’s metal recycling industry – which is composed of SMEs (small and medium-sized enterprises) and large players – is one of the fastest growing industries, providing local,

non-outsourcable jobs, the European umbrella organization for recycling industries underlined. “It offers a unique infrastructure of facilities spread all over Europe, that supplies steel mills and smelters located in and outside Europe with quality grade metal scrap which is resource and climate efficient.” Metal recyclers’ priorities, as outlined in its metals strategy, were threefold:

- Creation of well-functioning internal and global markets for metals
- Rewarding metal recycling environmental benefits
- Increase the intake of commodity-grade metal scrap in metal production

Various hurdles

Despite enormous environmental benefits, substantial bottlenecks keep hampering metal recycling in Europe, EuRIC wrote in February this year.

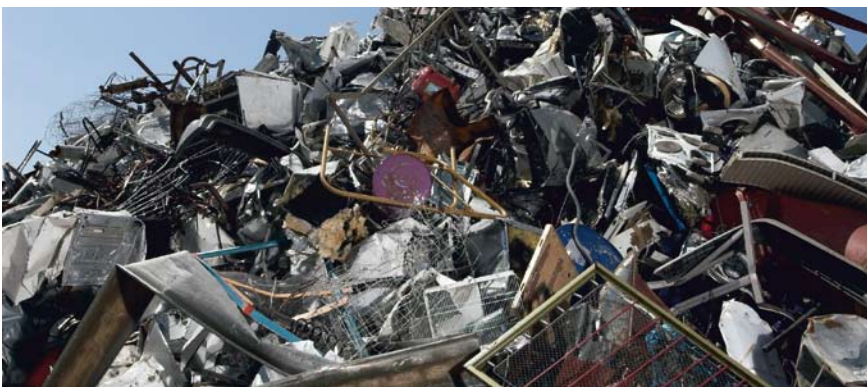
- “The first one has to do with the fact that Europe’s industry remains mostly linear with only 12 percent of the materials it uses coming from recycling. As a result, in Europe, the supply of metal scrap from recycling meeting industry specifications often exceeds the demand and remains under-utilized in metal production.
- The second one relates to the fact that commodity prices still fail to

internalize the massive environmental benefits of metal recycling. There is in EU legislation no incentive that rewards metal recycling lower-carbon and energy footprint when compared with primary raw materials (often extracted outside Europe).

- The third one is rooted in European waste legislation, which hinders more circularity. Metal scrap is a valuable commodity with a positive environmental footprint, which should not be classified as waste but as secondary raw materials. In addition, a number of procedures pertaining to cross-border shipments or to permitting remain far too burdensome to incentivize circular metal value chains.”

Against this backdrop, Cinzia Vezzosi, President of EuRIC, stressed, in particular, the absolute need to set up framework conditions and incentives that steers metal recycling and metal production from secondary raw materials by rewarding their environmental benefits. Taking the example of steel, “it is key to support value chains currently striving to migrate from current blast furnaces, which use primary iron ore and coal, to electric arc furnaces, which use recycled steel and can use power from renewable sources. Low-carbon impact steel and metals, in general, are not only vital to achieving climate neutrality, it is also instrumental to compete better in a rapidly changing market”, she was quoted.

■ Read the Circular Metal Strategy here: www.euric-aisbl.eu/position-papers/item/525-euric-circular-metals-strategy-2



*) Compared to primary production, steel, aluminum and copper recycling save respectively 58, 92 and 65 percent of CO₂ emissions (FEDEREC, 2017).

GLOBAL ALUMINUM SCRAP RECYCLING MARKET

Technology research and advisory company Technavio has added a new report to its offering.

The global aluminum scrap recycling market by end-user and geography is expected to grow by nearly 12 million metric tons (MT), at a compound annual growth rate (CAGR) of over eight percent during 2021-2025.

Regarding the business opportunities, the growing focus on fuel efficiency and reducing the overall weight of vehicles have increased the consumption of aluminum in the automobile industry. Also, the market has been witnessing a significant rise in the rate of aluminum cans, Technavio wrote. For instance, nearly 50 percent of the aluminum produced in Europe is obtained from scrap recycling. These



factors were expected to create several opportunities for vendors during the forecast period.

“Based on the segmentation by end-user, the market generated maximum revenue in the secondary smelt-ing segment in 2020,” the company

informed. The increasing demand for recycled aluminum from the construction industry would drive the segment.

The Asia-Pacific (APAC) held the largest market share in 2020, and the market growth in the region is expected to be faster compared to the market growth of other regions. Accordingly, this development can be attributed to the regional surge of the construction and automobile industries. “Also, the increasing import of aluminum scrap in countries such as Hong Kong, Thailand, South Korea, Japan, and Malaysia is contributing to the growth of the aluminum scrap recycling market in APAC.”

www.technavio.com/report/aluminum-scrap-recycling-market-industry-analysis

Machines – Installations – Ideas



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The Bongioanni waste treatment plants are designed by an experienced team and produced with high quality components. All manufacturing processes are certified ISO 9001/2015.

www.bongioannimacchine.com



SCRAP METAL RECYCLING MARKET TO JUMP UPWARDS

Global market intelligence company Fact.MR has launched a report on the scrap metal recycling market, predicted to top a valuation of 500 billion US-Dollar by 2031.

Accordingly, the global scrap recycling industry is expanding steadily with a rise in demand from key end-use sectors (such as building & construction and automotive). Moreover, the industry is subject to grow further over the coming years. It is projected to ascend at a compound annual growth rate (CAGR) of around 5.5 percent through 2031.

The latest report on scrap metal recycling, by an ESOMAR-certified market research and consulting firm, offers a detailed analysis of the global industry. Besides, it informs about new trends, demand-supply trajectories and growth and restraining factors for the forecast period of 2021 to 2031, Fact.MR emphasized. As stated, the

United States, Germany, China, India, Japan and a few other countries would have a major share on the market. Furthermore, the Asia Pacific region is expected to exhibit the fastest growth rate throughout the forecast period.

Scrap metal recycling is highly sought-after in the building & construction sector, Fact.MR gave account. "As the construction sector is getting back on track again with increase in the number of residential, commercial and industrial projects, scrap metal processing equipment suppliers are likely to come across higher growth

scope over the coming years." Based on a report titled "China – Construction and Green Building", published by SelectUSA, the People's Republic of China is the world's largest construction industry; the United States is the country's second-largest source of imports for the construction industry, with an import market share of 13 percent. As stated in the report, China's construction industry is set to grow at an annual average of five percent in real terms through 2023. "This, in turn, gives a glimpse of the high potential for scrap metal processing stakeholders," Fact.MR underlined.

The global scrap metal recycling space is getting tougher regarding competition, the market research firm informed. To sail through the cut-throat competition, key players are bringing in a wider variety of products.

www.factmr.com/report/scrap-metal-recycling-market



Photo: GFR Archive

GLOBAL WASTE TO DIESEL MARKET WILL GROW

Reportlinker.com has announced the release of the report "Global Waste to Diesel Industry" focusing on the period from 2020 to 2027.

The municipal waste sector is one of the segments analyzed in the report. This sector is projected to record a 9.5 percent compound annual growth rate (CAGR) and reach 524.2 million US-Dollar by the end of the analysis period. "After an early analysis of the business implications of the pandemic and its induced economic crisis, growth in the oil and fat waste segment is readjusted to a revised 8.7 percent CAGR for the next 7-year period," the provider informed. According to Reportlinker.com, this market in

the USA was estimated at 165.3 million US-Dollar in the year 2020. China, the world's second-largest economy, is forecast to reach a projected market size of 176.8 Million US-Dollar by the year 2027 trailing a CAGR of 8.4 percent over the analysis period 2020 to 2027. "Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 8.3 percent and 7.3 percent respectively over the 2020-2027 period," the market research firm wrote in a press release. "Within Europe, Germany is forecast to grow at approximately 7.3 percent CAGR."

In the global plastic waste segment, the USA, Canada, Japan, China and

Europe would drive the 8.4 percent CAGR estimated for this segment. These regional markets accounting for a combined market size of 97.6 million US-Dollar in the year 2020 would reach a projected size of 171.2 million US-Dollar by the close of the analysis period. "China will remain among the fastest-growing in this cluster of regional markets."

Led by countries such as Australia, India, and South Korea, the market in Asia-Pacific would be forecast to reach 117.8 million US-Dollar by the year 2027.

www.reportlinker.com/p06033273/?utm_source=GNW

THE INTERNATIONAL CORRUGATED PACKAGING MARKET IS STILL GROWING

According to market intelligence, testing and consulting firm Smithers, the latest data for the global containerboard and corrugated packaging market would show that consumption of the latter reached 160.5 million tons in 2020; the value corresponded to 170.7 billion US-Dollar. Expert analysis in the Smithers report “The Future of Global Corrugated Board Packaging to 2025” forecasts that the global corrugated board will increase at a compound annual growth rate (CAGR) of 3.8 percent across 2020-2025 to reach 205.7 billion US-Dollar. “The volume of board consumed worldwide will increase at a slightly slower rate to reach 193.2 million tons in that year,” the information said.

As predicted, the Covid-19 pandemic will see a marked impact on corrugated consumption in certain sectors and regions, especially those worst affected by the virus. In terms of end-uses, food shipments would be the least affected while other consumer items will see a more significant drop, the company emphasized. “These will be mitigated in developed regions by the strong increase in e-commerce as stay-at-home consumers undertake more online shopping. Several board converters have developed e-commerce specific delivery designs to capitalize on this, accentuating what the industry has already identified as a key growth segment.”



Recycling, sustainability and price pressure

In the longer term, Smithers analysis identifies the following business trends that will support further use of corrugated board packaging:

- Recycling and sustainability will remain a key concern for converters and brand owners, but an oversupply of materials is liable to generate new price pressures
- Demand for finer flute grades for high-quality printed cases and as alternatives to folding cartons will rise
- Further pressure for light-weighting of corrugated designs will have a negative impact on volume sales as less fiber delivers an equivalent required performance
- E-commerce will continue to expand, even once lockdown (shelter-

in-place) orders have been revoked; this will generate a new need for white-top liner that can receive high-quality print graphics in particular

- Dimensional (DIM) weighing in packaging and the focus on minimizing extraneous protective components will slow some of the expanded use of corrugated in direct-to-consumer e-commerce shipping
- There will be more use of retail-ready packaging formats, as more modern retailing expands into developing markets in Asia and elsewhere
- Digital (inkjet) printing will increase the overall demand for better quality substrates and expand the options for packaging printers
- New coating technologies, including bio-based polymer solutions, will help improve the recyclability of coated corrugated grades
- Industry consolidation will continue leading to a greater concentration of capacities and more uniformity for users.

“These trends and the essential technologies that will help make them a reality over the next five years are examined in depth in the Smithers study,” the company noted. “They are used to provide context to the wider picture of the industry across 2015-2025 given in the Smithers data set, with over 350 data tables and figures.”

www.smithers.com

Photo: O. Kürth

INEOS STYROLUTION INTENDS TO BUILD A DEMONSTRATION PLANT

Ineos Styrolution, a global leader in styrenics, plans to build a demonstration plant at its Antwerp site in Belgium to test the production of ABS (Acrylonitrile Butadiene Styrene) plastic from recycled feedstock. As reported, the plans for the new plant are part of the project “ABSolutely Circular”, which is supported by the EU LIFE programme. The company’s plant is intended to complement a demonstration unit planned by project partner Indaver, “making Antwerp the leading European center for the recycling of styrenics”. Technology partners are invited to join the project.

www.ineos-styrolution.com

SOFTWARE SUPPLIER EXPANDED BUSINESS

AMCS, a global supplier of integrated software and vehicle technology for the waste, recycling and resource industries, has announced that it has expanded its Irish operation with the recent acquisition of Dublin-based Dataset Solutions.

The company acquired was founded in 1986. According to the buyer, it is established “as a significant player



Jimmy Martin

in waste management and skip hire sectors”. Following the acquisition, the Dataset Solution’s team would join AMCS, and its customers become part of its 2,800-strong global customer community. As stated by Jimmy Martin, CEO and co-founder of the AMCS Group, the Irish group can expand its overall global business in 22 countries.

www.amcsgroup.com

Polystyrene Recycling:

AGILYX AND TECHNIP ENERGIES COLLABORATE

Technip Energies has announced the initiation of an agreement with Agilyx Corporation.

The companies intend to collaborate and want to accelerate the implementation of Agilyx’s technology for the advanced recycling of post-use polystyrene. Under this agreement, Technip

Energies will market and license the integrated technologies of Agilyx depolymerization and its proprietary purification technology, leveraging the expertise, resources and global presence of respective companies.

“Both companies bring strong, specialized experience to this offering. Agilyx

contributes its deep experience in chemical recycling of post-use plastics, while Technip Energies has extensive experience in scaling-up technology which will increase the plastic recovery,” a press release said.

www.technipenergies.com

www.agilyx.com

WEEE FORUM CONTINUES TO GROW AND PROSPER

The WEEE Forum, which represents e-waste Producer Responsibility Organizations (PRO) throughout the world, now has 43 members, at least one on every continent. The new members of the WEEE Forum

are EcoCómputo and Red Verde from Colombia; ERA, South Africa; EEPA, Lithuania; and Ecolec, Spain. Now the global not-for-profit association and the world’s largest multi-national center of competence concerning the

management of waste electrical and electronic equipment (WEEE) is looking forward to welcoming more PROs soon.

www.weee-forum.org

GLOBAL MAGNETIC SEPARATOR MARKET TO GROW

According to Research and Market, the global magnetic separator market is expected to grow from 725 million US-Dollar in 2020 to 928 million US-Dollar by 2025. The compound annual growth rate is projected at 5.1 percent. As reported, one of the major driving factors for the magnetic separator market is the increase in recycling rates across

the world. Due to the stringent rules and regulations of quality in the food & beverages industry, the demand for magnetic separators was also increasing. Expansion and urbanization in developing countries would also drive the expansion rate in this segment. “However, the manufacturing of low-quality magnetic separators in developing countries restrains

the market growth,” Research and Market said. Magnetic separators are used for various processes in the recycling industry. Owing to an increase in the waste produced by countries across the world, the need for recycling is ever increasing.

www.researchandmarkets.com/reports/4986799

TECHNOLOGICAL PROGRESS OF PROCESSING FERROUS SCRAP

Josef Schuster GmbH has been active in the collection and processing of ferrous scrap for over 30 years. Martin Schuster, who took over the management of the family-run company located in Asten near Linz in 2016, leads the business aiming at productive and economic renewal. With this in mind, the company has increased the quality of the internal treatment cycle by installing two solutions supplied by Panizzolo Recycling Systems. Therefore, the Italian-based company talked to Martin Schuster about why they decided to work with Panizzolo Recycling Systems.



Photos: Panizzolo

When was Schuster Metall-Recycling GmbH founded, and what has changed ever since?

Founded by my parents in 1985, the company focused on the collection and trade of scrap metal. In 2016, with my entry into the company management, we diversified and increased the type of metal collected, allowing us to grow our business, quadrupling the workspace and taking it from the initial 4,000 m² to today's 16,000 m². Over the years, we have expanded our range of activities to include other waste such as paper and wood waste. However, we still focus on the collection and treatment of metal and ferrous scrap.

Can you tell us more about how you work and how you have positioned yourself on the Austrian market?

We currently consider ourselves a medium-sized company with 25 employees, including clerks, workers and drivers. We cover all stages of the process, from the purchase of scrap to the sale of the finished product. The areas in which we work most are located in the regions of Upper Austria, Lower Austria and Salzburg, where we receive scrap from both traders and companies that generate their production waste. Once stored and sorted, the scrap is sent to one of the two Panizzolo treatment cycles. The mixed metal is sent to the plant Mega 1100 for recovering iron, copper, brass and aluminum.

Overall, the load of material circulating in our company is about 40,000 tons per year. The two Panizzolo plants – Flex 500 Mobile and Mega 1100 – allow us to work simultaneously on the two main types of scrap. The Flex 500 is used for aluminum cans, and we can process approximately 2.8 tons/hour with a total input load of approximately 10,000 tons per year. The Mega 1100 is used in processing mixed metal scrap, with a production capacity of about 20 tons/hour. The outgoing metals are sold in Austria, Germany and Italy.

Why did you decide to work with a Panizzolo hammer mill?

I wanted to introduce new technologies into the company that would allow me to work with mixed metal, a type of scrap that is increasingly found in Austria and throughout Europe in general. Therefore, I came across the Panizzolo recycling plants, finding the treatment cycle and operation of the hammer mills very interesting. I also explored other companies. However, in the end, I realized that the technologies offered by Panizzolo were the solution that suited my production and quality needs best.

I had the opportunity to see the Panizzolo plants in action during my visit to a German company, seeing the quality of the machinery and comparing myself with the experiences of the end-users. However, what convinced me is that, compared to other models on the market, the Mega 1100 and Flex 500 Mobile hammer mills can balance other production performances with low energy costs. Focusing on the treatment of post-consumer cans and mixed metals, I preferred to insert two distinct treatment lines. In this way, I can work on two fronts simultaneously, keep the outputs separate and maximize the value of the metals at the time of sale. However, the interchangeable cradle system remains a decisive aspect as it allows me to optimize the hours dedicated to maintenance.

What are you expecting for the future?

We are expecting that in the coming months, we will be able to produce up to 25 tons/hour of treated mixed metal with the Mega 1100. Because it is easy to find these scraps in Austria and throughout Europe, we focus on maximizing productive and profitable performance. However, we constantly monitor market trends, and, also thanks to the interchangeable cradle in the Panizzolo mills, we are ready to change the direction of treatment if needed.

The aspect that remains fundamental is that here in Austria, as in other European countries, our sector is increasingly moving towards using those technologies that allow a higher quality treatment of metal scrap.

🌐 www.panizzolo.it



GOAL: RARE EARTH RECYCLING FOR LOUDSPEAKERS

Canada-based Mkango Resources Ltd. informed that HyProMag Limited and partners, European Metal Recycling Limited (EMR) and University of Birmingham, have been awarded a grant (256,144 British Pound) from the Industrial Strategy Challenge Fund – delivered by UK Research and Innovation – for a new project entitled “Rare-Earth Extraction from Audio Products” (REAP).

The project “will investigate ways of recycling rare earth magnets from speakers used in automotive and consumer electronics applications, which account for approximately 20 percent of the current market for rare earth magnets, according to Adamas Intelligence,” Mkango Resources informed. Therefore, the loudspeakers

would represent a significant opportunity for rare earth magnet recycling. As reported, Mkango’s subsidiary, Maginito Limited, holds a 25 percent equity interest in HyProMag, with an option to increase its interest up to 49 percent.

Fundamental to REAP is a patented process for extracting and demagnetising neodymium iron boron (NdFeB) alloy powders from magnets embedded in scrap and redundant equipment named HPMS (Hydrogen Processing of Magnet Scrap), originally developed within the Magnetic Materials Group at the University of Birmingham and subsequently licenced to HyProMag.

The other project partner, EMR, is a global leader in metal recycling,

operating at 150 locations around the world. It will pre-process automotive and flat screen TV loudspeaker scrap to provide a feed of scrap components containing NdFeB magnets to HyProMag. That company will use the HPMS process in conjunction with the University of Birmingham to extract the magnets as a demagnetised alloy powder, which can be used in the remanufacture of magnets.

“The short loop recycling processes which are being developed by HyProMag will have a significant environmental benefit compared to primary production of magnets,” Mkango Resources emphasized.

<https://mkango.ca>

<https://hypromag.com>

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RECYCLING OF RARE EARTH MAGNETIC MATERIALS FOR LUXURY CARS

The University of Birmingham and Bentley Motors have agreed to a three-year research project called “Rare-earth Recycling for E-machines” (RaRE), which intends to deliver a sustainable source of rare earth magnets for electric and hybrid vehicles.

Rare earth magnets play a vital role in almost every appliance that uses electricity to generate motion. In the past three decades, their use has increased exponentially. Although they are increasingly important in the transition to a low carbon economy, less than one percent of these magnets is recycled, the university described the situation.

As reported, the 2.6 million pound sterling (about 3.6 million US-Dollar) RaRE project is funded by the Office for Low Emission Vehicles (OLEV). The project delivered in partnership with Innovate UK involving six partners who will work together to establish the first end-to-end supply chain of recycled rare earth magnets in the UK.

The research project will build on a technology developed by Professor Allan Walton and Professor Emeritus Rex Harris of the University’s Magnetic Materials Group. The technology was



A sample rare earth magnet from HyProMag

patented by the University of Birmingham Enterprise and subsequently licensed to HyProMag Ltd, a company set up by the Birmingham researchers. HyProMag has since received substantial investment from Mkango Resources, which will be funding HyProMag’s contribution to RaRE.

The extraction process

The technology, called Hydrogen Processing of Magnet Scrap (HPMS), extracts rare earth metals from waste electronics by breaking them into a powder. The powder is easily separated from the remaining components, the University wrote. Accordingly, the project develops a process to recycle magnets extracted from computer hard drives to make rare earth

magnets for use in bespoke ancillary motors. That involves HyProMag scaling up the recycling techniques. The University of Birmingham will also provide cast alloys, which HyProMag will blend with secondary materials to produce the ‘sintered’ magnets, which are formed by press molding the metal powders.

In addition to the University, Bentley and HyProMag, the other partners in the RaRE project are:

- Unipart Powertrain Applications Ltd, leading the development of manufacturing scale-up routes to ensure facilities and define processes, are suitable for volume automotive manufacture.
- Advanced Electric Machines Research Ltd, leading on the design and development of the motors.
- Intelligent Lifecycle Solutions Ltd will pre-process computer hard disk drives to remove the rare earth magnet containing components from the waste, which will be shipped to HyProMag for recycling.

- www.birmingham.ac.uk
- www.hypromag.com/rare-earth-magnet-recycling/
- www.mkango.ca
- www.bentleymotors.com

Photo: HyProMag

www.recyclingportal.eu

RecyclingPortal
The portal for waste, waste disposal, recycling, life-cycle management and markets

JOINT VENTURE FOR ENERGY FROM WASTE PROJECTS

Aim is to develop energy from waste projects in Australia to provide solutions for some of the 27 million tons of waste landfilled each year

Abu Dhabi's renewable energy company Masdar and Tribe Infrastructure Group, an independent infrastructure project finance firm headquartered in United Arab Emirates (UAE), intend to strengthen their collaboration in the deployment of utility-scale energy-from-waste (EfW) projects by establishing a joint venture in Australia. The announcement was made by Christopher Pyne, Former Australian Defence Minister, and Abdullah Al Subousi, UAE Ambassador to Australia, alongside Mohamed Jameel Al Ramahi, Chief Executive Officer of Masdar, and Peter McCreanor, Tribe CEO, during the inauguration of the Australia United Arab Emirates Business Council, which took place in Sydney, Australia.

Attractive market

Each year approximately 27 million tons of waste is landfilled in Australia, the equivalent of filling 75 Olympic swimming pools. Yet there are currently no utility-scale energy from waste plants operating in the country. Australia represents an attractive market for investment in the EfW as part of

a widespread push to help decarbonize the Australian economy, Tribe Infrastructure Group underlined.

In January 2020, Masdar and Tribe announced that they had acquired a 40 percent stake in the East Rockingham Waste to Energy project in Perth, Western Australia. Construction on the 511 million Australian Dollar (about 377.4 million US-Dollar) greenfield facility, which is located in the Rockingham Industry Zone, 40 kilometers south of Perth, is ongoing and the plant is expected to be operational in late 2022. When completed, East Rockingham WTE will process 300,000 tons per year of non-recyclable residual municipal, commercial and industrial waste and up to 30,000 tons of biosolids per year, the information said. The facility

would also recover approximately 70,000 tons per annum of bottom ash, which will be processed for use in roadbase and other construction materials. According to Tribe, the facility will generate 29 megawatts (MW) of baseload renewable energy, enough to power more than 36,000 homes, and displace more than 300,000 tons of CO₂ emissions per year.

In October 2020, Opal Australian Paper and SUEZ Australia and New Zealand announced that Masdar and Tribe have joined them as additional equity partners for the development of the Maryvale EfW facility in Victoria. This project would divert approximately 325,000 tons of non-recyclable residual waste from landfill "and reuse it to generate steam and electricity to replace natural gas and coal fired electricity". The project is aligned with Victoria's circular economy policy and is expected to deliver significant reductions in greenhouse gas emissions.



Masdar and Tribe are both founding members of the Australia United Arab Emirates Business Council, which was recently established to increase collaboration between the two countries.

www.tribeig.com

www.masdar.ae

Photo: Masdar

GLOBAL PLATFORM: ICLEI CIRCULARS

ICLEI – Local Governments for Sustainability has launched ICLEI Circulars, a global platform, which works across regions to facilitate the circular economy transition at the local level. "Through regional hubs, ICLEI Circulars will work with communities around the world to find the best circular solutions to address pressing local challenges and offer sector-specific guidance for cities to begin working with circular development solutions where their need is greatest," ICLEI – a global network of more than 2,500 local and regional governments – gave account. The platform's flagship publication, City Practitioners Handbook: Circular Food Systems, offers practical tools and learnings from 50 local and regional governments on circular food systems and was developed with contributions from the Ellen MacArthur Foundation, the United Nations Environment Programme, Circle Economy, The Finnish Innovation Fund Sitra, Metabolic and RUAF.

<https://circulars.iclei.org/>

BIR World Recycling Convention:

LAUNCH OF NEW SURVEY ON SHREDDER SAFETY

During the latest World Recycling Convention (online) organized by the Bureau of International Recycling (BIR), the Shredder Committee focused on safety issues.

Sharing information is regarded as one of the most effective ways to improve safety around shredder installations. Therefore, Christopher J. Bedell (Senior Vice President and General Counsel for The David J. Joseph Company, USA) called for a safety “summit” to be held once operators had had an opportunity to digest the contents of the newly-launched BIR Shredder Safety Survey Report for 2019 (https://bir.org/images/BIR_Publications/Report_on_the_BIR_Shredder_Safety_Survey_for_2019_-_FINAL.pdf).

In his opinion, such a discussion could then lead to actions “to address the highest risks in shredder operations”. A summit meeting could also help identify trends that might not show up at individual yards – something that could become useful in preventing accidents.

The Shredder Committee’s Chairman Scott Newell III (Newell Recycling Equipment, USA) welcomed this proposal for a further session to share experiences and information. At the Shredder Committee meeting, he



Photo: O. Kürth

also provided an update of the World Shredder List showing 322 installations in North America, 262 in Europe and 579 elsewhere for a global total of 1163.

Regarding the BIR Shredder Safety Survey Report 2019, Christopher J. Bedell presented some of the main findings. As stated, based on responses to a BIR-led questionnaire, this statistical analysis of incidents and injuries occurring at shredder installations of more than 1,000 HP (horsepower) has been designed to enable shredder owners to benchmark their safety performance against similar operations around the world and to provide a basis for safety briefings. The speaker noted, in particular, the confidentiality accorded to survey respondents as

well as the high incidence of eye and hand injuries and the prominence of picking, mill maintenance and conveyor repair as sources of accidents.

On the same day, the committee launched the BIR Shredder Safety Survey for 2020 (<https://www.bir.org/ShredderSafetySurvey2020#>). According to the world recycling organization’s Trade and Environment Director Ross Bartley, the survey is available in five languages (English, Chinese, French, German and Spanish) and had been extended to include questions on weather conditions at the time of an incident and deflagrations. “Every shredder owner is welcome to participate,” he insisted.

www.bir.org

NEW CAT 953 TRACK LOADER

A track loader is the one machine that can do it all – clear, load, dig, carry, fill and more. As underlined by the American manufacturer Caterpillar, the new Cat 953 Track Loader combines versatility with up to ten percent better fuel efficiency, more productivity, and cab and controlla-



bility improvements. The new model would meet U.S. EPA Tier 4 Final/EU Stage V emission standards. At 160 hp (119 kW) and an operating weight of 35,181 lbs. (15 958 kg), it would replace the 953K.

www.cat.com

Photo: Caterpillar

ENHANCED EFFICIENCY AND INCREASED UPTIME

German-based plant builder Stadler has developed in-house the Service Data Cloud (SDC) platform, which captures operating and sensor data from the equipment at the customer's sorting plant. According to the company, the solution provides a complete overview of the sorting plant's operation with data captured from the facility's equipment, unlocking opportunities to optimize its efficiency, facilitate troubleshooting and service support, and maximize uptime.



Photo: Stadler

"The information is securely stored in the cloud and accessible from anywhere on- or off-site through a web portal. The SDC leverages automation and the Industrial Internet of Things (IIoT) to optimize and increase the efficiency of processes in Stadler

sorting plants and provide better, faster support to its customers." SDC was equally effective in all types of sorting plants. Moreover, it is possible to implement the solution at existing plants, "where it may just need updating some hardware", the provider

underlined. "In these facilities, it can highlight areas where the process can be improved and can be used to implement updates to the existing equipment."

www.w-stadler.de



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Finland:

FUTURE FLAGSHIP PLANT FOR TEXTILE FIBER REGENERATION

Circular fashion and textile technology group Infinited Fiber Company intends to build a flagship factory in Finland to produce regenerated textile fibers for the global market.

According to the company, its patented technology transforms any cellulose-rich raw material – including discarded textiles, used cardboard or rice or wheat straw – into cellulose carbamate fibers with the look and feel of cotton. It is envisaged that the new factory will have an annual capacity of 30,000 metric tons and will use post-consumer textile waste as feedstock.

As reported, the total investment for setting up the flagship plant is estimated at around 220 million Euro. According to Infinited Fiber Company, they will decide upon the location in September. Moreover, the company expects that the future facility will be operational in 2024. Austrian-based international technology group Andritz will be a key supplier of the

process equipment for the new plant; both companies have worked together to carry out trials since the end of 2019.

Finnish waste management company Lounais-Suomen Jätehuolto Oy (LSJH), owned by 17 municipalities in South-West Finland, will supply raw material to Infinited Fiber Company's flagship plant from the full-scale textile waste refinement plant being prepared in the Turku region of Finland. LSJH's plant will process all the end-of-life textiles of Finnish households in cooperation with other municipality-owned waste management companies.

The plant's entire output is intended for export, Infinited Fiber Company informed in a press release. It hopes supply agreements with several global fashion and textile brands will be in place before the end of 2021, securing the factory's entire output capacity for several years.

The process

Infinited Fiber Company currently operates pilot facilities in Espoo and Valkeakoski, Finland, with a combined nominal capacity of 150 metric tons/annum. "The magic in our process happens when urea reacts with the cellulose, creating a carbamate functionality that gives the new fiber unique qualities like its soft and natural look and feels superior dye uptake, and naturally occurring antimicrobial properties," the Finnish enterprise informed on its homepage. The technology would cover all steps – from the pre-treatment of the raw material to the finished, ready-to-ship textile fibers with the brand name "Infinna". Toxic substances are not used.

As underlined, the technology can be retrofitted cost-effectively to any pulp and viscose fiber lines in existing factories.

 <https://infinitedfiber.com>

Textiles:

SORTING FOR CIRCULARITY

Netherlands-based organization Fashion for Good – a global platform for innovation, made possible through collaboration and community with partners – has launched a new project to drive textile recycling.

The number of discarded textiles is increasing annually, with projections of further acceleration. Although some of this waste is reused, a significant proportion is diverted for recycling. For creating the necessary infrastructure to recycle these textiles effectively, it

was important to understand their material composition. The current textile sorting system, which relies heavily on

manual input, cannot provide accurate insights due to unreliable and absent clothing labels, Fashion for Good pointed out.



Therefore, the international organization has launched the Sorting for Circularity Project to address this challenge on a scale greater than ever before. "Bringing together key brands and industry leaders from across Europe, the project will conduct a comprehensive textile waste analysis using more accurate, innovative Near

Infrared (NIR) technology, while also mapping textile recycler's capabilities." This research would aim at leading to an open digital platform to match textile waste from sorters with recyclers, enabling their alignment and building infrastructure towards greater circularity in the years to come.

"The aim of the 18-month project is to create a greater link between textile sorters and textile recyclers, stimulating a recycling market for unwanted textiles that can generate new revenue streams for sorters," Katrin Ley, Managing Director of Fashion for Good, was quoted. "Traditionally, the sorting industry generates income through the sale of reusable textiles, with the remainder being downcycled, incinerated or landfilled. To achieve a circular system, a new end-market for non-reusable textile is required, with

an infrastructure and digital matching system that can support activities of sorters and recyclers."

According to the organization, the Sorting for Circularity Project is driven by Fashion for Good with catalytic funding provided by Laudes Foundation and facilitated by brand partners, Adidas, BESTSELLER, and Zalando, as well as Inditex as an external partner. Partner companies Arvind Limited, Birla Cellulose, Levi Strauss & Co., Otto and PVH Corp. are participating as members of the wider working group. Circle Economy leads the creation and implementation of the methodology, with support from Refashion, to assess textile waste composition. Both organizations build on their extensive experience from similar projects, such as the Interreg Fibersort Project and previous textile composition analyses.

As reported, the project brings together the largest industrial textile sorters in the North-West European region. That includes Boer Group, I:CO (a part of SOEX Group), JMP Wilcox (a part of Textile Recycling International) and TEXAID, "placing key industry players firmly at the heart of the project and driving the industry towards greater circularity". The French accredited Extended Producer Responsibility (EPR) eco-organization Refashion, a key project partner, provides input into the methodology and leads the NIR scanner calibration. Aligning the Sorting for Circularity Project with their study in France ensures methodologies and findings can be standardized, compared and implemented on a larger scale, Fashion for Good gave account.

<https://fashionforgood.com>

GLOBAL E-COMMERCE PACKAGING MARKET

The rise of the e-commerce shopping market is connected to a rising e-commerce packaging sector.

As per this recently issued market research report by Facts & Factors, the global e-commerce packaging market was about 27 billion US-Dollar in 2020, with sales value projected to hit around 62 billion US-Dollar by the end of 2026. The compound annual growth rate (CAGR) is projected to reach 15 percent from 2021 to 2026.

"With an increase in internet penetration towards urban and rural areas across the globe, the e-commerce market has been upgrading its marketing strategies in order to tap into a previously untapped market," the Indian-based market research firm wrote. "Previously, companies that stuck to retail-only business strategies have begun producing their own version of

e-commerce applications in order to get on the trend. The leading market players in the sector are moving ahead in the same direction. Amazon opened five new performance centers in India in order to recoup its position as the largest e-commerce presence in the region. Furthermore, collaboration in the sector helps combine two consumer bases of different shopping tastes. In essence, Amcor Limited acquired Bemis Company, Inc. By integrating their two firms together, Amcor looks

to expand into the consumer base of Bemis and vice-versa."

The material segment can be categorized in the following way: protective packaging, corrugated boxes, paper, tapes, mailers and others. The protective packaging is expected to witness the highest growth CAGR across the category for the forecast period.

www.fnfresearch.com/e-commerce-packaging-market



cieTrade Business Management Software: **TAKE CONTROL OF YOUR TRADING OR RECYCLING BUSINESS**

cieTrade is a global provider of commodity trading and recycling software. The American company offers business management and inventory solutions specifically for international trading houses, pulp and paper brokers, and commercial recycling plants.

Although the company started out primarily offering a solution for scrap and paper stock brokerage, cieTrade has greatly evolved into a powerful, agile platform that has allowed its clients to scale their business and reduce costs while helping them respond to changing market conditions and opportunities. In the following interview with Emily Ott, Global Recycling Magazine wanted to know more about the company's specialized software solutions.

Which companies in the recycling industry can benefit from cieTrade's business software?

The cieTrade platform is uniquely adapted to support a wide range of business models within the recycling and waste industry. This includes brokers buying from third-party suppliers and shipping to domestic and international receivers, brokers selling to overseas customers with and without using freight forwarders, commercial and MRF

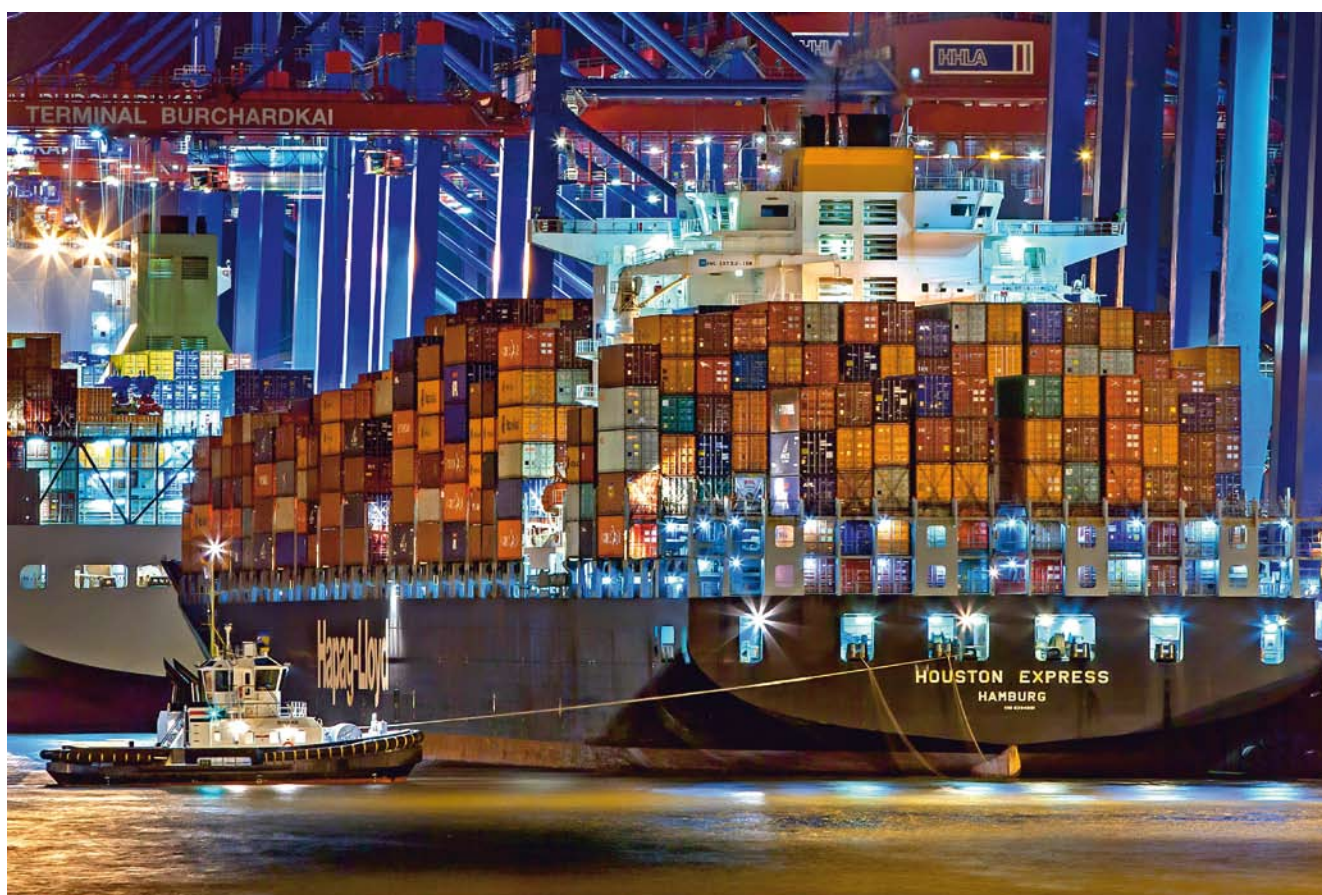


Photo: Julius Silver / pixabay.com

plant operations, retail recycling or buyback centers, scrap material processors such as plastics pelletizing or metal shredding, and waste brokerage for companies providing managed waste and recycling services for regional or national accounts.

Apart from features such as invoicing, customer accounts, customer database, equipment tracking, inventory management, waste disposal, and work order management, what other benefits does cieTrade software offer?

There are several additional benefits cieTrade offers depending upon the type of operation and how it is managed. Below are a few key features that clients have said are especially valuable:

- Mobile tablet app to handle received material grading, processing and shipping.
- Self-Inspection mobile app to capture and organize export container and claim photos.
- Mill Release Number Tracking.
- Freight Rate Management and 3PL integration.
- Finished Bale tracking and barcode labels from a mobile app.
- Support for bales routes using average weights.
- Automated settlement and billing process.
- Data capture tools to easily upload and batch edit shipping data from third parties.
- Route Management and mobile dispatch service app for drivers.
- Public Trade Point-of-Sale app and compliance for retail/buyback centers.
- Sophisticated tools to analyze the profitability of material streams by supplier/source.
- Seamless real-time integration with financial systems that can be easily reconciled.
- Self-Service web portals for customers and supply chain partners.
- Extensive Gross Profit, Tonnage and trend reports.

For Scrap Brokers and Exporters:

- Generating specialized shipping and export documentation and tracking document packages.
- Tracking budget to actual performance.
- Reporting gross profit by matching expense accruals with revenue (automating the accrual process).
- Managing ocean freight rates, bookings and fulfillment.
- Ecommerce integration with major ocean carriers.
- Easily visualizing profit on every brokerage deal.

Would you mind explaining these features in more detail, taking a recycling plant as an example? To what extent can the amount of work and expenses be reduced?

The advantages most clients realize from using our platform tend to include: potential reduction of existing or fu-

ture staffing needs, increased productivity and accuracy, in part by eliminating double-entry and manual procedures, improved customer service with faster, easier access to vital information, and greater business insight for improved decision making and control. Quantifying the effective value or reduction in costs associated with these is always difficult to determine and can vary significantly among companies with different operating practices.

However, for a typical recycling operation where in/out bound loads are printed on physical tickets, later recorded on spreadsheets and, again, cut and pasted into settlement reports or customer billing, our platform introduces a significant reduction in keystrokes, potential errors, time spent manually compiling reports, searching for information and updating accounting software. In these cases, delivering ROI is relatively easy to achieve and in a fairly short time (especially given the competitive cost of our software). Less tangible but often just as critical, especially for growing operations with multiple sites or companies with third party stakeholders, is having a standard operating platform to improve scalability, establish reporting consistency, and improve training and manageability of staff.

For example, here is a simple illustration of how cieTrade helps to reduce work and minimize overhead costs:

- Inbound loads are initially weighed using scale integration and are received directly into the software instead of using physical scale tickets.
- These “electronic” tickets are matched up with a corresponding customer, pickup location and a related price letter, eliminating the need to track loads on spreadsheets or with hand written notes on tickets.
- Once the trailer arrives in the yard to be unloaded, our warehouse grading app helps grade and process tickets, eliminating the handwritten paper breakdown sheets.
- Since grading is performed within the software, your back office receives instant notifications and can easily confirm or make corrections as needed without double-entry, handling of physical tickets, or deciphering handwritten notes.
- Once grading is confirmed, the material is instantly posted to inventory, eliminating manual material tracking (if that is even being performed).
- Since each ticket is matched with a customer, location, price letter and service charges, the settlement process can be fully automated, eliminating the need to manually compile statements and post accounting entries. For a recycling plant with numerous commercial accounts, the time savings and improved accuracy of this one process can save several days of work each month.
- Outbound loads are staged and set up within the software so they are tracked and scheduled all in one place.
- Documentation such as Bill of Ladings, Delivery Confir-

mations, or Packing Lists can be automatically generated, eliminating manual documents and improving the organization by attaching them to corresponding tickets.

- When a trailer arrives, its release number can easily retrieve the record of the scheduled load, further eliminating the need to track this separately and further helping to eliminate shipping errors.
- Scale weights are captured directly from the scale onto the outbound load ticket (again eliminating manual tickets and double-entry) to produce a net shipping weight.
- Next, billing workflow tracks in-process loads that need received weights or that have been shipped but not billed to avoid costly errors and oversights while final billing is performed directly within the software to further eliminate manual entry in accounting and on spreadsheets to track out-bound weights.
- As a result of these processes, your floor inventory is also maintained, providing improved visibility of material grades on hand while eliminating manual stock lists.
- Specialized reports on tonnage, sales, purchases, gross profit, and more can all be easily generated on demand without spending hours of work compiling manual reports from paper tickets or copying and pasting spreadsheet data.

Efficiency is gained as a direct result of eliminating duplicate entry, automation of processes, and generating reports. Costs are reduced as an indirect result of saved labor, reduced or eliminated mistakes and oversights, improved customer service, and better reporting and analytics for improved decision making on pricing and account management.

When talking about plastic recycling, for example, the quality of the processed material is crucial – as in other industries. How can cieTrade’s solution control inventory value, production costs, and material sources for quality assurance?

Providing effective traceability of material and tracking of actual or “landed” inventory value is a critical requirement for most recycled plastic processors and a major weakness for many ERP systems that often need to be heavily customized to do this.

cieTrade natively supports this requirement first by using a “serialized” inventory model to capture received material. This allows individual items such as boxes or bales to be tracked with specific attributes such as supplier, grade, type, receive date, net weight, condition and more, all identifiable by a unique barcode. Inventory items are initially valued using a “landed” cost that includes any related receiving expenses such as freight or handling costs into its overall value. Warehouse storage and other charges can



Emily Ott, cieTrade Product Manager

also be added to further improve costing accuracy. When feedstock inventory is selected for processing, its landed cost value plus any production costs such as labor or machine run-time can all be allocated into the “output” or production value of each finished item on a weighted average basis, including the effective cost of yield loss through production. The material sources of these finished goods are connected back to the processing job that created it which, in turn, is linked to the specific feedstock items selected as “input” and the ticket it was received on, making it easy to trace the source material for any finished item and identify what load and supplier it came from and when.

For companies that export recycled commodities overseas, cieTrade offers software solutions for international trading, which provide appropriate tools. What are the main features?

The complexity and demands of international trade can be difficult for any software to properly support. cieTrade approaches this challenge by offering a highly flexible and dynamic platform that can be tailored to meet the diverse needs of scrap commodity traders. This includes critical features such as:

- Support for complex trading scenarios with multiple suppliers to a customer order or multiple customer orders to one supplier.
- Sales Order pre-calc, budget, and approval process to manage and control order profitability and reduce risk.
- Specialized tools to easily upload container details from suppliers.
- Ability to manage ocean freight rates, bookings, reserve allocations to suppliers and its fulfillment.

- Container tracking, container booking assignment, and sales disposition all from one specialized “dashboard”.
- Ecommerce integration with ocean carriers to submit BOL instructions and more.
- Ability to generate export shipping documentation and provide LC business support using customizable templates and tools.
- Customizable documentation package and status tracking.
- Logistical reporting on booking and shipping activity for internal operations and customers.
- Profitability reporting by order, shipment, customer, grade, supplier, market etc.
- Assigning currency contracts to orders and transactions.
- Customer/supplier portals to expedite documentation and status updates on orders.

Due to the pandemic, international trade is restricted by high transportation costs and the lack of freight containers. Can the software factor in ocean freight rates, trucking, and inspection costs?



cieTrade team members in meeting

Yes, all related logistical and business expenses are accounted for in the gross profit reporting of every shipment/order. Our unique worksheet concept captures revenue, cost of goods sold, and related expenses such as ocean & inland freight, marine insurance, inspection, gate fees, and more. Actual costs can be analyzed against budgeted estimates using our pre-calc tool so that cost discrepancies are easily identified against benchmarks. Users can also create “advance” bookings before issuing purchase orders to help secure container reservations in tight markets. cieTrade helps manage current ocean and inland freight rates, reports on historic rates, and provides specialized reports to analyze tonnage and freight costs by carrier, shipping lane, and more.

Can the exporting company also track containers for scrap, pulp, lumber, or paper stock?

Yes. cieTrade offers the flexibility to manage export shipping containers with a wide range of bulk material and packaging types including bales, boxes, lumber bundles, paper stock or pulp rolls, and even sheets just to name a few. Packing lists can be customized to summarize container information or provide details and specifications based on specific commodity types. Container information can be easily imported from suppliers without manual entry using our spreadsheet upload tool and then tracked from our Container Management dashboard where logistics, documentation, and billing status can all be viewed. From here weights and other container details can be easily edited, bookings can be changed, and containers assigned to a bill of lading and commercial invoice. You can even generate VGM certificates and submit BOL instructions directly to steamship lines using our built-in e-commerce connectivity with Infor-Nexus.

www.cietrade.com

INTERNATIONAL TAKE-BACK OF OLD EQUIPMENT

German-based RENE AG – a network, which handles international compliance tasks stemming from WEEE (Waste Electrical and Electronic Equipment), batteries and packaging obligations for companies – offers its service worldwide. Around 80 states across the globe have formally defined standards for environmentally sound recycling of waste electrical and electronic equipment (WEEE), the business that runs one of the largest commercial European systems in this sector, informed. To meet those standards, it would manage a worldwide network of WEEE recycling companies. “Currently, this network spans across 56 countries,” RENE AG pointed out. Together with more than 80 contracted – and certified – partners, the firm was prepared to take back WEEE in many regions: North and South America, Europe, Africa, the Middle East, Asia and Australia. “The recycling is executed within the country of the pick-up.”

www.rene-europe.com

STELCO SIGNS MOU WITH PRIMOBIUS TO CONSTRUCT A PLANT FOR RECYCLING OF LI-ION BATTERY METALS

The goal is recovering lithium, nickel, cobalt and other materials from expended lithium-ion batteries in North America.

Primobius GmbH is a 50:50 joint venture company owned by Australian Neometals Ltd., and German-based SMS group (www.sms-group.com) to commercialize an environmentally friendly recycling solution for end-of-life and scrap lithium-ion battery (LiB) cells. The company has recently signed a memorandum of understanding (MoU) with Canadian Stelco Inc., a wholly-owned subsidiary of steel manufacturer Stelco Holdings Inc.

Stelco is pursuing initiatives with major automobile producers to recycle end-of-life automobiles in order to recover valuable materials for re-use or re-sale. "Recycling the lithium-ion batteries contained in electric vehicle automobiles is a major aspect within this value chain, which will become even more important in the future," SMS group gave account. The Canadian firm was looking to partner with a party with lithium-ion battery capabilities to establish a battery recycling business in North America as part of its broader automobile recycling pur-



Photo: SMS group

suits. The Primobius recycling process would offer large-scale sustainable recycling "that can drastically reduce the CO₂ footprint of vehicle and cell makers".

The MoU would provide a framework towards establishing a 50:50 incorporated lithium-ion battery recycling joint venture in North America. It is planned that Primobius is going to supply a dedicated recycling facility (processing capacity: 20,000 tons/year) adjacent to Stelco's proposed vehicle recycling operation, run by the joint

venture partners with equal contribution of capital costs and sharing of financial returns. As reported, the facility will be modeled on its proprietary refining process following the successful completion of the demonstration trials at its showcase facility. The company's demonstration plant is currently being assembled in a dedicated warehouse at the SMS group manufacturing center in Hilchenbach, Germany.

www.primobius.com
www.stelco.com

CHRYSALIX ROBOVALLEY FUND INVESTS IN TECHNOLOGY FIRM

Global venture capital fund Chrysalix, headquartered in Canada, has invested in Sortera Alloys, developers of an intelligent sorting system for the upcycling of non-ferrous scrap metal.

As reported, the system enables accurate, high throughput sorting by metal type and alloy composition through a

combination of sensor fusion (XRF-x-ray fluorescence, Optical), AI/ML (artificial intelligence/machine learning) image processing and an advanced scrap feeder design. "Chrysalix is making the circularity of metals a major theme of our new fund," Alfred Lam, Partner at Chrysalix Venture Capital, was quoted. Primary aluminum production would

account for one percent of global GHGs (greenhouse gases). Furthermore, to achieve the forecasted global demand and climate change targets, the industry had to deliver significant decarbonization.

"After the successful demonstration of our patented high throughput AI sort-

ing technology under the Doe Arpa-e metals project, there has been a lot of interest from the investment community to implement this technology at commercial scale. We chose to work with Chrysalix because of their track record for long term commitment to global sustainability efforts,” Nalin Kumar, CEO of Sortera, commented. “In addition to the infusion of funding from Chrysalix to develop and demonstrate the first industrial-scale metal recycling facility, their international partners will enable us to expand the impact of our technology at a global scale.”



pounds (more than 45,000 tons) per year demonstration system at a facility in Fort Wayne, Indiana. Furthermore, Eriez Magnetics, based in Erie (Pennsylvania), would build equipment for facilities to provide low cast metal alloys as feedstocks to local industries all over the world.

As emphasized, the Chrysalix RoboValley Fund invests in intelligent systems enabled by AI, IoT (Internet of Things) and sensor technologies to achieve significant improvements in productivity and critical business processes. Investors in the fund include Fortune 500 companies, leading corporates, financial institutions, family offices and universities, as well as a notable cluster of metals producers, such as South32, Severstal and Mitsubishi Corporation.

🌐 www.chrysalix.com

🌐 www.sorteraalloys.com

According to the information, Sortera is a spin-out from the Arpa-e metals program and is led by a team of seasoned innovators in the fields of advanced materials, electronic instrumentation and equipment development. This program challenges teams to find cost-effective

and energy-efficient manufacturing techniques to process and recycle metals. During this R&D program, Sortera partnered with OmniSource, one of North America’s largest processors and distributors of automotive scrap and secondary metals, and plans to deploy a fully integrated 100 million

Photo: O. Kirth



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HOW TO GET A “GREEN” SHIP RECYCLING

In 2018, in summary, 744 ships were dismantled worldwide, resulting in 18.9 million GT (Gross Tonnage) material.

With 253 wrecks, India scrapped a third of all ships by numbers, while Bangladesh, with nearly eight million GT, broke most material in terms of volume, indicating that this country's yards were the preferred destination for larger vessels. In contrast, the EU scrapped 31 ships, delivered some 72,000 GT, and the local recycling yards dismantled mostly small-size vessels, according to NGO Shipbreaking Platform. If one follows figures of statistic-portal statista, most of the reported shipping tonnage sold for demolition in 2018 consisted of oil tankers, adding up to nearly 10.8 million GT, followed by bulk carriers with 2.5 million GT. The remaining vessels range from approximately 1.3 million GT (container ships) to 185,000 GT (ferries and passenger ships).

Five countries responsible for 97 percent

Although 82 countries are ship recycling domains, five of them are responsible for an average of 97 to 98 percent of all tonnage recycled globally, argued Nikos Mikelis, in 2013 non-executive director of GMS, the world's leading cash buyer of ships for recycling. In his opinion, in 2013 each of “India, China, and Bangladesh have a large share of the world's recycling capacity (i.e. between 24 percent and 31 percent), while Pakistan and Turkey have smaller but increasing shares of the world's capacity (around 11 percent and four percent)”. For 2019, he reported a present capacity of 9.9 million GT in Bangladesh and 5.7 million GT in Pakistan, not to forget China with 8.2 million GT. In general, other countries could close up if their economy needs



Photo: Mulderphoto/stockadobe.com

ferrous scrap imports and if the local labor costs can realize a steel scrap price under import price level. But Nikos Mikelis is sure that areas like the European Union, the USA or Canada could never be in a position to establish a major ship recycling industry: These economies do not need to import ferrous scrap and have to deal with high labor costs. “In such mature economies, it would appear that ship recycling can only exist as a service for disposing smaller or government-owned ships, or wrecks.”

EU list of recycling facilities

An opposite point of view, substituted by the NGO Ship-breaking Platform, says that in 2018, 518 from the 744 large ocean-going commercial vessels were sold to the scrap-yards of Bangladesh, India and Pakistan and broken down on tidal mudflats, “amounting to a record-breaking 90.4 percent of the gross tonnage dismantled globally”. Instead of dangerous ship scrapping at Southeast Asian beaches, vessels, as a matter of principle, could have been treated at the 20 EU-listed yards that can handle the recycling demand of EU-flagged ships cleanly and safely. In January 2020, the list comprised 41 yards, including 34 facilities located in 12 EU Member States and Norway, six facilities in Turkey and one facility in the United States of America.

Shortly before, Nikos Mikelis had warned that “it should be evident to all that EU SRR (European Regulation on Ship Recycling) will fail in its enforcement unless its List includes a not-insignificant number of South Asian yards.”

The European Union quickly widened its gathering ground: The list, updated in November 2020, comprised 40 recycling facilities located in countries that had applied for inclusion in the European List of ship recycling facilities – 20 in India, 14 in Turkey, four in China and two in the USA.

No chance of banning beaching

But there is by no means a chance that EU legislation or measures could stop unacceptable ship recycling practices in South Asia by banning beaching. The three leading countries Bangladesh, India and Pakistan – that already recycled more than two-thirds of the world’s recycled gross tonnage and even more of the world’s recycled lightweight in 2013 – would not put an end to their local practices on their grounds. In contrast, likely, European based end-of-life ships could immediately change their flag to get the best retailing options. Following Nikos Mikelis, the only winners would “prevail from the unclear, unenforceable and confusing regulatory requirements”, but certainly it would not



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change the working conditions of “the so-called exploited workers of South Asian ship recycling yards”.

EU recycling capacity developable

Another problem affects the recycling possibilities: Official data the International Maritime Organization resorts to indicate that the combined maximum annual recycling volume in the EU, including the United Kingdom and Norway, represents just 0.57 percent of the world’s capacity. And the overall tonnage the EU yards could recycle in 2018 totaled about 82,000 GT – correlating with 0.45 percent of the globally recycled volume. Figures of the European Maritime Safety Agency EMSA document suggest that the capacity needs to be doubled. It seems that there are also not enough adequate facilities to recycle the largest sea-going vessels. Therefore, Martin Dorsman, Secretary General of the European Community of Shipowners’ Associations ECSA underlined: “We were and still are worried that there is not enough capacity and certainly welcome the Commission’s current efforts to enlarge the list.” To retrieve to the existing facilities’ honor: EU yards are not only active in ship recycling but also focus on ship repair, conversion and off-shore works.

Re-rolled or melted steel scrap?

A third difficulty is associated with Europe as the world’s largest net exporter of scrap steel, the majority going to Turkey and some quantities also to India and China. Why should Europe recycle large end-of-life ships and transfer their material via ship to other countries? Or, in other words, and according to Nikos Mikelis: “It makes no sense to recycle large ships in Europe to produce scrap that will have to compete with the large quantities of other European ferrous scraps in order to be sold and transported

to countries most of which already recycle ships.” Besides that, the South Asian steel industry prefers re-rolled ship’s scrap, as it is easier to process and up to 90 percent cheaper than melted steel scrap. There is no need to resort to expensive melted foreign material.

Conventions: Hong Kong versus Europe

The field of ship recycling rules is manageable but is divided – on the one hand – in nations attending the Statements of Compliance with the “Hong Kong Convention for the safe and environmentally sound recycling of ships” adopted in 2009 and since then waiting for prospective enforcement and – on the other hand – the EU region with an own Ship Recycling Regulation No 1257/2013: Based on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, it entered into force on December 30, 2013. There are some gaps in the Hong Kong Convention, as it excludes several ship types, does not enforce the polluter pays principle, does not codify a solid recycling process and will not reduce beaching, for example. The drawbacks of the EU Regulation include – as a master thesis at the Free University of Brussels in 2019 stated – amongst others that not all ships worldwide fall under this regulation: ships can easily reflag from an EU flag to circumvent the regulation; the capacity for enforcement has to be enlarged; the cooperation between member states must be improved; it is unclear what role beaching facilities shall have. The European Institute for Asian Studies spoke of concerns that the Regulation might become a “paper tiger”, stimulating the debate, but very modest in changing the shipbreaking business in the yards of South Asia.

Two additive approaches

However, the European Regulation (related to Basel Convention) and Hong Kong Convention basically only differ in the way yards are authorized and in defining two additional hazardous materials to be controlled. A study on “Contributions of Ship Recycling in Bangladesh”, edited by the International Maritime Organization in 2017, underlined that “the EU Regulation is consistent with the Hong Kong Convention in many respects”. In other words, “the irony is that the Basel Convention and the Hong Kong Convention were never in conflict with one another in the first place ... The two approaches are not duplicative but rather additive ... But from a legal standpoint, there is no conflict, if the obligations are added and implemented at the same time”, expressed even a paper titled “Contradiction in terms: European Union must align its waste ship exports with international law and Green Deal”, edited by Greenpeace, Basel Action Network, European Environment Bureau and NGO Shipbreaking Platform in September 2020. Already in 2017,

„Like other recycling activities, ship recycling can be carried out sustainably, in a way which is good for workers, the environment and the economy.“

Karmenu Vella, EU Commissioner for Environment, Maritime Affairs and Fisheries

a study on ship recycling in Bangladesh underlined: “If EU wants to promote ‘responsible’ ship recycling globally and minimize environmental footprints, it should develop a regulatory framework that does not shut down recycling industries in developing countries.” Additionally, it should give incentives to developing countries to improve their ship recycling practices and become ‘green’, “without depriving them from future economic prosperity”. The before mentioned thesis goes one step ahead and suggests that in the long term “more effort should be put into regulating the proper design of ships to facilitate safe and environmentally sound recycling”.

Potential to be a green business

Already in 2014, the European Institute for Asian Studies commemorated “that the aim is not to shut down this type of industry or to excessively burden developing countries, but to upgrade ship recycling to fulfill its ‘green business’ potential, without depriving South Asia countries of economic opportunities”. And the institute argued that – “if conducted in an environmentally safe and sound manner” – ship recycling would have the potential to be a “green business” through re-use of materials, especially if newly designed ships have a cradle-to-grave approach in mind.

Compliance with all regulations

The Ship Recycling Transparency Initiative (SRTI) is sure to take a step in the right direction. As an “independent initiative” hosted by the Sustainable Shipping Initiative, it is supported by leaders from across the shipping value chain like – amongst others – the China Navigation Company, GES International, Hapag-Lloyd, Lloyd’s Register and A.P. Moeller-Maersk. In 2019, 41 percent of the signatories were shipowners, approximately 30 percent financial stakeholders and nearly 12 percent cargo owners like BMW and truck manufacturer Scania. The Initiative delivers a “vision of a world where ships are recycled responsibly – socially, environmentally and economically – going beyond international conventions and setting a new norm for responsible ship recycling”. And it wants to create “a new norm through the simple act of being transparent”. According to SRTI’s 2019 report, ship recycling policies adhere to a range of global and regional conventions, guidelines and principles, including first of all the Hong Kong Convention, the EU Ship Recycling Regulation, Basel Convention, United Nations Global Compact, OECD Guidelines of Multinational Enterprises, Stockholm POP Convention, and ISO Specifications 30000. The result: “All disclosing shipowners’ ship recycling policies cover the environment, labor and human rights; other issues commonly covered downstream facilities for managing waste and hazardous materials, health and safety as well as anti-corruption.”



Photo: NGO Shipbreaking Platform

Recycling more than 95 percent

The concept of Sea2Cradle, a global expert in green ship recycling, is different. The company “wants to meet the highest standards of health, safety and environment”, complying with all EU, International Marine Organization, Basel Convention and ILO legislation. Their portfolio reaches from making a ship recycling plan and finding a buyer to supervising the dismantling and recycling at the demolition yard. According to the slogan “zero pollution, zero incidents, zero accidents”, Sea2Cradle provides demolition yards with an accident-free working environment, proper disposal of hazardous materials without exposure to workers, and recycles more than 95 percent of all material aiming at 100 percent. Meanwhile, the enterprise looks back at 180 recycling projects.

Improvements have been made ...

Undoubtedly, the practices of ship recycling have improved lately. According to the International Shipping News magazine, the last four years saw nearly 80 out of 120 ship recycling yards in India achieving Statements of Compliance with the Hong Kong Convention. The paper reports on ship recycling yard owners massively investing in upgrades of their recycling facilities by floors with drainage systems, heavy lift cranes, training for workers and implementation of Ship Recycling Facility Plans and Ship Recycling Plans following guidelines of the International Marine Organization. Yards incorporated in the International Ship Recycling Association (ISRA) made “huge investments” to achieve ISRA’s high-level demands for sustainable ship recycling.

Now, the group claims to be “representing the strongest environmentally responsible yards in the world”. According to Hellenic Shipping News, in February 2020, many yards in India proclaimed an upgrade of their beaching facilities to comply with the Hong Kong Requirements. And in January 2020, the media gave account that the PHP Ship Breaking and Recycling Industries Limited, a ship recycling facility in Chattogram, was verified to be the first Bangladeshi recycling facility in line with the Hong Kong Convention.

... but it is not sufficient

This optimistic picture of an environment-friendly ship recycling future shows cracks when faced with the site inspection reports the EU Commission conducted in summer 2020 in the Indian coastal region Alang. Six facilities had applied for inclusion in the European List of ship recycling facilities. Since the first meeting, all of them “had made important investments in the last years to upgrade its infrastructure and ship recycling practices”, the reports confirm. But the proceedings set out a lack of adequate hospital facilities by limited emergency capabilities and underlined the fact that the place for treatment of serious injuries is located approximately 1.5 hours’ drive away from the Alang yards. All yards show difficulties in ensuring sustainable downstream management of wastes generated by the ship dismantling activities. Most of the generated waste is transferred to the local treatment storage and disposal facility. However, the operator is not able to handle certain types of wastes like e-waste, batteries or POPs. Therefore, these types of waste are transferred to other waste man-

agement facilities with yet unknown standards. At one yard the evaluators even criticized an incomplete Ship Recycling Facility Plan, the improvable environmental monitoring, missing measures for protecting the intertidal zone and a questionable drainage system for the secondary cutting zone. As the facility did not meet the requirements, it was suggested to evaluate improvements during a re-inspection of the facilities.

Investment in ship recycling seems to pay off. In 2016, India planned to invest 100 million rupees (1.5 million Euro) in improving ship recycling conditions at a recycling yard in Gujarat. Not for nothing, in October 2020, Norway showed interest in investing in the Bangladesh ship recycling industry. And in December 2020, China, banning the recycling of foreign ships on its shores at the end of 2018, was considering reversing its two-year-old decision.

But currently, the lockdown hit the branch hard in the first half of the year 2020: Mid-summer showed the selling of several Very Large Ore Carriers coupled with Capesize bulk carriers, and the last quarter was characterized by five hulking cruise ships being dismantled in Turkey, a mini price recovery for the ship recycling market and a “new optimism”, according to shipbroker Clarkson Platou Hellas. On the whole, the ship recycling sector is struggling economically. It remains up in the air when companies “are increasingly expected to make sure that their business, including their supply chain management, operate in line with international human rights standards and does not cause harm to the environment.”

NEW MOBILE WINDSHIFTER FROM NIHOT

The SDM windshifter is produced by Dutch companies Nihot and TRS.

The new version is an offering from Nihot Recycling Technology B.V. in conjunction with TRS BV. According to the manufacturer, it will enlarge the product range, meeting both market and customers’ needs. “The SDi windshifter, the most reliable and versatile heavy/light separator, is now available on tracks in addition to semi-mobile and static options, allowing customers the opportunity to choose the configuration which best suits their application and environment”, the companies underlined. Their collaboration is a “response to the increasing market demand for an SDi windshifter on caterpillar tracks. A configuration that expands the versatility of a mobile windshifter when processing various waste types in different places”. According to Nihot Sales and Marketing Director Joep Barenbrug, since Nihot introduced the first semi-mobile windshifter in 2011 – now known as SDi – it has become one of the company’s most popular machines. “Our customers are very satisfied with the adaptability and performance of our SDi semi-mobile windshifter, but most use it as a static machine. But ever since its introduction, we have received customer requests for a fully mobile Nihot windshifter. Some customers need a self-propelled windshifter as no power source is available on remote sites, while others want tracks to maneuver from pile to pile when processing rough and sharp materials, such as metal scrap.” The SDi windshifter will be manufactured at the Nihot factory, and the tracks are designed and constructed by TRS.



 www.nihot.nl

BRATISLAVA LAUNCHES PROJECT USING SMART TECHNOLOGY

Bratislava, the capital of Slovakia, in cooperation with the technology company Sensoneo, has announced the launch of a project targeted at waste digitalization and efficient waste collection.

The European Innovation Council subsidized the project. Sensoneo received the respective grant in the summer of 2020 for the large-scale deployment of its solution to demonstrate its environmental and economic benefits. As reported, the project includes several stages to be implemented until April 2022. The city expects savings on waste collection-related mileage, emissions, and the possibility for early intervention in the case of overfilled containers. "For the citizens of Bratislava, this would mean cleaner public spaces and more efficient waste collection services," explained Katarína Rajčanová, city spokeswoman.

The project includes:

- Digitalization of 85,000 containers, installation of 1,753 Sensoneo sensors to monitor all containers for glass waste and underground bins across the city
- Deployment of 92 Sensoneo Watch-Dog devices on all waste collection vehicles to automatically digitalize the waste collection process and automatically verify pick-ups
- Dynamic waste collection powered by Sensoneo's Route Optimization
- Testing of Sensoneo's prototypes

facilitating the introduction of "Pay as you sort" models and recognizing fill-levels of containers during the pick-up

Digitalization of waste infrastructure is in line with the city's Strategy for Municipal Waste Management of the transition to a circular economy during 2021-2026. "Our goal is to have exact data on the volume of waste that residents produce. These data would then be reflected in statistics at the taxpayer level. Each collection container or bag in the city will be tagged, and its dumping will be recorded using the waste collection technology," Ivana Maleš, co-author of the city document, is cited.

According to the scope, size and technologies applied, the project represents first-of-its-kind deployment on a global level, smart waste management solutions provider Sensoneo emphasized in a press release. "The use of smart technologies in the management and collection of waste is in its early stages as of yet – even the world's most well-known capitals are piloting the technologies. At the moment, there is no reference from a large-scale deployment that provides the evidence of the benefits covering such a large scope – infrastructure management, process digitization and dynamic collection."

 www.sensoneo.com





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SOUTH AMERICAN BUSINESSES FACE VARIOUS CHALLENGES

A common denominator in the Latin American markets is the adverse effect from the pandemic, as outlined in the latest World Mirror, published by the Bureau of International Recycling (BIR) in May.

As described by Alejandro Jaramillo, Chairman of the BIR Latin America Committee, the Covid-19 cases and hospitalizations have been dropping in most Mexican states. At the same time, more Mexicans were vaccinated, which were “still far from enough to reach any kind of immunity”. Against this backdrop, Alejandro Jaramillo (Glorem SC, Mexico) registered less policy volatility and, at present, no threat of the industrial shutdown seen last year.

The Mexican scrap market was characterized by a lower aluminum demand, due to the shortage of computer chips affecting the automotive industry in North America. In Mexico, the production loss is put at 136,000 vehicles, equivalent to 18 percent of the output in the first four months of this year. Additionally, some actors on the Mexican market have run into cash-flow issues, “resulting in yards now giving preference to prompt payment terms over theoretical high prices with unknown payment dates”. The demand for aluminum extrusion scrap remains robust and attracting scrap units from abroad, the Chairman of the BIR Latin America Committee, informed. This trend were likely to continue at least until the end of this year. “The shortage of containers has not been as acute in Mexico as in other regions, so scrap exports remain a relevant alternative for most of the country’s yards.”

Brazil would face unpredictable market conditions over the next quarter, according to some yards and



traders, Roger Amarante (INESFA, the Brazilian Association of Iron and Steel Companies, BRA) gave account in May. “Sometimes it feels like we are moving forward and then like we are going backwards again. The economy is unstable and exchange rates move up and down every week, with the variation as much as ten percent some months.” Steel market prices had increased about 18 percent in April but mills dropped scrap prices by an average of 30 US-Dollar per ton compared to April levels. Also, they were “verticalizing purchasing and competing directly with recycling companies. Given this scenario, it seems impossible for scrap companies to manage and plan their next steps, relying on the solution of day-to-day deals.”

Regarding Uruguay, Nicolás Werba (Werba SA) stated that business slowed in the first quarter of 2021; home-working policies had reduced companies’ movements of scrap. But China were back in the market and buying at a healthy rate. Furthermore, commodity prices have been on the rise for some time, “giving recyclers some breathing space”. However, the biggest competitor for established recyclers would remain the smuggling of

metal. “This remains intense despite the fact that Brazil’s legally-established businesses are not enjoying good buying prices because of the damaging impact of Covid.”

In Chile, the recycling industry had recorded better figures than for the same period last year, informed Nicolás Fernández (Metales y Aluminios SA and Asociación Nacional de la Industria del Reciclaje – ANIR). A second wave of the pandemic had hit the country in March and forced the entire population into strict quarantines – “but, as an essential activity, recycling has remained above 80 percent capacity on average”. The unpredicted commodities boom had brought back those long-awaited margins, mostly in the metals segment. According to Nicolás Fernández, the great challenge for the export sector has been to diversify its destinations, dodging certain markets depressed by the pandemic. “This has been particularly difficult with such a troubled maritime industry, with its route and destination closures, prohibitions on loading scrap metals, considerable rate increases, and so on.”

 www.bir.org

PROMATERIS INVESTS IN BIOPLASTIC PRODUCTION CAPACITY


The Romania-based manufacturer has invested more than ten million Euro in developing a state-of-the-art facility near Bucharest and intends to build another plant. The existing facility in Buftea, dedicated to processing bioplastics derived from renewable resources, increased the company's production capacity to 15,000 tons/year. Promateris has become "the leading production capacity in Central and Eastern Europe".

The company intends to build a new plant in Crevedia (Romania), which will allow "to double the production capacity and diversify the portfolio, with products with low environmental impact, including biodegradable marine". The initial investment will be

seven million Euro. Construction of the new facility is scheduled to begin in 2021 and end in 2023. According to Promateris, its plant in Buftea reaches high standards of quality, environmental and safety requirements. The company achieved the goal of having zero percent industrial waste "through installing a bioplastic recycling line, reducing waste through recovery and re-conversion, in accordance with the principles of circular economy". The manufacturer hires 120 employees, most of them in production, R&D and quality control. Having more than 60 years of experience in the packaging manufacturing field, Promateris started manufacturing bio-based and compostable packaging in 2017. The company distributes its products in

more than ten European countries, including Greece, Austria, Hungary, Romania, Poland or Norway.

Promateris (ex Prodplast) recently went through a rebranding process to align its production activity with the company identity. The group invests in developing sustainable packaging products and solutions for the circular economy, R&D and end-of-life solutions. It also operates a plant dedicated to manufacturing electrical cable compounding. The company is active in Bucharest, Valencia and Athens through commercial offices and distributors in more than 20 countries and three continents.

 www.promateris.com

forrec.eu



TAILORED PROJECTS AS UNIQUE AS DNA STRANDS





PHILIPPINES' WASTE AND THE BAN OF INCINERATION

September 01, 2020, Win Gatchalian, Senator of the Republic, held a privilege speech at the Senate of the Philippines. In his words, “the Philippines is facing a garbage crisis” that requires immediate concerted action from the government and civil society. “And we need to act now before it is too late.” Will the country overcome the crisis?

Following official data from the Philippines' Economic Planning Office, the country's waste generation reached about 40,000 tons per day in 2016. The World Bank in 2012 estimated that solid waste produced by Philippine cities would go up to 77,776 tons per day by 2025. Nationwide, about 40 to 85 percent of the solid wastes generated are collected. The poorer areas of cities, municipalities, and rural barangays stay typically unserved or under-served. “Uncollected waste ends up mostly in rivers, esteros and other water bodies”, a Senate paper says.

One half biodegradable

Figures of the National Solid Waste Management Commission (NSWMC) indicate that the solid waste in 2013 consisted of 57 percent residential, 27 percent commercial, 12 percent institutional and four percent industrial waste. Accordingly, 52 percent of the waste was biodegradable, 28 percent recyclables, 18 percent residual and two percent special/hazardous. A newer source speaks of recyclable waste comprising plastic packaging materials of 38 percent, followed by paper and cardboard waste, which contributes

about 31 percent. The remaining 31 percent are made up of metals, glass, textile, leather and rubber. Ana Baligod Cabatbat, a specialist at the Philippines' Department of Environment and Natural Resources – Environmental Management Bureau – subclassifies the waste in compostable (50 percent), residual (15 percent), factory returnable (30 percent) and special waste (five percent).

The national Republic Act No. 9003, otherwise known as the “Ecological Solid Waste Management Act of 2000”, enacted in 2001, requires local administrations to close their existing open dumpsites by 2006. But ten years later, there were still 403 open dumpsites and 108 controlled dumpsites in operation. Although the number of sanitary landfills increased from 48 in 2010 to 118 in 2016, local government units (LGUs) with access to controlled landfills stayed below 15 percent; in December 2018, about 353 LGUs had access to 165. “Open dumping remains the general practice of waste disposal in the country”, the Senate-paper confessed.

Different composting techniques

Republic Act No. 9003 requires that at least 25 percent of all solid wastes from waste-disposal facilities is diverted or recovered through reuse, recycling, composting, and other resource-recovery activities. LGUs are also mandated to put up or establish several waste facilities such as materials-recovery facilities (MRFs) for processing recyclable and biodegradable waste. Until 2016, about 9,900 MRFs were in operation in the country, serving a third of the country's 42,000 barangays (lowest government structure, comparable to a district). A look at the National Solid Waste Management Status Report published by the Environmental Management Bureau offers pictures underlining the different qualities of these facilities, ranging from bicycles with a trailer over simple wooden roof-covered sheds to smaller “centralized gravity-driven” buildings. There are several types of unpretentious composting techniques used by LGUs, national government agencies, private farms and cooperatives in the Philippines. Several vermicomposting facilities separate the biological solids, which are further worm-composted. According to Ana Baligod Cabatbat, 25 percent of the compostable wastes is recovered and recycled to organic fertilizer.

Energy from biodegradables

Biodegradable waste is also broadly treated by facilities for energy recovery. The Department of Energy delivers a table listing projects and capacity for generating energy in the Philippines as of March 31, 2021. The list informs about 65 commercial biomass projects with a potential capacity of 182 MW and an installed capacity of 619 MW; 22 facilities in own use are responsible for a further 170 MW. Another

earlier table with awarded biomass projects as of June 30, 2020, offers 41 ventures: Most of the biomass power plants mentioned have an installed capacity of up to 32 MW, biomass treatment facilities for landfill methane recovery, refuse-derived fuel processing, gasification, waste-to-energy (W-t-E), multi-feedstock, rice-husk, bagasse as well as pineapple fruit waste fired are also mentioned. And some are running partly in cogeneration.

Mismanagement of solid waste

The condition of solid waste treatment was different. A 2017 report from the Senate Economic Planning Office described the situation: “Majority of LGUs have yet to comply with the provisions of RA 9003, particularly on the establishment of local SWM [solid waste management] Boards, submission of SWM [solid waste management] Plans, establishment of MRF [materials-recovery facilities], and closure of all open and controlled dumpsites.”

Some shopping malls promote eco-shopping bag programs, monthly waste markets, other malls, supermarkets, fast food chains and commercial shops organize their own SWM programs. Projects of Unilever Philippines, Nestlé Philippines or CocaCola reduced trash by 50 percent, enabled the composting of coffee grounds or launched a “Give a Can, Give a Hope” program. But if households, communities and businesses are not practicing segregation at source and separate storage, most solid wastes end up as “mixed garbage”. While only 30 percent of barangays segregate their collected waste properly, 77 million Filipinos imply a “mismanagement” of solid waste through their daily lives, the Department of Environment and Natural Resources (DENR) gave account.

Recyclables delivered to junk shops

Concerning recyclables, in many cases, either the semi-formal or informal waste collectors or even the generators

“Improper wastes disposal, inefficient waste collection and lack of disposal facilities are among the dominant concerns in the country's solid waste management.”

themselves bring the sellable materials to junkshops. The accumulated recyclables from MRFs are delivered to junk shops, too. Especially paper, scrap metals and plastics with high commercial value are typically sold to junk dealers, consolidators and recyclers. Disposal site scavengers catch most recyclables like paper, plastic, metals, glass and aluminum. After leaving local junk shops, the material usually passes through a business chain of middlemen and wholesalers for use by the industry sector, mainly outside the Philippines, the Status Report suggests. “There is a very limited number of materials recovery facilities equipped with technologies to reduce wastes like recycling and composting”, the Finnish supplier of waste solution products WOIMA Corporation judged in May 2020. And added: “Improper wastes disposal, inefficient waste collection and lack of disposal facilities are among the dominant concerns in the country’s solid waste management.”

PCB destruction and waste import ban

But things are getting in motion. In 2015, DENR and the Environmental Management Bureau got ownership of the Non-Combustion Destruction Facility for Persistent Organic Pollutants, worth three million US-Dollar. Before, the facility had a design capacity to destroy 750 tons per year of PCB oil. In 2018, the facility treated only 100 tons of PCB oil. After facility upgrades with the support of the United Nations Industrial Development Organization, it is now expected to destroy 600 tons of PCB oil and PCB annually. Due to using state-of-the-art non-combustion technology, it is now the only EMB-accredited facility in the country to treat PCB oil and PCB-containing equipment with concentrations below 10,000 ppm. The facility will enable the country to treat its own PCBs instead of having these exported for incineration. In May 2019, the DENR was tired of misdeclared shipment carrying garbage entering the country’s ports. Therefore, they began to develop a policy, which would ban all waste

imports. Not to affect the industry relying on recyclable products, the EMB was directed “to make an inventory on the industries relying on these recyclable materials”, the Environment Undersecretary for Policy, Planning and International Affairs, Jonas Leones, was quoted. The International Trade Administration published a list of goods prohibited from being imported to the Philippines including, inter alia Polychlorinated biphenyls (PCBs), hazardous waste, used clothing and rags, used motorcycle parts as well as right-hand drive vehicles.

Participation of informal workers

In February 2020, the Philippines banned single-use of plastic products like plastic bags, straws, spoons and forks in national government agencies, local government units, and all other government-controlled offices. In the same year, the United Nations Industrial Development Organization and the Philippines’ Department of Environment and Natural Resources – Environmental Bureau, with funding from the Global Environmental Facility (GEF), started to support safe and informal recycling of electronic devices in two low-income districts in the Manila metropolitan area. The project included the plan of a new facility and safety training in practical workshops for recyclers providing them with the necessary skills and teach them how to disassemble parts, all according to international safety and security standards. Another GEF-supported program aims at improving the conditions for artisanal miners. Moreover, the program wants to reduce harmful mercury emissions by eliminating mercury usage in artisanal and small-scale mining.

With the help from ADB and USAID

Support came from abroad. The Asian Development Bank (ADB) published comprehensive practical guides on “Integrated Solid Waste Management for Local Governments” and on “Public-Private Partnerships by Local Governments”. The first presents “a comprehensive yet accessible approach to improve waste operations ... by breaking down sector silos, providing relevant and technical knowledge, and even showing how to maximize private sector participation”. The latter informs about “the next phase of PPP reforms in the country supported through ADB’s technical assistance on strengthening PPPs in the Philippines (second phase) and the Expanding Private Participation in Infrastructure Program”.

The international development agency USAID awarded nearly 1.5 million US-Dollar in grants and provided technical assistance to ten local Philippine organizations for using novel approaches to improve solid waste management and increase recycling. In 2020, the Clean Cities, Blue Ocean



Photo: ALDI SÜD

(CCBO) program on ocean plastic pollution was provided to start working with partners in Manila Bay, Batangas and Iloilo to identify, test, and scale locally-driven solutions to promote the 3Rs (Reduce, Reuse, Recycle) and enhance solid waste management systems.

Worrying about 15,000 mangroves

The industry did not stay inactive. In March 2017, some Chinese enterprises signed letters of intent for investing 10.4 billion US-Dollar into the Philippine ship and ship recycling branch. According to Germany Trade & Invest, especially the Japanese shipbuilder Tsuneishi Heavy Industries wanted to invest more than 100 million US-Dollar for a 150-hectare ship recycling project in the municipality of Hinoba-an. (Local environmental groups opposed the project – worrying about the future of 15,000 mangroves and the nearby coral reefs – and the authorities refused the approval. Now the plan is on hold indefinitely.)

New facilities planned

But Coca-Cola Beverages Philippines – for example – in partnership with Thailand-headquartered chemicals sup-

plier Indorama Ventures, began to set up a joint venture for the country's largest bottle-to-bottle recycling facility in 2020. An annual capacity of 30,000 tons or almost two billion plastic bottles and an output of 16,000 tons of recycled PET resin were projected. In August 2020, Nestlé Philippines reached plastic neutrality, the company gave account: Nestlé collected and co-processed the equivalent amount of plastic as contained in the products sold. MetPower Venture Partners Holdings, Inc. – a subsidiary of Metro Pacific Investments Corporation – was planning to invest in a CO₂ recovery facility that is expected to become Mindanao's first indigenous source of food-grade CO₂. The plant should be co-located at the Polomolok site, nearby the waste-to-energy biogas plant for Dole Philippines, Metro Pacific Investment informed in November 2020.

To produce eco-bricks

In January 2021, building solutions provider Holcim Philippines Inc. planned to invest PHP 121.5 million until 2022 to raise the efficiency of shredding operations at its Geocycle unit. That will convert qualified waste materials to alternative fuels and raw materials in cement production at its Bulacan plant: In 2020, Holcim Philippines co-processed close



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to 130,000 tons of qualified wastes. In March 2021, snack food company Mondelez Philippines teamed up with social enterprise The Plastic Flamingo to collect and recycle 40 metric tons of post-consumer plastic packaging to produce “eco-bricks” as a sustainable wood alternative to be applied in the construction sector. And Quezon City longs for a waste treatment facility to convert up to 3,000 metric tons a day of municipal waste into 36 MW (net) of electricity.

Discussion about waste-to-energy

Waste-to-energy is a broadly and controversially discussed issue in the Philippines. On principle, the Republic Act 9003 – the “Ecological Solid Waste Management Act” – bans the burning of waste for 20 years. From the perspective of the environment protection group No Burn Pilipinas with good reasons: Waste combustion uses fire grates, causes toxic and hazardous pollutants, and thus provides a clear violation of the “Philippine Clean Air Act” of 1999. In addition a university professor argued that external companies try to sell incinerators by not calling them by name but using different names, like waste-to-energy. In opposition, Philippine officials like the DENR are convinced that waste-to-energy facilities are more environment-friendly than sanitary landfills and would benefit in terms of a more secure energy system. Cautionary voices warned that the fee for tipping or processing wastes paid by LGUs would be too low. According to the Asian Development Bank blog, three obstacles – the NIMBY attitude (“Not in my backyard”), weak LGU capacities and lack of alternatives to landfilling – have aggravated the situation. That results in keeping the private sector from investing in solutions.

The first WtE facility

However, in 2017 the Asian Development Bank discussed preparing “a pre-feasibility study of a waste-to-energy facility with a modular waste capacity of 1,000 tons per day using a stoker-type incinerator”. Moreover, they estimated the cost of establishing a waste-to-energy facility under public-private partnership at 13.1 billion Philippine Pesos (PHP) and required a tipping fee of PHP 1,600/ton (in addition to the subsidy of PHP 600/ton), resulting in a Return on Equity of 17 percent and a minimum debt service coverage ratio of 1.2x.

In April 2018, Austworks Corporation, together with the City Government of Puerto Princesa, signed a joint-venture agreement about PHP 2.1 billion for the Puerto Princesa City waste-to-energy project – the country’s first WtE facility. According to the Philippines’ Private Public Partnership Center, the facility should include a plasma-gasification process processing all current city waste and generate up to 4.2 MW of base-load electricity, twenty-four-seven.

Trials of private companies

In 2019, the EMB approved a project titled “Capacity development on improving solid waste management through advanced/innovative technologies”. With three years duration, the project aims to improve Philippine solid waste management through adopting waste-to-energy and other technologies. Moreover, the project will aim at targeting LGU’s capacity for improving solid waste management utilizing W-t-E and enhancing other solid waste management technologies. In June 2019, an article in the online magazine Eco-Business stated that private companies were trying to construct waste incinerators and asked if waste-to-energy plants were bad investments for governments. The summary report 2019 of Metro Pacific Investments shows the intent: “We are also awaiting Notice of Award to build the Quezon City Solid Waste Management Facility that could convert up to 3,000 metric tons a day of municipal waste into electricity”. In July 2020, environment protection groups denounced and thus made current moves in Congress public to legalize garbage incineration declared as waste-to-energy plants banned under the Clean Air Act.

Gasification over incineration?

The proceedings of the waste-to-energy process do not implement WtE being the best technology. In July 2020, the Manila Times engaged with the best thermal waste treatment method and stated: “But instead of incineration, gasification is a better, economical and cleaner alternative.” The article pointed to its high-revenue potential, the reduced need for landfills and fossil fuels, and the dire need for this “environment-friendly waste management technology”. A scientific article on the “Economic analysis of waste-to-energy investment in the Philippines”, published in 2020, declares: “While incineration is most widely used among WtE technologies, many cities are now recognizing the benefits of gasification over incineration as the syngas produced by this technology can be used for energy storage and electricity generation.” However, in contrast, Sonia Mendoza, Chairperson of Mother Earth Foundation, mentions: “Instead of burning away billions of pesos in public funds to support WtE facilities, we urge the government to invest in efforts by our communities and local governments to implement zero waste programs as already provided for in the Ecological Solid Waste Management Act. Cities and barangays doing/having zero waste have managed to divert municipal waste by as much as 80 percent and saved millions of pesos while creating jobs.” Be it as it may. The Asian Development Bank has at least one proposal: “One solution is to provide more incentives to private companies to invest in solid waste management by extending contracts to a term of 7 to 10 years or more. ... However, this would require changes to the country’s procurement laws.”

ULTRA-HIGH PERFORMANCE CONCRETE USING WASTE CLAY

Engineers from the National University of Singapore (NUS) repurpose excavation waste to produce greener and stronger concrete.

Concrete is made up of water, cement and a filler such as sand. The cement industry alone is responsible for about eight percent of the world's carbon dioxide emissions, and the production of concrete consumes ten percent of the world's industrial water. Furthermore, the amount of cement produced every two years is more than the amount of plastic produced over the past 60 years.

These considerations led Associate Professor Pang Sze Dai and his team (Centre for Advanced Materials and Structures at the National University of Singapore's Department of Civil and Environmental Engineering) to focus on the development of greener, more sustainable concretes, intending to reduce this immense impact.

Swapping out scarce sand for common clay

Singapore is undergoing urban development at a rapid rate. Inevitably, this requires vast amounts of concrete, which in turn, creates a huge demand for water and sand – resources that the city-state lacks. But now the team has found a solution to this problem. They demonstrated that they could drastically reduce the amount of sand needed in the concrete mixture by using a common clay material that can easily be obtained as waste from excavation works.

The researchers first obtained excavated waste clay from construction sites in Singapore. Then the material was heated to 700°C to 'activate' the clay to enhance the bonding ability in concrete. Afterward, the activated

clay was used to replace up to half the fine sand powder typically used in concrete. Finally, the researchers were able to produce "ultra-high-performance concrete (UHPC) – a strong type of concrete that can reduce the size of the structural elements, and potentially reduce the amount of concrete used," NUS reported.

Upcycling waste clay

"Replacing the fine sand powder is triply advantageous as this material is expensive, has a large carbon footprint and is carcinogenic with prolonged exposure since it contains silica," the university described the benefits. "In addition, the NUS team also found that replacing part of the sand filler with activated waste clay did not have a significant effect on the strength of the UHPC." Tunneling and foundation works, which are common in Singapore, would generate a large amount

of excavation waste materials. Disposing of waste clay was problematic, as land-scarce Singapore had limited available space for landfill.

The team's discovery "opens an avenue to transform this waste into a potential resource," Associate Professor Pang was cited. "Globally, low-grade clay is abundant. Its multi-faceted utilization in concrete as fillers can not only help curtail the carbon footprint of concrete but also reduce the cost of concrete production." The team is now looking into using waste clay for more concrete applications. Other than the use of waste clay, the NUS research group is also exploring other waste materials to replace the filler in concrete and the usage of seawater and sea sand to reduce the reliance on valuable freshwater and river sand imports in Singapore.

<https://nus.edu.sg>



From left: Dr Du Hongjian, Assoc Prof Pang Sze Dai, and Mr Anjaneya Dixit from NUS Civil and Environmental Engineering with the raw materials, processed clays, and the finished concrete product

LASER-BASED SENSOR TECHNOLOGY FOR RECYCLING METALS

In order to help the industry have greater access to raw materials, the German partners – Fraunhofer Institute for Laser Technology ILT and Cronimet Ferroleg. GmbH – have jointly developed a laser-based sorting process for metal scrap.

The sensor they have developed as part of the “PLUS” project (PLUS = Pilot plant for laser-based sorting of special alloys) makes the recycling of metallic raw materials many times more efficient than previously possible, a press release said. The EU project “REVaMP” (Retrofitting Equipment for Efficient Use of Variable Feedstock in Metal Making Processes) would go a step further: In this project, Fraunhofer ILT experts have also been contributing their expertise in the field of materials analysis at the European level since January 2020.

As reported, the global demand for metallic raw materials such as chromium, nickel, copper and cobalt is rising. These metals are becoming increasingly scarce commodities. “Since there is a shortage of mineral resources, recycling raw materials plays a decisive role in curbing the shortage and is the most important source of metallic raw materials in Germany and Europe,” Fraunhofer ILT wrote. There are clear advantages of recycling. However, the crux of the matter is that both the price and availability of metal scrap and its recycling rate hinge on numerous mutually dependent factors. “These include fluctuating prices on the primary market, the life cycle of products and their collection rate, losses in the process, technical recyclability and the value of the alloy in question. The global markets are correspondingly volatile. If the price of primary metals rises, the availability of scrap falls, and vice versa. This entails high risks for companies.”



The pilot plant for laser-based recycling, which was created in the PLUS project, is suitable for the automatic processing of high-speed steels (HSS), for example

Greater yield thanks to lasers

Against this backdrop, Fraunhofer ILT – together with Cronimet Ferroleg. GmbH – has developed the mentioned laser-based sorting process. The sensor technology – created as part of the PLUS project funded by the German Federal Ministry of Education and Research (BMBF) – “makes the detection and sorting of alloys in metal scrap much faster and more accurate”. In 2020, the pilot plant was put into operation at the Cronimet-Ferroleg. site in Karlsruhe and has performed remarkably well, the information underlined. Among other things, it is designed to process high-speed steels (HSS).

“HSS tools contain valuable alloying elements such as cobalt and can be found in any hardware store. For example, in drills or milling heads,”

Project REVaMP: “Retrofitting Equipment for Efficient Use of Variable Feedstock in Metal Making Processes”

The REVaMP project, running from January 1, 2020 to June 30, 2023, is funded by the European Union under the Horizon 2020 program.

Project partners:

- VDEh-Betriebsforschungsinstitut (BFI), Germany (project coordination)
- Fraunhofer Institute for Laser Technology ILT, Germany
- RWTH Aachen University, Germany
- National Centre for Nuclear Research (NCBJ), Poland
- Azterlan Metallurgy Research Centre, Spain
- Eurecat Technology Centre, Spain
- Cartif Technology Centre, Spain
- Laser Analytical Systems & Automation GmbH, Germany
- SYSKON - Systemy Kontroli Procesów Przemysłowych, Poland
- OTJ Poland, Poland
- GHI Hornos Industriales, Spain
- ArcelorMittal Bremen GmbH, Germany
- Sidenor Speciality Steels, Spain
- Grupal Art, Spain
- REFIAL Aluminium Refinery, Spain
- Exide Technologies, Spain

Dr. Cord Fricke-Begemann is quoted, who is responsible for materials analysis at Fraunhofer ILT. According to the information, common processes are limited to the laborious manual measurement of a few alloys. On the other hand, laser-induced breakdown spectroscopy (LIBS), used in PLUS, is a technology that can identify more than 20 special alloys even in small scrap parts – automatically, quickly and without contact. “In a very short amount of time, we can process more scrap and achieve higher grade purity,” Fricke-Begemann is convinced. “In this way, we are building an important bridge between research and industry.”

As part of the EU project “Retrofitting Equipment for Efficient Use of Variable Feedstock in Metal Making Processes” (REVaMP), which was launched in 2020, Fraunhofer ILT is contributing its expertise at the European level. The project, which is scheduled to run for three and a half years, is supported by an international alliance of companies and research institutes from Spain, Poland and Germany. The goal is to put the knowledge gathered in the PLUS project on a universal basis, regardless of the alloys involved. “We want to build a sensor that can be installed in existing industrial plants to make the recycling process fundamentally more efficient,” Fricke-Begemann said.

What are the composition and properties of the alloys to be recycled? How much lead does the delivered material contain? When does a material become molten, and how much energy needs to be added? These questions are the focus of REVaMP and are to be answered more precisely in the future.

If successful, this would be a significant contribution to making Europe more independent of the global raw materials markets – and to decisively improving the resource efficiency of its companies.

www.ilt.fraunhofer.de/en.html

www.revamp-project.eu

POSITIVE OUTLOOK FOR BATTERY RECYCLING

The “Global Electric Vehicle Battery Reuse and Recycling Market 2020-2027 by Category, Battery Type, EV Type, End-Use, and Region: Trend Outlook and Growth Opportunity” report has been added to ResearchAndMarkets.com’s offering. According to the market research store, this sector will reach 5,391.8 million US-Dollar by

2027, growing by 54.2 percent annually over 2020-2027. The market is driven by reducing battery waste and costly battery disposal, an increasing demand for electric vehicles, and focus on sustainable transportation. As underlined, the analysis and assessment are generated from “premium primary and secondary information sources with

inputs derived from industry professionals across the value chain.

The report is based on studies on 2017-2020 and provides forecast from 2021 till 2027 with 2020 as the base year.”

www.researchandmarkets.com

Das Original. DAS BRIKETT.





Stefan Ekström, CEO

Presona:

ALL ABOUT COMPACTING DIFFERENT MATERIALS

Sweden-based company Presona AB designs and manufactures balers with pre-pressing technology for efficient baling of the different materials – from paper and plastic to household and industrial waste. The product range also includes pneumatic waste extraction systems for the graphics industry and paper and packaging manufacturers.

However, also Presona has been affected by the restrictions and challenges posed by the pandemic. Despite that the firm continued supporting their customers to minimize any disruptions to their operations. Therefore, we talked to Presona's CEO Stefan Ekström about how the pandemic affected the company, in which way digitalization led to technological advancements and the new baling press MP 270 MH.

To what extent has the pandemic affected your company regarding business operations and incoming orders?

We had quite a few orders for balers when the pandemic started. We were very grateful for that because the travel restrictions have made it harder for our sales staff to visit customers. I feel that the market is a bit sluggish at the moment. There is a lot of interest in our products. But it takes longer than before for customers to decide to place an

order. I believe that the effects of the pandemic on material flows have created some uncertainty for some of our customers.

The company's main markets are in Europe and the Middle East. However, in which new countries have you managed to gain a foothold recently?

Presona has always worked globally, but Western and Eastern Europe and the Middle East are indeed our “home markets”. For the last couple of years, we have been working more and more in Mexico and the USA. Presona as a company was active in the US previously, but we left that market for various reasons some years ago – long before I started working for Presona. Now, we are back in the US and Canada with Stadler America LLC, a great partner! Our collaboration feels just right, and we have already done several deals with satisfied customers as a result.

To what extent have developments such as digitalization, artificial intelligence, or Industry 4.0 led to technological advancements and optimizations for baling presses?

The recycling industry is moving quite slowly, but I feel there has been an increased interest in digitalization over the last couple of years. For example, we see increased demand from our customers to measure more and more things in the balers and retrieve production data from the machines via the internet. The information is used to analyze and streamline production. It is no problem for us to meet these requirements with our current technology. However, I think going from this to Industry 4.0 with interconnected machines and processes and AI's making decisions is a long process that will take time for us as an industry. Industry 4.0 is also called “the fourth industrial revolution”, and this type of revolution requires a lot of thought and a lot of work.

However, we have significantly increased our baler digitalization with the smart control system we have in our new

baler MP 270 MH. The new baler calculates the density of the material and automatically optimizes the baling process based on the nature of the material. This way, the baler itself ensures that it has the highest possible capacity at all times.

The unique selling point of Presona balers is the pre-press technology. What makes vertical and horizontal compaction better or different from comparable machines of competitors?

The difference is that when using pre-press technology, all the energy is used for compaction. The pre-press is located on top of the machine and has two tasks. First, compress the material vertically, and second, close the press chamber so that the material cannot be pushed up into the hopper during compaction. When the press chamber is closed, all the force in the main press is used to compress the material. In a shear baler, some of the force is used to cut the material with the knife. Therefore, a shear baler needs larger motors than a baler with pre-press technology to achieve the same capacity.

Another challenge with shear balers is that some of the material will use “the path of least resistance” and move from the press chamber and back up into the hopper because there is no “lid”. That is especially evident when baling PET bottles. In a baler with pre-press technology, the bottles cannot “escape”, creating higher capacity because the baler has to run fewer cycles.

The MP 270 MH is a new Presona baling press. For which needs was the baling press designed?

The MP 270 MH baler is made for both recycling and compaction of household waste. The baler has a very high capacity and is designed for customers with large volumes to process. One use case could be a recycling plant in an area with a large population where you have to compress a lot of material per unit of time. If you have a lot of material



Presona Baler MP 270 MH screen and conveyor

to compress, you can become more cost-effective with an MP 270 MH baler. A single baler can replace several smaller ones at a cost that is significantly lower per ton produced.

To what extent have the customers' needs influenced its development?

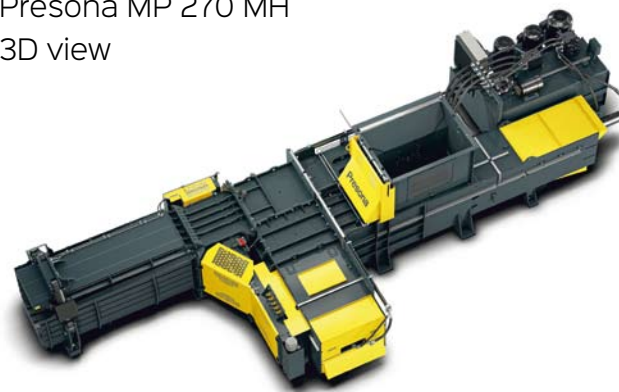
We have seen a consolidation trend among our customers. Many smaller recycling sites have become a few larger ones with larger amounts of material and thus requirements for greater baling capacity. In general, the industry also wants to be more efficient, and replacing several smaller balers with a really large one gives efficiency gains since the production cost goes down.

Can you tell us more about the innovative features of the baling press?

The baler has two presses. The first press can be compared to a pre-press lying down instead of sitting on top of the machine. The first press has the task of compressing the material to 200 kilograms (kg) / cubic meter. The newly developed control system calculates the density of the material in the press chamber. It ensures that the compressed material reaches the correct density (200 kg / cubic meter) – without any help from a human operator. The pre-compressed material is then moved to the main press, which makes the finished bales. The fact that both presses work in parallel and that the main one always works with pre-compressed material means that the capacity is high, up to 45 tons/hour (actual capacity). We say we put a turbo on the baler. A turbo compresses air to provide higher performance. Our baler pre-compresses the material to provide higher capacity. Another new feature is the special program for baling PET. In this program, we open up the machine

Presona MP 270 MH

3D view



into the main press and thus get a lot of material in one fill while minimizing the amount of PET that can „escape“ from the press chamber of the first press. This way, we get high capacity even when baling plastic.

The new baler is also significantly lower compared to our pre-press machines in the LP family. That can result in a lower system cost as the conveyor belts can be shorter.

Technology never stands still. So, what are your plans and goals for the future?

We will continue to listen to customer needs and develop products to help customers have increasingly efficient processes. Part of this is to continue to develop balers and other products with a long service life, which means low life cycle costs and thus a low cost per tonne produced.

■ Marc Szombathy and Dr. Jürgen Kroll conducted the interview.

🌐 www.presona.se

UK: CIRCULAR ECONOMY FOR BATTERY METALS

By its own account, London-based Technology Minerals Ltd will be the UK's first listed company to create a circular economy for battery metals within a singular company. It would also be the first and only UK company to extract the raw materials required for Li-ion battery cathodes; recycling them for use by battery manufacturers. In March, the firm announced that its subsidiary, Recyclus Group, has signed a deal with a UK lead-acid battery-recycling group. This new alliance would deliver a recycling process “that will ensure no parts go to landfill, in an industry that has traditionally caused harm to the environment by incinerating parts or sending them to landfill”. Spent batteries would produce 18,000 tons of pollution each year in the UK. As emphasized, this deal will help to provide new technical processes, “where parts will be desulphurized to make the lead eligible for reuse – in turn, cutting slag waste by 90 percent”. This collaboration would help to accelerate the battery market towards a much more sustainable future. “As electric vehicles (EVs) replace the internal combustion engine, the strain on the battery metals industry will be enormous – so much so, the metal and mineral demand for the EV industry is expected to double that of consumer electronics,” the company stated.

🌐 www.TechnologyMinerals.co.uk, www.recyclusgroup.com

PLASTIC SORTING: DISTINGUISHING BETWEEN HDPE AND LDPE

By launching two applications for its mobile NIR spectroscopy solution, trinamiX (a subsidiary of BASF SE) is improving on-the-spot sorting of the sought-after plastic.

Due to rising prices for polyethylene (PE), the production of single-grade PE recyclates has become increasingly attractive: This material is the most widely produced plastic in the world and the most popular thermoplastic for foils and packaging. Depending on its density, PE can be divided into HDPE (high-density polyethylene) and LDPE (low-density polyethylene). While the similar characteristics of HDPE and LDPE lead to overlaps in their respective applications, differences in their mechanical properties have an impact on their processing and the subsequent recycling process. In the context of recycling, a separation by type has a favorable effect on the quality of the recyclate.

Additionally, trinamiX's solution now provides also insights when it comes to the recovery of mixed plastics made of PE and PP. By determining the per-



centage ratio in PE/PP mixed plastics, recyclers can sort incoming commodity streams with greater precision. "This way, the different specifications and quality requirements of the recyclates can be attained more accurately," the Germany-based company, which was founded in 2015, assured.

Since the introduction of the plastic sorting application last year, the solution has supported users with the rapid identification of common plastics, including the polyolefins PE and PP. Additionally, there is an application enabling the quick differentiation of the engineering plastics PA6 and PA66. As reported, trinamiX's solution combines robust hardware with intelligent

data analysis and a mobile app. NIR spectroscopy is a proven technology that trinamiX has integrated into a portable format for on-site analysis.

"In doing so, trinamiX relies on cloud-based data processing, which ensures continuous development of the solution – there is no need to replace hardware," the company belonging to the BASF Group underlined. "This allows trinamiX to continuously develop new applications and react flexibly to new challenges in the field of plastic sorting – while working closely together with customers as in the case of its new PA6/PA66 application."

[trinamixsensing.com/plastics](https://www.trinamixsensing.com/plastics)

Photo: trinamiX GmbH



THE LAST SWING OF THE ROTOR BLADES



ARJES
Recycling Innovation

TITAN 900

The mobile heavy-duty class

Windturbine operators are required to dismantle the old systems; the extreme size of the rotor blades which are made of fiberglass and reinforced plastic, are not only extremely resistant but normally require especial transportation. Is this a real challenge for the TITAN 900? Well, challenge accepted!

Like this example, there are countless possible uses more found in the shredding of household and commercial waste, in the construction and demolition industries, as well as in composting and wood processing companies.

We will also accept your challenge!

www.arjes.de

UPGRADE COMPONENT FOR VACUFIL RECYCLING SYSTEM

German-based BB Engineering GmbH has expanded its melt filter portfolio to include a patented large-area vacuum filter designed especially for processing polyester waste.

The so-called Visco+ filter is already known as the key component of the BB Engineering VacuFil recycling system. Now, it is also available as a separate and easily-integratable upgrade component for existing systems. Within this context, the uses of the Visco+ are by no means limited to just decontamination. Here, the Visco+ offers the following solutions:

- IV homogenization: if an existing production system is struggling with IV fluctuations, the Visco+ can actively intervene and balance out any irregularities;
- IV increase: if the final viscosity is insufficient when processing recycled materials, the Visco+ can increase the IV without the negative impact of long residence times.

“In this way, the Visco+ enables fast and flexibly-controllable viscosity build-up and reliable viscosity monitoring of the polyester melt using a to-date unique, patented process,” BB Engineering assured. “Depending on the intended end-use, the melt can be adjusted to the further processing procedure in a targeted manner. The requisite melt properties – above all the intrinsic viscosity, but also the purity and homogeneity – are achieved in a reliable and reproducible manner and can also be adjusted during ongoing operation.”

According to the German machine building company, founded in 1997 as a joint venture between Oerlikon Barmag and Brückner Group GmbH, its process is new and super-efficient. As a melt filter, the Visco+ would operate like a liquid-state polycondensation



BB Engineering GmbH has expanded its melt filter portfolio: Visco+

unit. A maintenance-intensive reactor or a deposit-prone stirring unit were not required. “Moisture is removed from the PET in the filter, which – in conjunction with an adjustable residence time – results in the desired IV increase in the vacuum. That enables a controlled IV build-up of up to 30 percent.”

The intrinsic viscosity is the central quality figure in PET recycling and rPET processing. It determines the melt performance in the downstream production process and the properties of the end products. Therefore, it is continually monitored through an integrated viscosity measurement unit and reliably adjusted in the event of deviations (caused by disparate input qualities, for example). At the same time, the filter provides an enormous material surface compared to the volume and continuously renews this. To this end, contamination can be removed particularly effectively from the starting material through an automatically regulated high-performance vacuum (1-30 mbar). “The result is a pure, homogeneous melt with control-

lable IV values and consistent quality,” BB Engineering emphasized. “For this reason, the Visco+ is particularly suitable for recycling PET waste that is to be reused for high-end products.”

 www.bbeng.de



PICVISA: TRANSFORMING THE RECYCLING INDUSTRY WITH THE NEW ECO PICK 2.0

Three years after installing the first ECO PICK unit, PICVISA launches ECO PICK 2.0. The company has introduced changes to the robot that is transforming the recycling industry in line with its innovative vision.

One of the most striking aspects of the ECO PICK 2.0 is its modularity: vision module, upper structure and lower structure. It has a symmetrical design, which makes it easy to install and flexible to integrate. Moreover, the modular structure has advantages for its maintenance: easy, accessible and centralized in the operator's area. ECO PICK 2.0 is designed for operational comfort.

New gripping systems

Concerning the modular setup of the new robot, the upgrade improves flexibility in the handling of materials, with different robot models and gripping systems. Among others, the following gripping systems are available: single suction cup (for small containers and coffee capsules), double suction cup stirrer (for the recovery of light containers), single electromagnet (for the recovery of metals, base plates and WEEEs), mixed suction system plus electromagnet (for the purification of ferrous material flow). Due to the versatility of the different gripping systems, customers can focus on positive (sorting) or negative (quality control) selecting, depending on their needs.

Better technology, more information

ECO PICK was a robot that used Vision and Artificial Intelligence to automate sorting and selection in recycling plants. The ECO PICK 2.0 exploits the information produced more efficiently. The client has access to the visualization of all extracted data and the possibility to customize the information

together with PICVISA's data analysis experts. Optical equipment and Artificial Intelligence pave the way for more consistent detection rates, providing recycling plants with a horizon full of data. In response to this new need, the new system offers many advantages:


- Saving time and resources on characterizations
- Possibility to plan intervals between maintenance services
- Control of energy consumption
- Remote monitoring of performance
- Cost control
- Easy monitoring of process parameters
- Optimisation of production

Sales modalities

With ECO PICK 2.0, PICVISA reaffirms its positioning as a strategic technological partner. A vision with which the company wants to be much more than a one-off supplier, providing constant support, with a commitment

to keep equipment up to date, without technological obsolescence. To make this possible, the company offers up to four different sales modalities, from standard sales to leasing and hire-purchase.

Luis Seguí, managing director of PICVISA, remarked at the launch of the new robot: "It's been more than three years since the installation of our first in-plant robotic unit, and we are now here to launch the ECO PICK 2.0: modular design, maintenance optimization, increasingly sophisticated and extensive databases, possibility to combine RGB, NIR, 3D technologies. And not only that, but we offer the possibility to the customer to buy a service instead of a machine: less impact on the financial structure of the company, equipment that always includes the latest updates and with up-to-date maintenance."

 www.picvisa.com



“BRIDGE BREAKER” ALLOWS ACCURATE DOSING

The pneumatically operated device that is deployed inside one of the hoppers in a gravimetric blender makes possible accurate dosing of regrind, recycled plastics, and other ingredients that tend to agglomerate or “bridge”.

USA-based Maguire Products, Inc. has introduced the new “bridge breaker” for its three largest blender series, those with maximum throughput capacities of 5,000 kilograms/hour, (11,000 pounds/hour) and the capability of blending up to twelve ingredients. The device consists of 1) a hopper insert that directs material straight down onto the dispensing valve, and 2) a rotary device that operates automatically while the dispense valve is open. The device rapidly pulses between clockwise and counter-clockwise movement, enhancing material flow through the dispense valve, the provider gave account. The hopper insert, which provides a vertical alternative to the sloping wall of the hopper, could be retrofitted in any blender currently in operation, the provider explained. “To make up for the space occupied by the insert, the complete



Hopper insert with bridge breaker



Blenders with hopper extensions

hopper assembly includes an extension to accommodate the desired quantity of material”.

According to Frank Kavanagh, vice president of sales and marketing, the new “bridge breaker” addresses the growing demand for recycled content in plastic products and the increasing use of regrind as a means of reducing production costs. “More and more processors have been finding it a challenge to keep such materials flowing consistently. In fact, we developed the bridge breaker to help one of our customers solve a problem with trim scrap.”

The large-capacity Maguire blender families – the 1200, 2400 and 3000 series – blend up to twelve ingredients, using a wide range of removable hopper and feeder configurations and numerous dispensing devices. The blenders handle raw materials in a variety of forms, including regular pellets and regrind, bulk powders, flake and ingredients that are especially bridge-prone, such as wood flour. As with other Maguire weigh scale blenders, once all ingredients are dosed into

the weigh chamber, the batch falls into a mixing chamber. A microprocessor makes corrections from batch to batch, including adjustments to compensate for variations in extrusion rate or bulk density, maintaining overall batch accuracy to within ± 0.1 percent, the American manufacturer informed.

Maguire Products, Inc., headquartered in Aston (Pennsylvania), is – in its own estimation – the world’s largest supplier of gravimetric blenders, liquid color pumps and vacuum dryers. The company also manufactures loading systems, auger feeders, granulators and related equipment and software. Founded in 1977, Maguire operates six manufacturing facilities in Aston. The producer maintains a network of distributors in the Americas and overseas and has six sales and service subsidiaries that stock, sell and service auxiliary equipment systems from Maguire and its affiliate, Novatec, Inc.: Maguire Canada, Maguire Europe, Maguire Asia, Maguire China, Maguire IMEA and Maguire Taiwan.

www.maguire.com

VEOLIA ORDERED THREE SAMURAI SORTING ROBOTS

Machinex will deliver three sorting robots on behalf of Veolia group, which will be installed at Bègles, near Bordeaux in France.

The implementation of these robots will take place as part of modernization work on the single-stream material recovery facility (MRF), provided for the public service delegation contract for recovery and treatment of domestic waste in the metropolitan area of Bordeaux Metropole, the Canada-headquartered machine manufacturer informed. The installation is scheduled for fall 2022. These three robots are to integrate a new single-stream system that can handle new streams resulting from the extension of sorting instruction, offering real performance guarantees. "Two robots will perform the quality control of clear PET and PE/PP by retrieving other recoverable and unwanted materials that may be present," Machinex gave account. "In addition, a third SamurAI will be placed on the rejects line to recover a maximum amount of materials at this time of the process."

The announcement reinforces Machinex's establishment on the European and French market, with now a presence on two sites operated by Veolia. Two sorting robots would be installed



this summer on the modernized Portes-Les-Valence site and operated by Veolia under a contract binding it to three syndicates in Drôme and Ardèche: SYTRAD, SYPP and SICTOBA.

Machinex has enhanced its presence in the French market and added a sales force in France since spring 2020 with the hiring of a local salesperson, Pierre-André Ruisi, to be close to customers and manage after-sales service. The company's objective is to collaborate with French MRF providers to sell equipment separately that can be integrated as ready-to-use equipment, such as robots. In parallel with its efforts to continue its establish-

ment in France, Machinex continues to develop high technology equipment, such as SamurAI sorting robots and MACH Hyspec optical sorters, and design new ones, such as MACH Vision. "This material flow analysis system, connected to the MACH Intell, provides great understanding of the material stream composition in real-time," the manufacturer emphasized. "Interconnection of all these high technology equipments is made possible thanks to Artificial Intelligence. Thus, Machinex is now able to provide complete technological solutions for MRFs of the future."

 www.machinextechnologies.com

Photo: Machinex



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CONVEYOR BELTS FOR MODERN SORTING TECHNOLOGY

Even though the heart of the Austrian-based company beats for sorting technology, Redwave saw the need to invest in the research and development of conveyor belts specially optimized for use in the recycling sector.

“In the past, we often had to live with compromise solutions when purchasing standardized conveyor belts. In many cases, the systems lacked adaptability with regard to customer conditions and needs, such as a small footprint. In addition, we were dependent on the supplier with regard to delivery dates,” Managing Director Manfred Hödl explained. These were the reasons that led Redwave, a division of Austrian BT-Wolfgang Binder GmbH, to develop conveyor belts specifically designed for the recycling industry.

According to the company, this would enable an improved and optimized feeding of the materials to the respective machine equipment. “Sorting machines, for example, can be optimally fed with conveyor belts that are adapted to the respective recycling materials. This in turn also has a positive effect on the quality of the end product or the throughput.” Besides, compromise solutions, with which customers were confronted in some cases due to external purchasing, were largely eliminated. “Where space is limited, no ‘emergency solutions’ are created, but instead individual and efficient customer solutions.”

The requirements for conveyor belts in the recycling industry differ significantly from the requirements of other industries such as the automotive, food or mining industries, the company underlined. Even within the recycling industry, the requirements are not identical, because waste glass fragments behave differently from,



for example, waste paper, plastics or scrap metal.

During the development process, great importance was attached to ease of maintenance, low maintenance requirements and user-friendliness of the conveyor belts, Redwave assured. “For example, removable sheet metal cladding and swivelling floor panels make cleaning easier and minimize the amount of maintenance required. External lubrication points also improve accessibility enormously and offer time savings.” Another point in the sorting process that should not be underestimated is the issue of dust formation. For this reason, special solutions have been developed for the belt seals (covers and gutter seals), “which are adapted to the respective material that is sorted in the recycling plant”.

The conveyor belts themselves are currently installed in Redwave systems as troughed belt conveyor, sliding belt conveyor and chain belt conveyor. The

products are characterized by their modular design: It allows a simple modification of the conveyor belt length afterward, but also additional equipment (sensors, weighing system, scraper) can be retrofitted easily.

“Smart” solution

Almost everything is called “smart” these days. The list is endless and the little word “smart” is ubiquitous, referring to the increasing number of connected technologies designed to make life easier. This trend does not stop at Redwave conveyor belts, the company emphasized. A networked integration of the conveyor belts into the entire sorting system should further improve or optimize the sorting process. This integration would take place through the integration of Redwave mate, the intelligent artificial support in the recycling plant.

www.redwave.com/en/products/conveyor-belts

NEW SHREDDER FROM ARJES TAKES RECYCLING COMPANY TO A NEXT LEVEL

The British recycler Copia Metals & Waste Limited was looking for a machine sturdy enough to meet the high standards for waste and metal processing. Therefore, they purchased the ARJES IMPAKTOR 250 evo.

Husband and wife team Myles and Aimee have always been involved in the recycling industry. Aimee's father ran a successful waste and metal recycling business when she was young. That led to Myles and Aimee deciding to start their own business. In 2015, they decided to rebrand and started Copia Metals. However, they needed a larger and more suitable site, which they found in Charlton in southeast London. Since its opening in 2017, the company has seen steady growth. In December 2020, Copia Waste was established alongside Copia Metals, providing a one-stop-shop for all recycling needs of their customers.

Aimee Tichband, Managing Director of Copia Metals & Waste Limited, discusses the day-to-day challenges of her business. Moreover, she talks about the deal she was able to strike with ARJES' UK distributor, Doyle Machinery: "With both Copia Waste and Copia Metals growing exponentially, the

biggest challenge we face is recycling and managing the material we receive. Specifically at our waste transfer station, general construction waste is what we deal with, on a daily basis, from sites in and around London. And trying to hit our recycling targets in a quick, effective, environmentally friendly manner is one of the core values that set us apart from other companies. That's why we believe it is an aspect, which needs to be continuously monitored in order to improve it.

This challenge led us to our latest purchase – the ARJES IMPAKTOR 250 evo – custom-made for Copia green! Doyle Machinery is very well known within the waste and metal industry, so they were our first port of call when looking to purchase a shredder. Doyle machinery and Patrick King gave us first-class service, great advice and arranged everything, right down to the customization of the machine. Since the moment we received the shredder, we have been able to speed up the recycling process by collecting the various waste streams, processing them directly and sorting them into different recyclable categories, as well as saving well-needed space by reducing the volume of the material.

Therefore, more waste can be processed on-site.

We wanted a machine that is sturdy enough to meet our high standards for waste and metal processing and that can carry out the process quickly and effectively. The faster we can process the material at both our sites, the less impact on the environment, which is the main reason why we decided to choose ARJES. The built-in water spraying system allows us to work within close proximity to our neighbors without causing significant dust pollution. We purchased both the metal and waste shredding tool shafts with cassettes, which are easy and trouble-free to change, making the IMPAKTOR 250 evo perfectly versatile for both sides of our business. We look forward to the continued growth of both. And we cannot wait to see what Copia Metals & Waste has in store for the rest of 2021.

We are committed to stamping out waste to landfill and recycling 100 percent of all metal and waste streams that we deal with. We have recently looked into waste for fuel plants. We are hoping that we can make further progress in our recycling mission. As a leading company within the metal and waste sector, we will continue to re-evaluate our operational methods, and adapt our machinery to meet the challenges of the industry, while working hard to do our part for the environment. We have made a relationship for life with Doyle machinery and will use their expertise in future machinery purchasing. Our ARJES has dramatically changed the way we recycle and has made hitting our recycling goals simple and easy – 100 percent."



Photo: ARJES

www.copiametals.com
www.arjes.de

Patagonia:

SHREDDING OLD FISHING NETS WITH AUSTRIAN TECHNIQUE

Chilean plastics recycler Comberplast has successfully shredded old fishing nets and ropes collected from the Patagonian coasts for the past year with the shredder type Micromat 1500 from Austrian company Lindner.

Nature lovers and globetrotters alike love Patagonia, the region at the southern end of South America, governed by Argentina and Chile. Michel Compagnon from Santiago de Chile is one of them. Besides the magnificent spectacles of nature, one thing, in particular, caught his eye: discarded fishing nets and ropes, which are a burden on the environment and can bring the life of many sea creatures to an unhappy end. When asked about this, the local fishermen simply described the carelessly discarded rigging as waste. But for Compagnon, Commercial Manager at the plastics recycling company Comberplast, the unpleasant scene became a project to save the oceans and the beauty of Patagonia. And that is how the Atando Cabos project started.



Julio JR Compagnon is pleased with the optimal output from Lindner's Micromat 1500 ready for the next step in the recycling process

What began in 2016 with a handful of samples in a travel suitcase is now a project that transforms over 3,000 metric tons of ropes and nets into new products every year. The entire recovery process, from shredding and

cleaning to the extrusion and injection molding of new products – for example, pallets for an international brewery or other products for the agricultural and mining industries – takes place on-site at the Comberplast facility in Santiago de Chile. For more than 25 years, the company has been committed to the circular economy, long before circular concepts in plastics recycling became the latest buzzword.



Ropes and nets are designed to be extremely tear resistant and are usually highly contaminated after use

Since 2020, Comberplast has relied on the shredding technology of Lindner's Micromat 1500, equipped with an optimized cutting system from the Mono-Fix kit. "We process plastic waste from fish farming and fishing companies. These materials were developed by very clever people not to ever break or tear. Shredding is, therefore, an especially big challenge," Julio Compagnon, CEO of Comberplast and co-founder of Atando Cabos, was quoted by the Austria-based shredder provider. "In processing, we

are always looking for new solutions to tackle more difficult projects and to keep production economically viable. In Lindner, we found an experienced partner who was willing to go the extra mile with us."

The delivered materials are usually heavily loaded with abrasive substances such as sand, stones or organic material. That is why, when selecting the shredder, the main concerns besides high energy efficiency were the costs of wear and tear. Now, after a year in operation, Compagnon is pleased: "We got the Micromat in January 2020 – just at the start of the pandemic. The situation required us to find new ways of commissioning and servicing despite the physical distance. Thanks to the great cooperation of the Lindner team in Austria, the Chilean sales partner Ingeniería Delta Limitada and our technicians here on site, we were able



The plastic waste from the fishing and fish farming industries is used to produce, among other things, high volumes of pallets and crates

to successfully install and commission the shredder – everyone involved did an excellent job. Since then, our shredder has been running like clockwork

and we look forward to many more joint projects in the future."

🌐 www.lindner.com

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FLEXIBLE SHREDDER FOR ALUMINUM RECYCLING

Austrian company AMAG Ranshofen ordered a new XR3000C mobil-e shredder from UNTHA.

AMAG Casting, the aluminum recycling branch of the AMAG Group, was looking for a flexible, robust single-shaft shredding solution to add to its existing machinery. The machine should be able to process a wide range of scrap aluminum. Furthermore, the new shredder would have to be flexible and robust, with a definable target grain size achieved by exchangeable perforated screens. Two weeks of extensive trial runs during which the material to be shredded was tested in real-life conditions with a mobile XR solution convinced the AMAG decision-makers that they had found the right machine.

Since May last year, the XR3000C mobil-e has been actively used in Ranshofen and shreds aluminum



scrap in a wide range of designs, dimensions and homogeneities. The input material comes from scrap metal suppliers in the area. Depending on its consistency, the shredded product is either used directly in smelting furnaces or processed further in sorting plants. The throughput is largely determined by the input material's consistency and varies from two to ten

tons per hour. The greatest benefits for the company arise from the flexibility of the unit, the fact that it is mobile, and from the definable target grain size, thanks to exchangeable perforated screens, UNTHA gave account. As an additional benefit, the machine was equipped with the electric UNTHA Eco Power Drive.

About AMAG Ranshofen

The core areas of AMAG are recycling, casting, rolling, and surface and heat treatment of materials. The Ranshofen site produces mostly coils, plates and sheets in all alloys. Customers from the following sectors are mainly interested: automotive and aerospace industry, mechanical engineering firms, construction businesses and packaging and consumer goods industry.

 www.untha.com

Photo: UNTHA

WANTED: A SHREDDER FOR HAZARDOUS WASTE

For the processing of toxic, corrosive and sometimes flammable waste streams, the subsidiary of Vietnamese cement manufacturer Siam City Cement, INSEE Ecocycle in Hon Chong (Kien Giang Province, Vietnam), needed the right shredder.

The company chose a solution from the German-based engineering firm Weima. According to the German provider, INSEE Ecocycle – formerly Geocycle Holcim – is a leading provider of waste management solutions in Vietnam. To meet the challenges posed by climate change, increasing urbanization and dwindling natural resources, the business would specialize in the sustainable treatment of industrial waste as well as hazardous waste. It offers complete solutions for waste assessment and logistics. As a

subsidiary of the Siam City Cement Group, the Vietnamese company pursues the goal of producing high-quality building materials. The parent group, which has relied on the Weima brand for several years, is a leading manufacturer of cement and other construction products with headquarters in Bangkok and a network of group companies in Thailand, Cambodia, Vietnam, Bangladesh and Sri



Lanka. In addition to industrial waste, INSEE Ecocycle processes also hazardous waste at the Vietnamese cement plant in Hon Chong. A major challenge in handling this highly contaminated waste is posed by the aggressive properties of the material. For suitable waste processing as part of the calcination in the rotary kiln, an extremely robust shredding solution is required. For this task in pre-processing, Weima was commissioned to install a robust PowerLine 1500 single-shaft shredder. In order to ensure safety and to shred the particularly critical waste, such as sludge, textiles contaminated with oil, contaminated solid waste and activated carbon, to a homogeneous particle size, a slow speed of 65 rpm (revolutions per minute) is used.

 www.weima.com

Photo: Weima

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(R) EVOLUTION:

NEW GENERATION OF HAMMEL SHREDDERS – VB 750 DK L.V.

In 2021 Hammel Recyclingtechnik GmbH launches a new generation of shredders: the Hammel primary shredder type VB 750 DK “Long Version”, which is the successor of the bestseller shredder type VB 750 DK. The machine is characterized by the modified shredding unit with 2-meter-long shredding shafts. Bulky and large-volume material such as clamping plates and bulky waste is drawn in even better and can easily be charged by a wheel loader.

The interlocking knives of the now extended shafts are designed in such a way that multifunctional shredding is possible, i. e. processing of waste wood and fresh wood, root stocks, railway sleepers, bulky, commercial and household waste as well as old tires and aluminium.

Therefore, the Hammel company is responding to the market demand of customers who nowadays do not only need to shred a specific material but they are forced to work with a variety of materials. A neodymium magnet separates ferrous metals. This is installed in a modified position on the

discharge belt and enables even more optimal metal separation. Through the lightweight construction of the neodymium magnet the machine’s overall weight remains the same as the one of the previous shredder model. The newly designed discharge belt achieves a discharge height of approx. 4,600 mm. This enables the formation of large-volume material store or the end product can be conveyed directly into containers or trucks.

The shredder achieves a higher throughput due to both items; its new CAT C9.3 - stage 5 motor with the powerful 380 HP and its hydraulics of the most recent generation. The machine is currently on a demo tour and it is being tested in a wide variety of materials.

The shredder models VB 750 D (semi-mobile on hook lift) and VB 750 E (stationary with electric drive) will be converted to the “long version” of shafts in a short period of time. They will soon be on the market too.

www.hammel.de



Photo: Hammel

WASTE EXPO BRASIL

October 26 – 28, 2021, São Paulo (Brazil)

Waste Expo Brasil will take place in the city of São Paulo. According to the organizers, Waste Expo Brasil 2021 at Expo Center Norte is “the” time and money-saving event as it will gather local and international companies strictly selling solid waste services and equipment. The International Forum about Integrated Solid Waste Management will be co-located



and will discuss issues related to Brazilian solid waste management. Furthermore, the Forum will explore

the challenges and opportunities that the new regulatory legal agenda brings to decision-makers and waste management operators. A technical committee – technicians, waste managers and environmentalists – is in charge of selecting relevant topics to present.

www.wasteexpo.com.br

RESIDUOS EXPO 2021

November 10 – 12, 2021, Guadalajara, Jalisco (Mexico)

According to the organizers, Residuos Expo is the only exhibition and business forum in Mexico for waste management. This event aims at all companies looking for machinery, products and services “to carry out the best management for hazardous and non-hazardous waste, special handling and urban solid waste”, the homepage says. There they would find



solutions for the collection, handling, storage, destruction and/or recovery, transformation and commercializa-

tion. Simultaneously, the 15th edition of Expo Plásticos will take place. It is the meeting point for the entire industry, “a consolidated event in which companies, technology, machinery, raw materials, innovations and the latest in avant-garde solutions are presented”.

www.residuosexpo.com/2021/en/

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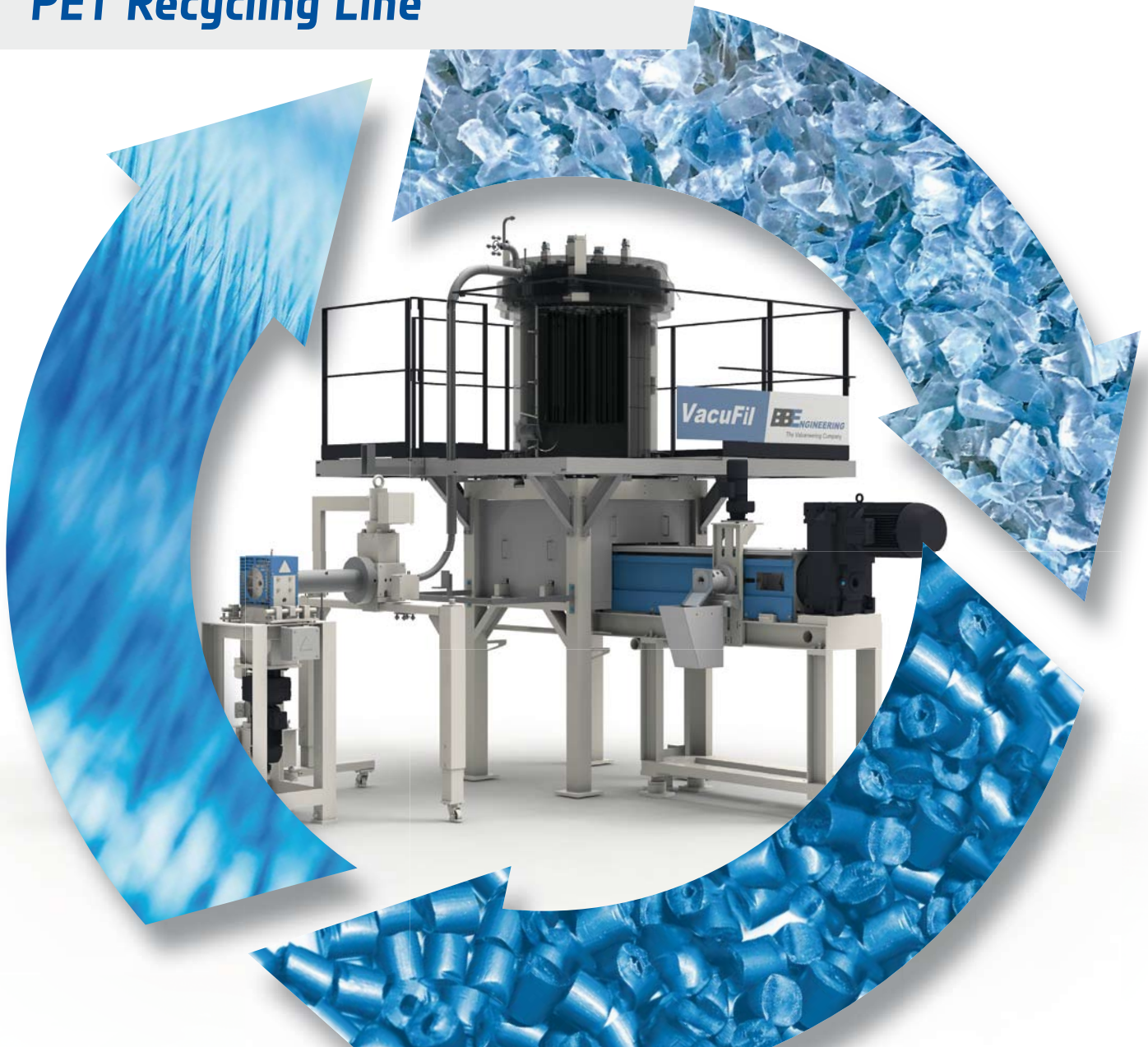
   
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