1/2025
11. Volume
24,- EURO

GLOBAL RECYCLING

The Magazine for Business Opportunities & International Markets

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Recycling: A Global Issue

Brigitte Weber
Editor-in-Chief

On 18 March, the Global Recycling Day took place with initiatives in many countries. Like every year, the Global Recycling Foundation – which supports the promotion of recycling, and the recycling industry, across the world – nominated #RecyclingHeroes to honor people, places, businesses, and activities that have championed recycling efforts. As emphasized by founding President Ranjit Baxi, recycling is an essential part of the fight against climate change. It promotes global sustainability, especially since it is projected to save more than a billion tons of CO_2 emissions by 2030.

Recycling is a significant global issue for many reasons, and progress is being made in reducing waste as well. This demonstrates an increasing number of countries with a national waste management and a recycling industry. However, there are limits, particularly when it comes to recycling plastics. The organizers of the international trade fair K 2025 (8-15 October in Düsseldorf, Germany), used the Awareness Day to take a closer look at the advances, challenges, and necessary changes within the plastics industry. Regarding recycling as a collective effort, the organizers concluded that the Global Recycling Day "serves as a reminder that recycling alone is not enough – a functioning circular economy requires collaboration between industry, policymakers, and consumers. Companies must invest more in innovative recycling technologies, while policymakers should establish clear legal frameworks and financial incentives. Consumers also have a role to play: Making more conscious purchasing decisions and improving waste separation significantly contribute to success. Only if all stakeholders work together can recycling become a true success story." This applies also to the worldwide trade of secondary materials, for example recycled steel (steel scrap). As one can learn at every convention of the Bureau of International Recycling (BIR), the delivered volumes are significant. In the first half of 2024 alone, the USA exported 7.197 million tons (-16.4 percent year-on-year); biggest buyers were Türkiye, Mexico, Bangladesh, India, Taiwan and Canada. In the same period, the EU-27 sold 7.359 million tons (-18.7 percent) abroad. Therefore, BIR underlined in a Position Paper the importance of free trade for the global recycling industry. Moreover, it outlined the negative impact of current trade barriers on recycled materials and highlighted the connection between the trade of these materials and sustainability.

Equally important for the success of recycling is the right equipment. For material handling, there is a solution: the SENNEBOGEN 850 G Series (page 37). The new HAMMEL pre-shredder VB 850 DK (page 36), the new Ecoglass equipment from PICVISA (page 39) and sorting solutions for metal separation from Eriez (Page 40) and Redwave (Page 42) are examples of the constant progress.

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

Yours
Brigitte Weber (weber@msvgmbh.eu)

You have surely noticed: With this issue of GLOBAL RECYCLING, we have switched to recycled paper. Not only were no trees cut down for the paper, but we also saved 79 percent water and 73 percent energy. Additionally, paper production caused 42 percent fewer CO_2 emissions compared to previous issues printed on conventional paper. As a publishing house, we take responsibility for climate protection and strive to act ecologically in all areas – including the printing of GLOBAL RECYCLING. For this reason, our magazine now proudly features the well-known "Blauer Engel" logo.

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Cover Photo:
SENNEBOGEN Maschinenfabrik GmbH

The Circular Transformation of Industries:
UNLOCKING ECONOMIC VALUE

In December last year, the World Economic Forum published this article, written by Anis Nassar, Lead, Circular Economy Innovation and Business Engagement, World Economic Forum, and Hernan Saenz, Senior Partner; Global Head, Performance Improvement Practice, Bain & Company.

We are experiencing a transformation of business models as many linear value chains reach their limits.

Traditional, linear value chains can be described as a straightforward, sequential process where materials and goods move from sourcing through production and consumption to disposal in a direct path. Such value chains are challenged by shortages of inputs, global disruptions, and the triple planetary crisis (climate change, pollution, and biodiversity loss).

Circularity, when products and materials are kept in circulation at their highest value, offers a path forward and can unlock growth and substantial value across stakeholders.

The shift toward a circular economy is a multifaceted process that requires multiple participants, from policymakers and academics to scientists, innovators, and the entire value chain. Businesses are uniquely positioned to accelerate the momentum for circular transformations as they can influence suppliers and customers to adopt circular practices.

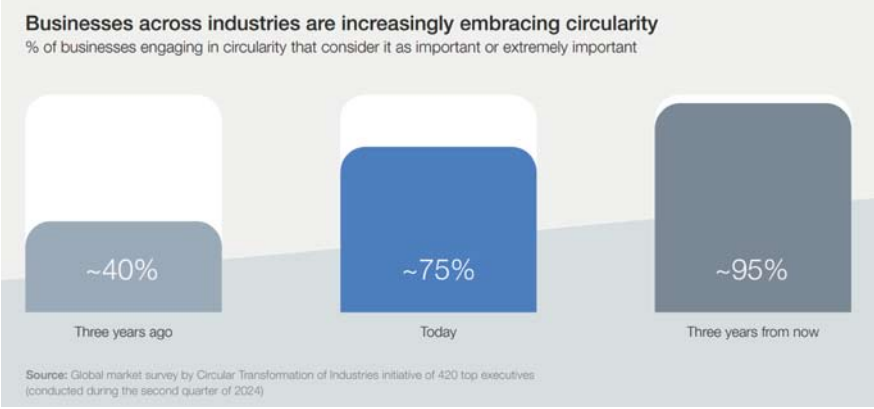
While linear business models are unlikely to disappear, the need for transformative change has never been more pressing. Circular business models are emerging as a new way to generate economic value.

The circular path to value

Businesses across industries are increasingly pursuing circularity and expect it to gain importance in the future, according to a survey of 420 top executives engaged in circularity from ten manufacturing industries across the globe, conducted by the World Economic Forum, Bain & Company and the University of Cambridge.

The survey found that only around 40 percent of businesses considered circularity important or extremely important three years ago. Today, that number has risen to around 75 percent and it is expected to reach around 95 percent in three years.

Historically, many firms have considered circularity mostly through the lens of recycling, increasing sustainability, or complying with regulations.



While recycling and compliance are important, circularity has economic value that extends further to revenue growth, increased resilience, and profitability in support of long-term competitiveness. The survey results make clear that executives understand the broad value creation opportunity circularity can provide.

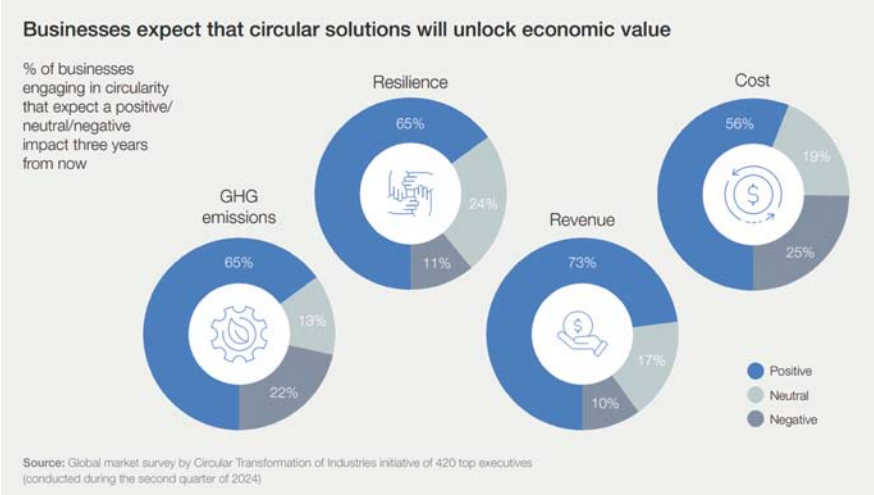
They show that businesses pursue circular solutions for broad reasons and expect to unlock positive economic value across four dimensions: revenues, resilience, sustainability (GHG emissions), and costs.

Value unlocked

While generating economic value from circular solutions at scale is not without challenges, leading multinational businesses already show that it is possible today with executive leadership buy-in, a strong cross-functional mandate and value chain engagement. The following case studies illustrate how selected circularity thought leaders overcame challenges and unlocked economic value from circular solutions.

In 2023, HP Inc, a global manufacturer of personal IT equipment, launched its HP Renew Solutions business. This recently created organization sources and refurbishes IT devices sold as HP Certified Refurbished Hardware.

HP Renew Solutions attracts customer demand for solutions that combine new and multi-lifecycle IT products driven by new regulations, sustainable procurement requirements and lower total cost of ownership targets. Demonstrating the broad positive impact of HP Renew Solutions on the company and its customers was crucial for securing a strong leadership buy-in.



Source: WHITE PAPER "Circular Transformation of Industries: Unlocking Economic Value" / World Economic Forum

This paved the way for a strategic investment to establish a dedicated business unit focused on developing and selling circular solutions.

"We must continue to pursue sustainability in our industry knowing that for lasting change, organizations need to tie their actions to business benefits," said Dave Shull, president of HP Solutions. "For the HP Renew Solutions business, our vision is clear: support our customers' sustainability and affordability goals with flexible IT solutions in a profitable manner."

Cisco, a global technology company, also employed a broad set of tactics to engage stakeholders while taking a different approach to unlocking economic value through circularity.

Cisco developed 25 Circular Design Principles – for example, "ensure product structure allows for identification and accessibility of valuable components" – and has a public goal of incorporating them into 100 percent of its new products and packaging by fiscal 2025. To accelerate implementation and foster buy-in across functions and levels, Cisco developed a scoring methodology that enables the company to track progress and recognize employees for circular design innovation. Additionally, as of fiscal 2024, over 7,000 employees had completed a dedicated circular design training. This broad set of engagement measures allowed Cisco to integrate circular design principles into its product design process.

"At Cisco, we embed circularity across product lifecycles. Alongside our goal to integrate Circular Design Principles into 100 percent of our new products and packaging by fiscal 2025, we run a take-back program to reuse, refurbish, and recycle used products at their initial end-of-life," said Mary de Wysocki, chief sustainability officer at Cisco.
In addition to executive leadership buy-in and cross-functional mandates, upstream and downstream value chain engagement plays a vital role when establishing a circular business model.

Agilent Technologies, a global provider of instruments, software, services, and consumables for laboratories, identified downstream customer engagement as an important enabler for selling refurbished laboratory equipment at scale. Agilent offers several incentives to increase the number of customers that return used products, including paying a residual value or, where possible, collecting used products from competitors.

The company focuses on strengthening the value proposition of refurbished products for customers by offering the same warranties for their refurbished products and investing in substantial quality controls. Additionally, they are collaborating with the non-profit organization My Green Lab, whose ACT (accountability, consistency, and transparency) Ecolabel program provides third-party verification of Agilent's equipment's environmental impact, helping users make informed, sustainable choices.

Aimee Whaley, associate vice president and general manager of Certified Pre-Owned Instruments at Agilent, said: "By offering instrument buybacks and credit towards future purchases, we have given customers the incentive to return 10,300 instruments between 2021 and 2023. "Additionally, we have refurbished 14,000 instruments and harvested parts from 2,700 legacy products. It is a win-win for customers and the circular economy."

Unlocking economic value through circularity

While leadership buy-in, a cross-functional mandate, and value chain engagement are key enablers, additional

The White Paper

In January this year, the paper was published at https://reports.weforum.org/docs/WEF_Circular_Transformation_of_Industries_2025.pdf

As underlined, the paper would suggest "enabling strategies that can help navigate complexities and unlock economic value. Developed in consultation with the World Economic Forum's Circular Transformation of Industries community, these offer a roadmap for achieving a circular transformation of industries at scale".

levers are required to take action and scale circular solutions.

A whitepaper by the Forum, Bain & Company, and the University of Cambridge, published on the side of the Annual Meeting 2025 in Davos, Switzerland, additionally outlines detailed, actionable strategies by type of circular solution applicable to multiple industry sectors. It addresses key challenges, highlights industry-proof points from circularity thought leaders, and details how, when done right, circular solutions unlock substantial economic value.

weforum.org

GLOBAL PLASTIC RECYCLING MARKET TO GROW

The "Plastic Recycling Market Opportunities and Strategies to 2033" report has been added to ResearchAndMarkets.com's offering.

According to the source for international market research reports and market data, the plastic recycling industry was witnessing significant growth with the global market reaching a value of nearly 41.6 billion US-Dollar in 2023. Steady at a compound annual growth rate (CAGR) of 4.74 percent since 2018, the market shows promising trends and is projected to grow exponentially. Expectations are set for a surge to 62.56 billion US-Dollar by 2028 and a further climb to a remarkable 90.13 billion US-Dollar by 2033.

"Key growth influencers in the historic period included an increase in disposable income, a rise in plastic consumption, heightened environmental awareness, and a shift toward sustainable investing," ResearchandMarkets.com described the favorable development. "The market faced challenges due to limited recycling infrastructure, but the forecast period points toward a brighter future, propelled by the demand for sustainable packaging, initiatives for plastic reduction in the automotive industry, proactive government measures, and a focus on tackling increasing plastic waste."

In 2023, the polyethylene terephthalate segment led the market, securing 48.80 percent of the total, equivalent to 20.3 billion US-Dollar. Until 2028, it is projected to be the fastest-growing segment by type, with a CAGR of 9.14 percent since 2023. The films segment is foreseen as the fastest-growing source, with a CAGR of 9.307 percent through 2023-2028. For end uses, packaging made up the largest portion of the market, and the automotive sector is expected to see the speediest growth moving forward.

Geographically, Asia Pacific's market share in 2023 was 40.77 percent. "North America and Western Europe followed suit, while future growth forecasts predict the highest CAGRs for Asia Pacific and South America, underlining robust industrial progression in these regions."

Strategies and Opportunities

As reported, industry participants are focusing on novel technologies such as chemical recycling and AI integration to boost efficiency and sustainability. Expansion endeavors would include new plants and state-of-the-art recycling facilities that promise to enhance material recovery rates. "Top market opportunities are emerging in the packaging segment, with significant sales growth anticipated by 2028."

To capture these burgeoning opportunities, industry players are encouraged to focus on technological innovation, efficiency-enhancing AI integrations, advancing processing capacities, and sustainable practices, the Ireland-based report provider stated. "Growth in the polyethylene terephthalate and film segments, along with strategic partnerships and product launches, should be key considerations, particularly in the context of strengthening market positions and capturing niche segments such as the automotive sector."

researchandmarkets.com

Photo: cirplus GmbH

CIRCULAR ECONOMY AND BUSINESS OPPORTUNITIES

Business models centered on industrial symbiosis play a crucial role in fostering green growth and accelerating circular economy adoption, COST, the European funding organization for research and innovation networks, informed.

As underlined by the European Cooperation in Science and Technology (COST), circular economy (CE) practices are helping to tackle some of humanity's most pressing environmental challenges, including the rise in global temperatures driven by increasing carbon dioxide emissions, the strain on natural resource extraction, and the growing volume of waste. The industrial processes and product use sector accounts for eight percent of Europe's total greenhouse gas emissions.

"The Energy Transitions Commission has identified the development of a CE strategy as a key opportunity, potentially reducing emissions in this sector by 40 percent," COST wrote. In addition to substantial decarburization, CE approaches could significantly curb waste production, contributing to a more sustainable future. "Under the framework of a CE, business models centered on Industrial Symbiosis (IS) play a crucial role in fostering green growth and accelerating CE adoption. These models prioritize maximizing the value of products for as long as possible while simultaneously minimizing waste generation."

Industrial Symbiosis

The process by which waste or by-products from an industry or industrial process are transformed into raw materials for another industry is known as Industrial Symbiosis (IS). This systematic approach promotes a more sustainable and interconnected industrial ecosystem, offering solutions to the development and environmental challenges highlighted by the United Nations' Sustainable Development Goals (SDGs). By adopting IS models, businesses can significantly contribute to achieving global sustainability targets.

Industry sustainability faces significant challenges related to waste management, raw materials usage, and supply chain efficiency. While the concept of IS is becoming more recognized, its advancement, integration, and

Photo: Production Perig / fotolia.com

large-scale implementation require considerable expertise, collaborative research, and strong partnerships between academia and industry, all supported by effective policies. The adoption of IS is hindered by low awareness, regulatory hurdles, limited incentives, and technological challenges across the value chain. Tackling these obstacles requires deeper investigation and greater involvement from industry, academics, and policymakers. To overcome these barriers, numerous key questions need to be raised about what knowledge is available on IS. What is the impact of IS on the industry system, policy regulations, and implementations in society? How are Information Communication Technology (ICT) tools integrated within the IS domains to support their proper implementation? How to increase the understanding, awareness, and knowledge about IS?

Introducing LIAISE COST Action

In 2023, an interdisciplinary research network gathering experts from academia, industry, and technology institutions launched the LIAISE COST Action (Cooperation, development, and crossborder transfer of Industrial Symbiosis among industry and stakeholders). This initiative aims to address critical questions surrounding the implementation of Industrial Symbiosis and promote sustainable industrial practices through collaborative research and innovation.

Ms Almudena Muñoz Puche, Chair of LIAISE: "Industrial Symbiosis is more than a strategy; it's a pathway to a sustainable future. Through LIAISE, we bring together experts, industries, and policymakers to break barriers, share knowledge, and turn waste into opportunity, building a Circular Economy that benefits both the planet and society." This COST Action initiative will foster longterm partnerships between academic institutions and industry, paving the way for large-scale implementation of IS processes, the information said. "The initiative will also facilitate the transfer of specialized technologies to the market, supporting Europe's goal of developing highly competitive, sustainable companies. By addressing key environmental challenges, such as decarbonization and waste reduction, this collaboration is fully aligned with Europe's vision for a greener future."

First anniversary of LIAISE

As reported, the network currently involves 245 working group members from 49 countries with a good gender balance and great involvement of young researchers. In its first year, LIAISE established its core management structure and organized thematical workshops in Armenia, Croatia, Lithuania, Serbia, and Slovenia to strengthen collaboration further and advance the project's goals. "As its acronym indicates, LIAISE aims to bridge the gap between theory and practice by fostering a participatory, practice-oriented approach that supports cross-sector collaborations. It will also establish Key Performance Indicators (KPIs) to assess the implementation of IS business models in the industry." These efforts would mark significant progress in reducing the environmental impact of industrial activities and advancing global climate goals.

"Establishing a robust knowledge base on IS, combined with enhanced networking and training, is vital for fostering a circular and sustainable industrial ecosystem worldwide. Such efforts are crucial for driving the transition to a more resilient and eco-friendly global industry."

- cost.eu
- liaise-action.eu
- cost.eu/actions/CA22110/#tabs+Name:Description

The EU Commission Proposes:

A DEAL FOR COMPETITIVENESS AND DECARBURIZATION IN EUROPE

In February this year, the European Commission presented the "Clean Industrial Deal", a business plan to support the competitiveness and resilience of European industry. The proposed deal aims at decarbonization while securing the future of manufacturing in Europe.

As stated on the Commission's homepage, faced with high energy costs and fierce global competition, European industries need urgent support. "The Clean Industrial Deal outlines concrete actions to turn decarbonization into a driver of growth for European industries. This includes lowering energy prices, creating quality jobs and the right conditions for companies to thrive." It would present measures to boost every stage of production, with a focus on:

- energy-intensive industries such as steel, metals, and chemicals, that urgently need support to decarbonize,

switch to clean energy, and tackle high costs, unfair global competition, and complex regulations;
- the clean-tech sector which is at the heart of future competitiveness and necessary for industrial transformation, circularity, and decarburization.

Also important is circularity, which aims to reduce waste and extend the life of materials by promoting recycling, reuse, and sustainable production. "Maximizing EU's limited resources and reducing overdependencies on third-country suppliers for raw materials is crucial for a competitive and resilient market," the European Commission underlined

The Commission is convinced that the "Industrial Decarbonisation Accelerator Act" will increase demand for EU-made clean products, "by introducing sustainability, resilience, and made in Europe criteria in public and private procurements". With the review of the "Public Procurement Framework" in 2026, the Commission intends to introduce sustainability, resilience, and European preference criteria in public procurement for strategic sectors. As reported, the act "will also launch a voluntary carbon intensity label for industrial products, starting with steel in 2025, followed by cement".

Regarding circularity and recycling, the Commission is convinced that the EU has to secure access to critical raw materials and reduce exposure to unreliable suppliers. "At the same time, placing circularity at the core of our decarbonization strategy helps maximizing the EU's limited resources".

The Commission would therefore:
- Set up a mechanism enabling European companies to come together and aggregate their demand for critical raw materials.
- Create an "EU Critical Raw Material Centre" to jointly purchase raw materials on behalf of interested companies. Joint purchases create economies of scale and offer more advantage to negotiate better prices and conditions.
- Adopt a "Circular Economy Act" in 2026 to accelerate the circular transition and ensure that scarce materials are used and reused efficiently, reduce the global dependencies and create high quality jobs. The aim is to have 24 percent of materials circular by 2030.

Financing the clean transition

According to the European Commission, the "Clean Industrial Deal" will mobilize more than 100 billion Euro to support EU-made clean manufacturing. The executive body of the European Union proposes to:
- adopt a new "Clean Industrial Deal State Aid Framework" to accelerate the approval of state aid to roll out renewable energy, decarbonize industry and ensure sufficient manufacturing capacity of clean tech;
- strengthen the "Innovation Fund" and propose an "Industrial Decarbonisation Bank", aiming for 100 billion Euro in funding;
- launch a dedicated call under "Horizon Europe" to stimulate research and innovation in these areas;
- amend the InvestEU Regulation to increase the number of financial guarantees that InvestEU can provide to support investments. This would in turn mobilize up to 50 billion Euro for the deployment of clean tech, clean mobility and waste reduction.

Acting on a global scale

"The EU needs reliable global partners more than ever," the European Commission emphasized. Therefore, in addition to ongoing and new trade agreements, the executive body of the European Union would soon launch "the first 'Clean Trade and Investment Partnerships', which will diversify supply chains and forge mutually beneficial deals".

At the same time, it "will act even more decisively to protect our industries from unfair global competition and overcapacities through a range of Trade Defence and other instruments." The Commission intends also to simplify and strengthen the "Carbon Border Adjustment Mechanism (CBAM)".

commission.europa.eu/index_en

Photo: TSUNG-LIN WU / fotolia.com

GOOD OUTLOOK FOR THE WASTE COLLECTION TRUCK MARKET

According to The Business Research Company, the market size for waste collection trucks has seen robust growth in the previous years and is anticipated to increase from 14.17 billion US-Dollar in 2024 to 15.26 billion US-Dollar in 2025. This would indicate a compound annual growth rate (CAGR) of 7.7 percent. “Factors such as urbanization, population expansion, environmental rules, economic development, enhancements in waste segregation, infrastructure evolution, and involvement of the private sector have all contributed to this historical growth,” the market research firm informed.

Photo: O. Kürth

This positive trend is expected to last. In the coming years, the market is set to rise to 20.21 billion US-Dollar by 2029 with a CAGR of 7.3 percent. “This growth during the forecast period can be traced back to a number of factors, including the increasing uptake of smart city projects, the escalating generation of municipal solid waste, heightening consumer consciousness about the detrimental impacts of uncontrolled dumping, growing public interest in sustainability, and increased automation in various industrial sectors.” Key trends for the forecast period would encompass smart waste management, the advancement of garbage truck fleets through connectivity and telematics integration, the creation of more cost-effective and efficient garbage truck models, and the application of technical improvements.

thebusinessresearchcompany.com/report/garbage-collection-truck-global-market-report

AFINUM INVESTED IN PROLOGA GROUP

German-based PROLOGA Group, a software provider in the SAP partner universe focusing on the circular economy and utility industry, has announced the investment by Afinum 9 in the company. This partnership would mark a significant milestone in the PROLOGA's history and underscore its commitment to continuous growth and innovation. Established in 2001, PROLOGA consists of three IT companies and currently employs around 70 people across locations in Halle (Saale) and Oldenburg. The group provides support to utility and waste management companies around the globe. Afinum, founded in 2000, is an independent mid-market investor that places funds in leading and uniquely positioned medium-sized companies. The fund Afinum 9 focuses on transition and succession situations in the four verticals "Software & TMT", "Healthcare", "Industrial Technology" and "Consumer & Internet".

prologa.com

AMCS RECOGNIZED AS A GLOBAL LEADER IN EHS SOFTWARE

Ireland-based software provider AMCS has again been recognized as a global leader in the Verdantix Green Quadrant for EHS Software 2025 report, the company announced in January this year. This recognition underscores AMCS' commitment to innovation and excellence in offering comprehensive and integrated solutions for EHS (Environment, Health, and Safety) and ESG (Environmental Social Governance) management through its AMCS Sustainability Intelligence Suite.

The report features a detailed, fact-based comparison of the 21 most prominent EHS solutions available in the market. Based on the proprietary Verdantix Green Quadrant methodology, the analysis would encompass in-depth live product demonstrations with pre-set scenarios and vendor responses to a 323-point questionnaire covering eight technical, 19 function-al, and 12 market momentum categories.

amcsgroup.com
verdantix.com

HOUSTON AMERICAN ENERGY CORP. TO ACQUIRE ABUNDIA GLOBAL IMPACT GROUP

In February this year, Houston American Energy Corp. (HUSA) announced that it has entered into a definitive agreement to acquire Abundia Global Impact Group, LLC (AGIG), a company specializing in converting waste into high-value fuels and chemicals. As reported, the acquisition supports HUSA's strategy to diversify its portfolio, expand its global footprint, and execute its comprehensive strategy aimed at driving shareholder value through innovation in the renewable energy sector.

The agreement would be subject to HUSA shareholder approval and standard closing conditions. Under the terms of the agreement, HUSA will acquire 100 percent of AGIG's issued and outstanding units from its members – and will issue to AGIG's members several shares of its common stock. According to the information, Abundia Global Impact Group is preparing to build its first advanced plastic recycling facility in Cedar Port, Texas. "The facility represents the first phase of a structured, capital-efficient growth plan aimed at scaling and deploying AGIG's suite of technologies for producing renewable fuels and chemicals from waste," Houston American Energy Corp. gave account. The new facility would serve as the hub for its five-year development plan in the USA.

houstonamerican.com
abundiaimpact.com

Advertorial:

FORNNAX WINS ‘BEST BRAND 2024’ AWARD IN RECYCLING INDUSTRY BY THE ECONOMIC TIMES

2024 has been a landmark one for Fornnax Technology PVT LTD, marked by several significant achievements, with the most recent being the prestigious ‘Best Brand 2024’ award presented by ET NOW (The Economic Times). This recognition demonstrates the company’s contributions to the recycling industry, firmly establishing Fornnax’s status as an industry leader.

Situated in the bustling industrial hub of Ahmedabad, Gujarat, India, Fornnax specializes in the production of top-tier recycling equipment like shredders and granulators, tailored to the ever-evolving needs of the recycling sector. This commitment to quality and local manufacturing has been crucial for the company’s continued success.

Mr. Jignesh Kundaria, the Director and CEO of Fornnax, shared his visionary outlook, stating, “We are dedicated to pioneering sustainable recycling solutions with our innovative offerings. Our mission goes beyond merely selling equipment; we are building a lasting business. This philosophy is at the core of who we are.” This powerful message encapsulates Fornnax’s visionary focus, emphasizing their commitment to fostering sustainable recycling ecosystems and recognizing the interconnected nature of the industry.

The Economic Times presented this distinguished award to acknowledge and celebrate exceptional accomplishments within the recycling machinery manufacturing sector. Fornnax extends its heartfelt gratitude for this revered recognition. The selection process for the ‘Best Brand 2024’ award entailed a meticulous evaluation of several critical parameters, including brand value, market longevity of equipment, annual turnover, a remarkable 30 percent growth rate, and strong brand recall among industry professionals and customers. These criteria reflect the extensive nature of the award and highlight the significance of Fornnax’s achievements.

Upon receiving the award, Mr. Jignesh Kundaria, Director and CEO, along with Mr. Ankit Kalola, Global Head of Sales & Operations, expressed their enthusiasm. “We are deeply honored to be recognized as one of The Economic Times Best Brands of 2024,” they said. “This accolade inspires us to continue innovating and developing groundbreaking solutions for the recycling industry,” Mr. Kundaria added. “We owe our success to our dedicated employees, trusted stakeholders, and valued customers, and we are truly grateful to the ET NOW group for this esteemed award. We look forward to leading the charge towards a more sustainable future,” he further expressed his appreciation. With this recognition, Fornnax remains resolute in its pursuit of innovative and efficient recycling solutions, continually striving to create a greener future.

Fornnax is one of the world’s leading shredding and recycling equipment manufacturers, offering Primary shredders, Secondary shredders and Granulators for Tyres, Municipal Solid Waste, Cables, E-Waste, Aluminium and many other industrial applications. Quick after-sales services that increase the customer’s uptime and productivity.

The company is committed to shaping the landscape for sustainable recycling solutions in the future. According to Fornnax, they are not just selling equipment, they are building business. Fornnax Equipment is built with the idea that the simple, most significant and heaviest is better. The equipment is an evolution of advanced products designed for the challenges of the recycling world. The global sales partner network makes the company successful worldwide. Fornnax’s corporate culture is based on its history of providing value to its customers’ success worldwide. This motivates the employees to work together, develop innovative products, and produce high-quality equipment.

fornnax.com

Photo: Fornnax

BAKCYCLE SORTS FLEXIBLE PACKAGING USING TOMRA TECHNOLOGIES

The Türkiye-based firm Bakcycle Recycling is convinced that it is setting a new standard in the Turkish recycling industry.

As reported by Tomra, the company's facility in Izmir, equipped with Tomra's sensor-based sorting machines, achieves high accuracy and purity in sorting mixed flexible packaging waste, addressing a critical need in the recycling industry. Flexible packaging, often composed of layers of materials like polyethylene (PE) and polypropylene (PP), presents significant recycling challenges. Each material type requires separate processing due to its complexity, and many recycling facilities lack the infrastructure to handle post-consumer low-density polyethylene (LDPE) materials. The lightweight nature of flexible packaging further complicates recycling, often resulting in these materials being down-cycled into lower-value products.

Purity levels of over 98 percent

In the processing line of the facility, three Autosort Speedair systems are located at the front of the line, followed by two Autosort units. While the first is developed for film applications, contributing to the high-capacity recycling of lightweight flexible packaging, the latter is Tomra's multi-functional sorting all-rounder. In the sorting process based on color and polymer, the first and second Autosort Speedair systems separate transparent LDPE from other materials. The third machine separates the collected transparent LDPE from transparent LLDPE. Thanks to the consistent airflow, the lightweight LDPE waste materials move stably on the fast-moving conveyor belt. The two Autosort units are tasked with sorting mixed-color and white LDPE in the following step.

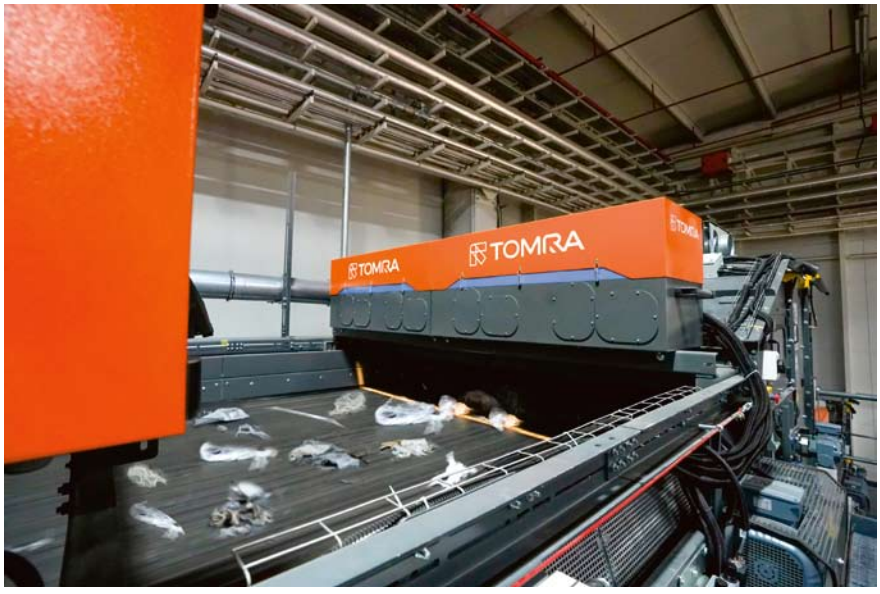
As a result, Bakcycle Recycling achieves purity levels of over 98 percent in the sorting processes, the information said. "With Tomra Insight, Bakcycle Recycling has transformed its optical sorting machines into connected devices." The company would use this cloud-based data platform to streamline its sorting processes and improve transparency and data management. It would help accurately assess the quality of the processed materials and "allows for detailed, real-time analysis of any material loss during production".

About Bakcycle

Bakcycle Recycling, founded by Bakioğlu Holding, began active operations at the end of 2023. The company specializes in producing granules that substitute for original raw materials, utilizing post-consumer low-density polyethylene (LDPE) packaging waste primarily collected from municipal and packaging waste sorting facilities.

The facility in Izmir covers an area of 20,000 square meters and aims to convert approximately 8,000 tons of LDPE waste from the domestic market into the highest quality rLDPE (recycled low-density polyethylene) granules annually. There are plans to double this production capacity within the next two years. The produced high-quality granules are offered to flexible packaging manufacturers to help them meet recycled content targets for non-food applications.

bakcycle.com.tr
tomra.com



Thanks to the consistent airflow of the Autosort Speedair, the lightweight LDPE waste materials move stably on the fast-moving conveyor belt

Photos: Tomra

NEW PET BOTTLE-TO-BOTTLE RECYCLING PLANT IN THE REPUBLIC OF TÜRKIYE

Istanbul-based construction corporation Doğa has set up a PET recycling facility in Kırklareli and recently commissioned two Starlinger recoSTAR PET 165 HC iV+ PET recycling lines from Austria-based engineering firm Starlinger.

Operating under the name Doğapet, the recycling site is located in Kırklareli, in the Marmara province near the Bulgarian border. It features sustainable construction and utilizes renewable energy and resources. As reported, the recycling lines were commissioned during the fourth quarter of 2024 and reached a combined output of 3.6 tons of bottle-grade recycled PET pellets per hour, amounting to a total capacity of 28,000 tons per year. "The Starlinger PET bottle-to-bottle recycling process has been approved for food-grade applications by national and international authorities such as FDA and EFSA as well as by important brand owners."

Starlinger's food-grade PET recycling process has been approved by FDA, EFSA and many international brand owners

Stricter Regulations expected

According to Selçuk Gökhan Gerlikhan, General Manager of Doğapet, the company believes that the plastics recycling sector will become increasingly important and will attract significant investments, particularly in the bottle-to-bottle segment. "Regulations prescribing the use of raw materials obtained through recycling are coming into effect in more and more countries. We also expect regulations in Türkiye to be tightened within the framework of zero waste targets in the coming years."

Currently, in Türkiye, the use of bottle-grade recycled PET (rPET) produced through mechanical recycling for food applications is not allowed. Only rPET generated through chemical recycling can be used to create new beverage bottles or food containers. However, bureaucratic procedures permitting the use of mechanically recycled PET for bottle-to-bottle applications are expected to be finished in the course of 2025, together with the implementation of a deposit system for plastic bottles.

As underlined, Doğapet currently sources post-consumer PET bottles for recycling in Türkiye. Like in many other countries, plastic scrap collection and pre-sorting of the material is in the hands of the private sector, although the government is preparing to implement measures such as the aforementioned bottle deposit system. "The pre-sorting processes for used PET packaging in Türkiye are really good, and consequently also the quality of the material", explained Gerlikhan. "In addition to the raw materials, which we currently source through the separate waste collection system, we will be able to obtain input material also through the PET bottle deposit system once it is in place. When we are ready to increase capacities, we will also process material from outside Türkiye if necessary."

Doğapet operates two Starlinger recoSTAR PET 165 HC iV+ PET bottle-to-bottle recycling lines with an output capacity of 1.8 tons per hour each

Photos: Doğapet

Doğapet is going to supply the bottle-grade rPET to global beverage and water companies that are important brands in their sectors. “We have made an investment at the most appropriate time in order to provide environmentally friendly solutions to changing needs in Türkiye”, said Selçuk Gerlikhan. “The demand for recycled, bottle-grade raw materials in Türkiye is high. We expect this demand to increase also in neighboring countries, especially in the European Union, due to the EU Single-Use Plastics Directive that will come into effect in 2025. As Doğa, we have high hopes in our PET bottle-to-bottle recycling project and want to continue our investments in this field according to the direction the sector takes.”

About Doğa

Founded in 1968, the corporation places a strong emphasis on sustainability – “Doğa” means “Nature.” It is diversified across various sectors, including construction, real estate, renewable energy, textiles production, and the defense industry.

In 2023, the company expanded its portfolio by establishing Doğapet, which focuses on PET recycling.

dogapet.com.tr
starlinger.com

S. NORTON GROUP PRESENTED THE NEW SHREDDER AT ITS MANCHESTER FACILITY

British metal recycling business S. Norton Group hosted a tour of its latest investment of 20 million British Pound Sterling (converted to more than 25 Million US-Dollar) for 17 senior leaders in the European metals recycling industry to showcase its success in boosting operational and energy-saving efficiencies.

Their Manchester-based facility for the February visit by CEOs from some of Europe and North America’s largest metal recycling companies was chosen by manufacturer Lindemann to highlight the installation’s innovative approach to processing waste metals.

According to S. Norton Group, the 3000hp Lindemann ZZ Power Zerdirator is one of the most efficient in the world. “Its sophisticated variable speed drive system, combined with a pre-shredder and shredder drive assistant, gives best-in-class energy efficiencies,” commended the metal recycling company. “Early tests indicate that it requires up to 20 percent less energy than a 3000hp shredder with a standard drive train and compared with the previous installation at Manchester, the new shredder delivers around 50 percent greater throughput.”

The installation of the shredder was managed by Group Capital Projects Manager, Dave Hobson who praised the extensive design, building and commissioning collaboration between S. Norton and Lindemann engineers.

According to Lindemann CEO Carl Gustaf Göransson, the event held in Manchester “served as a valuable forum for collaboration and innovation between us and our customers. It was a highlight to be able to showcase the first-rate installation of our best-in-class shredder machinery. Feedback from attendees was excellent and they valued the opportunity to see and discuss S. Norton’s shredder operation first-hand.”

Photo: S. Norton Group

Intensification of business

As a leader in innovative recycling and a global exporter, S. Norton Group made the major upgrade to increase their capacity to shred waste metals, mostly light iron and end-of-life vehicles (ELV), and produce higher quality ferrous and non-ferrous scrap metals. As the only shredder in the Greater Manchester area, the new facility serves the whole region for processing and recycling waste metals. “We were delighted to host this valuable opportunity for senior leaders in the industry to see our technologically advanced shredder and understand how it is able to produce high-quality shredded material, liberating more metal than older, less efficient models,” S. Norton Managing Director, Tony Hayer, was quoted. “The shredder was custom-built to replace an aging asset and is an integral part of our plans for growth and ongoing investment in operational quality and capacity at all our six UK sites, including Liverpool. We acquired a new site in Glasgow in December 2023 and another site in Birmingham is currently under development.”

s-norton.com
lindemann-metalrecycling.com

FRIENDLY ACQUISITIONS + SYNERGIES = INTERNATIONAL GROWTH

The internationally active Elemental Group, founded in 2010 in Grodzisk Mazowiecki, Poland, has invested 3.315 billion Polish Zloty (over 795 million US-Dollar) abroad and plans to continue expanding globally.

As reported by the holding firm, Elemental Holding SA, which is based in Luxembourg, the Elemental Group (GE) currently comprises 57 companies operating in 35 countries – and it sees itself in line with Polish direct investment abroad. "According to the United Nations Conference on Trade and Development (UNCTAD), Polish direct investment abroad reached a record high of 10,400 million US-Dollar in 2023," the holding company referred to the information given at that event. "This represents a 64 percent increase compared to the previous year and a 228 percent increase compared to 2021. Moreover, the ratio of Polish direct investment abroad to foreign direct investment in Poland reached 36 percent, the third highest in measurement history. In other words, Poland is transitioning from being merely a capital-absorbing economy to becoming a significant economic force investing in other countries."

Mergers and acquisitions

The Elemental Group (GE), an international leader in recycling and urban mining, has invested over 288 million US-Dollar (1,200 million Polish Zloty) in major foreign mergers and acquisitions – 17 to date. "Acquisitions must align with the Group's strategy. The company should be well structured in business terms and maintain a strong financial position. It must also be attractively priced. We pay close attention to the quality of the management team and development prospects," Paweł Jarski, CEO of Elemental Group, was cited. "The vast majority of our acquisitions are 'friendly'; we aim to achieve synergies. Typically, we don't purchase 100 percent of shares initially, as we want the existing owner to continue working with us for some time. We believe that the future performance of our acquired companies largely depends on the quality and satisfaction of the management team, so we always nurture these relationships."

GE's first foreign acquisition was Lithuania's EMP Recycling in 2015, later followed by expansion into Finnish, British, German, and Asian markets. The recycler's most recent acquisitions in 2024 included acquiring a 51 percent stake in a joint venture with Romco Group, covering Nigeria, Ghana, and the UAE, and an 80 percent stake in Romania's ACC Recycling Services. The latter plans to build a refrigerator and household appliance recycling plant near Deva, in Hunedoara County. The investment is expected to reach 19.84 million Euro.

Since 2019, Elemental has been operating in the US, generating its highest revenues. According to Slawomir Baran, Head of the Merger & Acquisition Department at GE, the firm has acquired four catalyst-recycling companies in the US. "Considering the volume of catalytic converters collected, we are already the number one player in this market, as well as globally," he is convinced. Regarding the Group's acquisition plans, he explained: "We are closely monitoring additional companies in the US, Africa, Asia, and South America. We continuously seek interesting companies that would complement our Group's strategy."

Photo: O. Kürth

E-waste and critically raw materials

Elemental Strategic Metals (ESM) in Zawiercie, also part of the group, imports raw materials for critical element recovery from approximately 80 locations worldwide (including 33 locations across 16 US states). As underlined by CEO Paweł Jarski, the company focuses on processing material from recycled catalysts, specifically the platinum group metals (platinum, palladium, and rhodium). "Through this investment, the Elemental Group has achieved vertical integration of this business line – we now control the entire value chain from collection through pre-processing, smelting, and refining. At the end of this process, we obtain metals at nearly 100 percent purity. Indeed, the volume of e-waste globally is enormous, and it's one of the fastest-growing waste categories. Therefore, considering market prospects, we definitely want to develop this business further. Our next strategic step is constructing a copper and printed circuit board (PCB) smelter in Zawiercie, where we aim to achieve vertical integration as well. The investment preparation process and financing arrangements have already begun. Regarding rare earth elements, we are watching this market

very closely, but in our opinion, it's still at a very early stage of development. When we become convinced it's the right time to enter this market, we will certainly consider acquiring one or more companies in this area."

In relation to critical raw materials, including rare earth metals and platinum group metals, there is a global expectation of increasing demand. GE aims to enhance its position as a major player in this market. Paweł Jarski is convinced that the group is well diversified geographically, with a collection network in North America, Europe, and Asia. As envisaged in the strategy, the next step would be vertical integration to further process collected materials within the group. "Thanks to the investment in Zawiercie, this vertical integration has already been achieved in Europe for platinum group metals," he informed. "The next logical step could be investing in a platinum smelter in the US, where we have substantial quantities of our material. This direction may become necessary if restrictions on the free flow of materials between the US, EU, and China continue to increase."

elemental.biz

About Elemental Group

Elemental Group is a global leader in urban mining, specializing in the extraction of strategic metals from recycled sources, including spent automotive catalytic converters (SACs), electronic and electrical waste (e-waste), printed circuit boards (PCBs), spent lithium-ion batteries, and non-ferrous metal scrap. The company recovers strategic metals – including platinum group metals, copper, and other base and precious metals – using environmentally sustainable methods.

Furthermore, Elemental Group has established strategic partnerships with Polish research institutions to develop recycling technologies, positioning itself as a key player in the European Union's sustainable economy. Through its approach and strategic vision, the company aims to make a significant contribution to the development of a circular economy across Europe.

GOAL: SUSTAINABLE EXTRACTION OF CRITICAL MINERALS FROM SPENT BATTERIES

Watercycle Technologies Ltd, a UK-based climate-tech company specializing in critical minerals recovery, has entered into a cooperation agreement with German Primobius GmbH, a specialist in end-to-end battery recycling solutions and plant building. "As a joint venture, Primobius combines the pioneering process capabilities of Neometals Ltd and SMS group's extensive engineering expertise." As reported, both companies are committed to collaborating on projects that support the sustainable extraction of critical minerals. Under this agreement, Watercycle and Primobius would pledge to share insights and optimize their respective technologies for battery recycling processes. "This cooperation will also serve as a framework to explore the potential for a deeper commercial relationship." According to the joint press release, Primobius' technology offers a two-step method to recover high-value battery materials from end-of-life and scrap lithium-ion batteries to achieve reduced carbon emissions. "This innovative approach complements Watercycle's sustainable, high-yield, low-cost mineral recovery systems, establishing a solid foundation for collaboration", the information said. "The partnership aims to foster an innovative ecosystem, accelerating the commercialization of technologies intended to reduce the need for new raw materials in the battery supply chain."

Photo: Watercycle/Primobius

primobius.com
watercycletechnologies.com

RECYCLED ALUMINUM FOR BATTERY CELLS

Aluminum recycler and roller Speira has signed an agreement with a leading South Korean battery producer: The supply of aluminum for battery cells aims to increase recycling content.

As reported by Speira, the European company will supply substantial volumes of aluminum strips, spread over the contract period, which will be processed into battery cans and then used in battery cells for electric vehicles. “It includes further improvements to the sustainability of the product by further increasing the recycled content and, thus, reducing the carbon footprint of the processed alloy.” The signing took place after a visit of the South Korean delegation in Germany to Grevenbroich and AluNorf in Neuss, the world’s largest rolling mill, which Speira operates as a joint venture.

Speira enters aluminum strip supply agreement for battery cells for electric vehicles

Photo: Speira

“We are proud to have signed this agreement, which strengthens our position in the battery and e-mobility market building on a strong long-term relationship with our partner. Our partner’s high-quality standards and requirements on supply chain stability are both an honor and a positive challenge for us. A strong team performance of all our four plants involved will form the basis of meeting these,” Alexander Dörsel, Head of Speira Specialties and New Business, was quoted.

About Speira

Speira is a leading European aluminum rolling and recycling company, comprising a total of eleven recycling and production sites in Germany and Norway plus its research and development. Speira recycles up to 650,000 tons of aluminum annually and produces around one million tons of advanced rolled products. As per Speira, the plants include the Alunorf joint venture, the world’s largest aluminum rolling mill, and Grevenbroich, the world’s largest refining plant. With approximately 5,400 employees, Speira is proud to supply some of the best-known industrial companies in the global sectors of automotive, packaging, printing, engineering, building, and construction.

speira.com

ALTERNATIVE FUEL PROJECT INTENDED IN THE SULTANATE OF OMAN

German-based consulting firm MVW Lechtenberg & Partner is planning a processing plant producing refuse-derived fuel (RDF) from household waste in the Sultanate of Oman.

For this purpose, Oman Environmental Services Holding Company (be’ah) has signed a memorandum of cooperation (MoC) with the Duisburg headquartered consulting firm and company Raysut Cement. The signing ceremony took place in Muscat, Oman, under the patronage of H.E. Sheikh Dr. Mansoor Talib Ali Al Hinai, Chairman of the Public Service Regulation Authority.

According to MVW Lechtenberg & Partner, the planned joint treatment plant will address waste management in the Dhofar region. “In addition to the household waste of about 800 tons per day, bulky waste and other waste are to be sorted, the recyclable materials sorted out and the remaining non-recyclable materials processed as environmentally friendly substitute fuel for the local cement plant. The organic fraction will be composted with tree and shrub cuttings as well as agricultural waste and processed into a high-quality substrate. A total of about 1,500 tons of waste are to be recycled in an environmentally friendly way every day.”

The signing ceremony took place in Muscat, Oman

Photo: Lechtenberg & Partner

lechtenberg-partner.de

REMEX GROUP EXPANDED BUSINESS ACTIVITIES IN ASIA

German-based Remex Group, part of the international Remondis Group, has invested in Singapore. Through its subsidiary Remex Minerals Singapore Pte. Ltd., the company acquired 51 percent of the shares in Singapore-based NEO Hardware Pte. Ltd. as part of a share deal. As reported, the transaction will take retroactive economic effect from November 1, 2023.

Photo: Remex

NEO Managing Director Xindi Wang and the shareholders of the Neo family Lim Yan Yan und Neo Cheng Kang with Michael Stoll (CEO of Remex GmbH), Venkat Patnaik (Managing Director of Remex Minerals Singapore Pte. Ltd.) and NEO Managing Director Neo Jia Le (from left to right)

According to the internationally active Remex Group, the double-digit million investment would complement its service portfolio, which has been processing municipal incinerator bottom ash and recycling recovered metals in the city-state of Singapore for almost ten years. "NEO Hardware Pte. Ltd. specializes in metal recycling and has been operating in this market for around 40 years. Last year, the family-run company traded quantities in the order of 140,000 tons," the information said. "The metals are received, processed and resold at two locations in Central and West Singapore. The company's extensive fleet of vehicles and machinery enables the direct dispatch of recycled goods within Singapore." Almost half of the quantities traded were exported. Sales markets would include India, Indonesia, and Malaysia. Furthermore, NEO's trade in recycling metals within South/Southeast Asia would offer the opportunity to expand existing business networks and identify further acquisition opportunities in the region. "Close cooperation with Remex Minerals Singapore and Remex Malaysia also enables synergies to be tapped, particularly in the areas of plant engineering, sales, and commercial administration," the group with more than 30 subsidiaries and associated companies in Europe and Asia underlined.

About Remex

Remex specializes in managing mineral waste and recovering its resources. The activities cover all areas associated with mineral management – from logistics and processing to subsequent recycling or disposal. "Focus is on the production and provision of secondary construction materials and recycled metals, land remediation, soil treatment, underground stowage, and landfill management," the company gave account. With its recycling activities, the recycler would reduce the consumption of gravel, sand, and natural stone and improve the carbon footprint of metal production.

remex.de
remex-solutions.de

NEW TEXTILE RECYCLING CENTER IN SWITZERLAND

Tell-Tex AG, one of Switzerland's largest used clothing collectors, has announced plans to build a new textile recycling center in St. Margrethen, located in the Canton of St. Gallen. This new facility, which represents an investment of nearly 44 million US-Dollar, will have the capacity to process approximately 20,000 tons of used textiles each year and is expected to begin operations in 2026. This plan, developed with engineering and consultancy support from Türkiye-based company Rematters Textile Recycling Solutions, would include innovative methods for automated sorting, accessory removal (such as zippers, labels, buttons), and high-quality textile-to-fiber recycling. As underlined by Tell-Tex AG, part of the Loacker Group, the goal is to shift the textile industry's linear model to a circular one, addressing climate change, reducing carbon emissions, and complying with new Swiss and EU regulations. "This transformation is essential to lessen environmental impact and ensure sustainability across the textile supply chain," the company is convinced.

tell-tex.com, re-matters.com

CHEMICAL RECYCLING FOR TECHNICAL TEXTILES

ResearchAndMarkets.com – an online platform that provides market and research data from publishers, consultants, and analysts – has added the "Editorial: Chemical Recycling for Tomorrow's Technical Textiles" report from Textiles Intelligence Ltd.. As described, the report is based on a keynote presentation given by Gherzi Textil Organisation during the 63rd Dornbirn Global Fiber Congress (Dornbirn-GFC) in September 2024. According to that information, the chemical recycling of synthetic fibers, primarily polyester, is set to have a major impact on the textile industry until 2030. "As well as the chemical recycling of synthetic fibers, the report examines the key trends impacting the textile industry, the rapid growth of the market for second-hand apparel, and forecasts of fiber consumption and associated production figures for 2026," ResearchAndMarkets.com informed. Considerable amounts of new recycled content would start to enter production cycles for technical textiles and the apparel market as significant chemical recycling operations come on stream. "Notable among such operations will be those for turning polyester and other synthetic fiber waste back into polymers and back further into monomers," the market research store gave account. Four major methods for turning recycled polyester and other synthetic fiber waste back into monomers have been identified: enzymatic recovery, glycolysis, hydrolysis, and methanolysis. Furthermore, several companies were making "impressive strides in the development of these methods." As reported, in the field of methanolysis, Eastman's technology would be capable of breaking down hard-to-recycle polyester waste into the monomer building blocks for producing polyester; the monomers could be used repeatedly without compromising performance. "In the field of glycolysis, Syre is being supported by an offtake agreement with H&M Group and is preparing for its first two Giga scale textile-to-textile recycling plants. In the field of hydrolysis, the Far Eastern New Century (FENC) has a commercial recycling plant in operation with a capacity of 600,000 tons. And in the field of enzymatic recovery, Carbios is constructing a plant which is expected to start delivering significant quantities of recycled feedstocks in 2026 and the company is developing a licensing model for its recycling technology which is already bearing fruit."

researchandmarkets.com

Goal:

ESTABLISHING A CIRCULAR TEXTILE ECOSYSTEM

Reju, a textile-to-textile regeneration company headquartered in France, and Cibutex, a cooperative of companies based in the Netherlands, have signed a partnership. Through this collaboration, both partners aim to establish an ecosystem among Cibutex member companies.
This partnership would deliver a feedstock supply of secondary raw materials derived from post-consumer textile waste to Reju for the recycling and production of regenerated Reju Polyester, the information said. "This provides circular regeneration opportunities using Reju's innovative textile-to-textile recycling technology."

As reported, the France-based company is pioneering a global infrastructure for large-scale textile waste regeneration, starting with polyester. Reju Polyester would have a 50 percent lower carbon footprint compared to virgin polyester and can be regenerated infinitely. This partnership with Cibutex would see materials from the cooperative's member companies processed at Reju's Regeneration Hub Zero in Frankfurt (Germany), which will be fully operational in 2025 and at future Reju Regeneration Hubs.

"Cibutex brings together companies from the textile service sector to collect and process post-use business textiles, creating a pathway for these materials to be reintroduced into the production cycle," Reju informed.

"It aims to close the loop on business textile production, ensuring that B2B post-use textiles are collected and transformed into valuable raw materials. By integrating Reju's proprietary regeneration technology, this union ensures traceability and scalability, key components of a truly sustainable and circular textile supply chain."

reju.com
cibutex.eco

VEOLIA AND MISTRAL AI JOIN FORCES

In February this year, France-based companies Veolia and Mistral AI announced a strategic partnership aimed at transforming the management and monitoring of industrial sites for water management, waste recycling, and local energy production.

By combining Mistral AI's generative artificial intelligence technology with Veolia's data and expertise, the two companies would be "paving the way for a new era of innovation and efficiency, actively contributing to the ecological transformation", Veolia emphasized in a press release. "This partnership marks a major step forward in industrial management. Thanks to the integration of Mistral LLM (Large Language Model) with Veolia's data and knowledge base, it will now be possible to have a conversation with the plant, a world first. This innovation will bring unprecedented transparency and modernize plant monitoring, particularly in crucial areas such as personal safety and water consumption management." By integrating the power of generative artificial intelligence, both companies would implement an "unique solution enabling employees and stakeholders to co-pilot water, waste, and energy plants through interactive discussions". This would represent a further step towards realizing Industry 5.0 "and the emergence of augmented employees, where technology directly supports human expertise", Veolia is convinced. The French transnational company has more than 3,800 drinking water production plants under management, as well as over 3,200 wastewater treatment plants, 865 waste treatment facilities, and 48,745 thermal facilities worldwide. "This project will support the objectives of GreenUp, Veolia's strategic program for depollution, decarbonization, and resources regeneration."

According to the information, the advantages of this technology are numerous:

- Simplified access to knowledge: Technicians and operators will be able to automatically access technical knowledge bases and critical data, whether applied to normal or exceptional situations.
- Greater transparency: Stakeholders, including customers, will be able to interact with systems in natural language, enabling real-time recommendations and proactive problem-solving.
- Improved operational efficiency: thanks to optimized monitoring and precise recommendations, Veolia's industrial sites will achieve new standards of performance and sustainability.

veolia.com
mistral.ai

NEW SOFTWARE FOR THE TEXTILE SORTING AND RECYCLING INDUSTRY

The Danish company NewRetex A/S, specialized in AI-based and automated sorting of textile waste, has presented its Manufacturing Execution System (MES) called "Huginn". This system, as stated by the company, "provides the textile sorting and recycling industry with complete data traceability, realtime production monitoring, and detailed business insights."

Huginn has been developed to meet both regulatory requirements and market challenges, such as the need for traceability and transparency across the value chain through product passports, NewRetex stressed. The company's system would support manufacturers in complying with future EU regulations such as the ECO Design Directives, "while helping them to achieve greater efficiency and sustainability in their processes". The system would provide a textile sorting and recycling company "with all the information needed to monitor and optimize production, develop new sorting recipes, and of course achieve full traceability of all the textiles being sorted and recycled". As underlined, the textile industry is increasingly focusing on recycled materials to meet the growing demand to reduce the industry's carbon footprint and increase circularity. "However, tracking and verifying recycled materials in an end product is often a major challenge for the industry. NewRetex now offers a solution for this: the innovative MES was named after the mythological raven Huginn, which stands for thought and observation."

The system would continuously collect and analyze data, and provide real-time KPIs (key production indicators) from the sorting and recycling processes. By integrating this advanced system with their automated sorting technology, NewRetex would offer "precise material and color sorting with fully automated data collection and traceability". Due to this automated sorting technology, the company earned a GRS (Global Recycling Standard) certificate "as one of the first textile sorting companies worldwide".

According to NewRetex the benefits of "Huginn" are:

- "Full traceability: NewRetex MES enables full traceability from textile waste to finished fiber products for end users, ensuring compliance with regulations such as ECO Design guidelines and GRS certification. Automated reporting enables effortless documentation, and APIs ensure seamless integration with product passport platforms.
- Real-time data: Continuous data collection provides valuable insights into every stage of the sorting and recycling process. This allows plant managers to optimize their sorting operations, monitor production rates, track their inventory and automatically generate reports with data visualizations.
- Mobile and web interfaces: Production workers can easily access the system from their phones to register material moving through the factory using QR codes. Desktop interfaces can be used by supervisors or information screens.
- Scalability: The system is adaptable and designed to evolve with technological advances and market demands. Multisite operations are supported, allowing Huginn to become a tool for material pooling and value chain optimization on a large scale."

newretex.com

South Korea:

SK CHEMICALS TO ESTABLISH WASTE PLASTIC RECYCLING INNOVATION CENTER

Korean company SK Chemicals announced in February this year that it will establish a Recycling Innovation Center (RIC) at its Ulsan plant where eco-friendly chemical materials are produced.

According to the company, it will invest in new pilot facilities for the chemical decomposition of waste plastics to produce recycled BHET (r-BHET), linking them with existing commercial copolyester production facilities. This would mark SK Chemicals' first depolymerization technology-based recycling center in Korea.

The newly constructed pilot facility is to produce recyclable plastic raw materials (r-BHET) from waste plastics. "This facility will validate commercialization technology for various types of low-quality waste plastics that were previously difficult to recycle using conventional methods, expanding beyond typical transparent bottles to include fibers, films, and automotive parts. In particular, the recycling of textiles is known to be a highly challenging field due to the diverse forms and types of materials mixed in a single garment. This includes not only polyester yarn but also other fibers such as cotton, as well as various accessories like buttons."

The depolymerization pilot facility is scheduled to begin operations in 2026 with an annual production capacity of 50 tons, the Korean company informed. "BHET(r-BHET), an intermediate raw material for polyester-based materials such as PET and copolyester, is integral to SK Chemicals' chemical recycling technology." With the construction of the RIC, SK Chemicals would establish an integrated research and production system at its Ulsan plant, covering everything from circular recycled raw materials (r-BHET) to circular recycled materials. "All processes from depolymerization to demonstration research, polymerization, and mass production will be organically integrated at one location." This is supported by a polymerization pilot that produces a circular recycled PET and a commercial production facility capable of mass-producing circular recycled copolyester.

"Since different industries such as automotive, electronics, and fashion have varying types of waste plastics and require different plastic qualities and properties, it is crucial to have the technology and capability to quickly validate and commercialize depolymerization and material production processes tailored to each industry," SK Chemicals explained. "With the establishment of the RIC, we will be able to provide faster and more flexible solutions to the complex challenges demanded by various industries based on our foundational technology."

By its own account, SK Chemicals has a strong track record of innovation in recycling: It was the first globally to commercialize circular recycled copolyester using chemically recycled raw materials (2021); the first in Korea to supply circular recycled PET (2022); and has established a solid production base for recycled waste plastic business by acquiring a stake in the Chinese company Shuye Environmental Technology and establishing SK Chemicals Shantou.

skchemicals.com

Aerial view of SK Chemicals' Ulsan plant where the Recycle Innovation Center will be constructed

Photo: SK Chemicals

CHINAPLAS 2025

The 37th International Exhibition on Plastics and Rubber Industries, Chinaplas 2025, will take place from April 15 to 18, 2025, at the Shenzhen World Exhibition & Convention Center (Bao'an).

According to the organizers, the People's Republic of China – with a steadily expanding Purchasing Managers' Index (PMI) and "confidence in meeting growth targets" – would solidify its position as a powerhouse in the global economy. "In November 2024, the PMI of China's manufacturing industry reached 50.3 percent, an increase for three consecutive months, indicating an accelerating pace in the expansion of the manufacturing industry, according to the National Bureau of Statistics of China." The plastic and rubber trade fair, themed "Transformation – Collaboration – Sustainability," would host over 4,000 international exhibitors, with 380,000 square meters of space across all 19 halls, displaying the latest innovations in plastics and rubber solutions. Together with nine country/region pavilions, Chinaplas 2025 would facilitate collaboration along the upstream and downstream industry chains, "leading the way with green, smart and high-tech solutions to drive high-quality industrial growth."

One key focus: circular economy

As described, the concept of a circular economy will continue to be one of the key focuses of the exhibition, highlighting the industry's commitment to sustainability and resource efficiency. "By emphasizing the reuse of resources to minimize waste and stimulate economic growth, the exhibition will demonstrate a clear dedication to addressing environmental challenges. This focus aligns seamlessly with China's progressive policies promoting sustainability and recycling initiatives, reflecting the industry's proactive stance towards a more sustainable future," the organizers underscored. Suppliers in the plastics and rubber industries were consistently unveiling biodegradable materials, recycling, and sustainable solutions as they actively propel efforts toward a circular economy.

At the trade fair, visitors will find three thematic zones on 16,000 square meters: Recycled Plastics, Bioplastics, and

Photos: Adsale Exhibition Services Ltd.

Recycling Technology. Furthermore, live demonstrations of two recycling production lines, focusing on "Bottle-to-Bottle Closed-Loop Recycling" and "Turning PE Waste into Treasure", would unveil advanced equipment technology and high-value utilization solutions within the plastic recycling sector. "The sports and leisure industry, a promising market for plastics and rubber applications, will also be highlighted at Chinaplas with the 'SportsTech Chic + Green' event, collaborating with renowned sports brands to showcase the innovation and sustainability of plastics and rubber in sports products," the information said. The exhibition and CPRJ (Adsale Plastics Network) will host the 6th Edition Plastics Recycling & Circular Economy Conference & Showcase in Shenzhen, gathering global stakeholders to delve into the latest recycling trends. "Collaborating with the China Packaging Federation, Chinaplas will first introduce the Sustainable Plastics Packaging Networking Forum, connecting industry experts and exploring sustainable packaging solutions worldwide."

Examples for promising Asian markets

According to Chinaplas, Indonesia continues to pursue its 20-year development plan covering the period from 2005 to 2025, in which it will focus its last phase this year on improving human capital and enhancing its global competitiveness. "High private consumption and favorable foreign trade has been contributing to the growth of the country's positive gross domestic product (GDP), which, according to the World Bank forecast, would average around 4.9 percent annually."

Indonesia's plastics market has also shown improvement, one can read on the exhibition's homepage. With a market size estimated at seven million tons in 2024, it is expected to grow annually by 4.5 percent to reach 8.88 million tons by 2029, the authors referred to a corresponding report released by Mordor Intelligence. Increasing demand from end-user industries, such as packaging, automotive, electrical and electronics as well as construction industry, would heighten the demand for plastics. "The country also offers growth opportunities for producers of environmental friendly products as it intensifies its circular economy initiatives. While the country continues to rely on polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), and polyethylene terephthalate (PET), other engineering plastics, as well as recycled materials such as recycled PET, are also gaining acceptance."

Among the industries in Indonesia, packaging continues to benefit from the increase in personal consumption, which is partly driven by the increasing adoption of e-commerce. As plastics offer the ideal properties, including wear and tear resistance, chemical resistance, ease of processing, recyclability, and other mechanical properties, they have been the material of choice for a wide range of packaging applications. From 140.3 billion units in 2023, the country's packaging industry is predicted to grow at a CAGR (compound annual growth rate) of more than three percent from 2023 to 2028, based on the projections by IMARC Group. "It also stated that consumers' focus on recyclability, convenience and ease of use are pushing brands to improve their product packaging." Flexible packaging would account for the highest share in the Indonesian packaging industry, with a growth rate at over five percent in the next few years.

As reported by Chinaplas, many innovations in the packaging industry are made to ensure the products align with circular economy goals. Several projects have been launched:

- Danone, in partnership with Prevented Ocean Plastic Southeast Asia, opened a new high-volume plastics collection center in Samarinda, Indonesia. The center is designed to process 500 tons of recycled plastics per month. AQUA, Danone's bottled water, brand is a partner of the project who funds the construction of the center. The company commits to be the customer for the recycled plastics produced by the center.
- The ALBA Group is constructing a plastic waste recycling plant with a rPET production capacity of 36,000 tons in Central Java, that will require approximately 48,000 tons

About Chinaplas

The trade fair is organized by Adsale Exhibition Services Ltd., Beijing Yazhan Exhibition Services Ltd., Adsale Exhibition Services (Shanghai) Ltd., Adsale Exhibition Services (Shenzhen) Ltd. and co-organized by China National Light Industry Council – China Plastics Processing Industry Association, Guangdong Plastics Industry Association, Messe Düsseldorf China Ltd., Shenzhen Polymer Industry Association and the Plastic Trade Association of Shanghai. The exhibition is also supported by various plastics and rubber associations in China and abroad.

Chinaplas 2025 is exclusively sponsored by the Europe's Association for Plastics and Rubber Machinery Manufacturers (EUROMAP) in China for the 34th time, the information said. "The event is currently Asia's leading plastics and rubber trade fair, and is widely recognized by the industry as one of the most influential exhibitions in the world."

of PET bottle waste annually. The company PT ALBA Tridi Plastics Recycling Indonesia's (AATPRI) is a joint venture between ALBA Group Asia and PT Tridi Oasis Group founder Dian Kurniawati. The PET bottles waste would be collected from the surrounding areas.

- Indorama Ventures Public Co., Ltd., a major player in the scene, has obtained 200 million US-Dollar loan from the International Finance Corporation (IFC) to expand its PET recycling capabilities in Indonesia, as well as Thailand and India. With the loan, the company will be able to expand its recycling facilities in Nakhon Pathom and Rayong in Thailand, to launch an automated plant in Karawang, Indonesia, and to construct new recycling plants in India.

"As Indonesia moves forward to increase its plastics recycling rate, the demand for recycling technologies will form parts of the overall strategy to achieve circular economy," the organizers of the exhibition in Shenzhen underlined.

Just as interesting is Vietnam's market. Estimated at 10.9 million tons in 2024, the country's plastic market is projected to grow by a CAGR of 8.4 percent from 2024-2029, reaching 16.4 million tons by 2029, Adsale Exhibition Services Limited referred to a report by Mordor Intelligence. According to the information, the progression is attributed to the resumption of activities in end-user industries to pre-pandemic levels, with construction activities in industrial estates driving demand for plastics, alongside with stable demand from the F&B packaging, electronics/electrical, automotive, and medical and healthcare sectors.

Vietnam has also attracted the interest of foreign companies looking to diversify their operations and expand in the Southeast Asian region. As reported, the country's Ministry of Planning and Investment gave account that investment inflows – with registered foreign direct investment amounting to 15.2 billion US-Dollar – had increased in the first six months of 2024 by 13 percent, compared to the same period in 2023. This figure was expected to reach 40 billion US-Dollar by the end of last year. "Industries receiving significant investments include semiconductor and electronics, construction, automotive, energy and consumer products. These investments are predicted to fuel activities in these sectors, thereby creating demand for plastics," the information said. "Vietnam has also entered into bilateral and multilateral free trade agreements (FTAs), paving the way for reducing import tariffs and opening up new markets. These agreements have encouraged Vietnamese companies to explore the latest technologies to push their operations toward the global market."

As stated by Adsale Exhibition Services Limited, there are more than 4,000 plastic product producers in Vietnam, according to the Vietnam Plastics Association, with around 90 percent being small and medium-sized enterprises. Regarding the manufacturing technology, extrusion technology is the dominant method for manufacturing plastics products to be used in the construction industry, while the fast-moving consumer goods industry will drive demand for injection molding and blow molding technologies. "The packaging sector, which accounts for the largest share of Vietnam's plastics market, has seen substantial growth over the years as the demand for lightweight, convenient and safe packaging products continues to rise in the food and beverage, medical and healthcare and personal care products."

Rising middle-class incomes, e-commerce growth and consumers' growing awareness on environmental protection would be key factors influencing plastics utilization in Vietnam. Over the years, major investment inflows have positioned the country as one of the Southeast Asia's fastest-rising manufacturing hubs. These investments would not only bring capital into the economy, but also facilitate the adoption of the latest technologies that would benefit Vietnam's industrial sector.

The circular economy is also gaining momentum in Vietnam with many plastics companies encouraged to incorporate environmental-friendly practices into production of green products, Chinaplas informed. "Duy Tan Plastics Manufacturing Corporation, one of the top 10 packaging companies in Vietnam, is expanding its domestic and international markets through innovations, the adoption of digitalization, and embarking on the circular economy journey. Duy Tan specializes in various types of rigid packaging and caters to both local brands and multinational corporations. The company's products are exported to 60 countries." The manufacturer had relied on imported machinery to produce packaging that meets its diverse markets.

chinaplasonline.com

FRANCE NEEDS A LONG BREATH

In the last 15 years, France's raw material consumption has been exactly on the EU average and level. A new report by the European Environment Agency and European Topic Centre on Circular Economy and Resource Use shows what France did and wants to do to keep pace with the European transition to a circular economy.

Between 2010 and 2023, the raw material consumption in France totalized to 14.1 tons per person, which equaled the European average. In 2023, the domestic consumption consisted of 53.9 percent non-metallic minerals, 28.4 percent of biomass, 15 percent of fossil energy materials and 1.7 percent of metal ores. The use of domestic material in France added up to a total of 759.9 million.

Numerous measures

The existing policy framework includes a Circular Economy Roadmap adopted in 2018, an Anti-Waste Law in 2020, a Climate and Resilience Law in 2021 and – according to the paper – "numerous measures" to speed up the transition in the circular economy. Amongst EPR schemes provided by the anti-waste law, there is a number of new schemes for example for construction products and materials, sports articles as well as several sorts of oil and packaging. Additionally, in 2022, France introduced an ecological planning process to integrate an ecological transition "into all sectors of public action", a process overseen by the General Secretariat for ecological planning. As part of the anti-waste law, a "3R strategy on plastic packaging" was introduced to reduce single-use plastic packaging by 20 percent and "unnecessary" single-use plastic packaging by 100 percent until the end of 2025. And a target of 100 percent recycling of single-use plastic packaging was set by January 2025.

Zero waste initiative launched

The mission of ADEME, the French Agency for Ecological Transition, comprises organizing and implementing the objectives outlined in the French Environmental Code. Following the Topic Centre-Report, "many French towns and cities launched zero waste initiatives". 359 local authorities are supposed to be involved in the approach – covering almost 50 percent of the French population. Circular economy policy elements have been incorporated into public procurement and are part of the Waste Prevention Plan for 2021-2027. This plan includes a "Diagnosis of the Management of Products, Equipment, Materials, and Waste from the Demolition or Major Renovation of Buildings" (PEMW diagnosis), which is applied within the building sector. These elements are also integrated into the national low-carbon strategy.

Many aims set

Aside from French circular economic targets based on European legislation like the Waste Framework Directive, the Single Use Plastic Directive and directives concerning batteries or packaging, the nation has set many aims specific to its country. Amongst others: 30 percent resource reduction between 2010 and 2030, 15 percent prevention of household waste between 2010 and 2030, five percent reuse of packaging put into circulation in 2023, five percent of household waste prepared for reuse until 2030, 50 percent reduction of food waste by 2025, 100 percent recycled plastic by January 2025, and the creation of "300,000 additional jobs, including in new professions". A repair bonus is deployed since December 2022 for electrical and electronic products, textiles and footwear.

There are targets for inert waste to be recovered by 77 percent, recycled by 35 percent by 2024, recovered by 88 percent, and recycled by 43 percent by 2027. Other waste streams are expected to be recovered by 48 percent and recycled by 39 percent by 2024 as well as recovered by 57 percent and recycled by 45 percent by 2027. Recycling targets have been set for concrete (60 percent by 2024), metal (90 percent by 2024), wood (42 percent by 2024; 45 by 2027), gypsum (19 percent by 2024; 37 by 2027), plastics (17 percent by 2024; 24 by 2027) and glass (4 percent by 2024; 18 by 2027). Targets for re-use (excluding backfill) are set at two percent in 2024 and four percent in 2027.

Photo: Bittner KAUFBILD.de / stock.adobe.com

Support by "France 2030"

Several financial supporting programs targeting circular economy will help. "France 2030" for example is an investment plan worth 54 billion Euro over five years. It offers financial support among others for the development of recycling, in particular for "recyclability, recycling and reincorporation of materials". It focusses especially on plastics including elastomers, com-

posites, strategic metals, textiles and paper and cardboard. Another "France 2030" supported program created for IT products and services is called "Eco-responsible digital acceleration strategy" and aims to develop the eco-responsibility of the digital sector. With a total budget of 300 million Euro per year, ADEME manages a fund dedicated to support the development of the circular economy, focusing on sustainable consumption, on changes in organization and economic mechanism, on support for repair and reuse as well as on support for waste recycling and especially material recovery operations.

A "recovery plan", implemented in 2021-2022, even made it possible to support the modernization of 26 household packaging and paper sorting centers, the modernization of around fifty sorting centers, more than 100 organizations to deploy over 15,000 selective sorting points, 130 projects for the organic recovery of bio-waste, 325 organizations in their projects to develop re-use and repair, nearly 500 investment projects for reduction, reuse and development of alternative solutions for plastic, and finally more than 350 projects for the production or incorporation of recycled plastics.

Recycling rates are changeful

In an "early warning assessment" published in June 2022, the European Environment Agency stated that France's recycling rate has been steadily increasing from 42.9 percent in 2016 to 45.1 percent in 2018, however going down since then: In 2020 the recycling rate stood at 42.7 percent. In parallel, the landfilling rate decreased from 22.4 percent in 2016 to 18.1 percent in 2020. But the level of incineration of municipal waste generated, which has been stagnating at about 35 percent during the period 2016-2019, has gone up in 2020 to 38.1 percent. And Statista found out, that France's plastic packaging recycling rate of 23 percent in 2021 was far away from Europe's 2025 plastic packaging recycling target of 50 percent by 2025. France needs a long breath to change its domestic into a circular economy.

■ Source: European Topic Centre on Circular Economy and Resource Use

FIRST IFAT IN SAUDI ARABIA IN 2026

Messe München is now collaborating with Saudi Arabian MWAN (National Center for Waste Management) to bring IFAT to the country in January 2026. As reported by exhibition corporation Messe München, it will be holding its first trade fair in Saudi Arabia in 2026 with IFAT, one of the world's leading trade fair for environmental technologies. In January this year, a cooperation agreement with the National Center for Waste Management (MWAN) in Saudi Arabia was formally ratified.

Great potential in Saudi Arabia

"Through this partnership with MWAN, the global network of IFAT with its 12 successful trade fairs in seven countries will thus be expanded by a strategically important new event," the exhibition corporation is convinced. "The trade fair will be held at the Riyadh Front Exhibition & Conference Center from January 26 to 28, 2026, and will bring together the key players in waste, water and various environmental technologies from the Middle East and North Africa."

Stefan Rummel and Dr. Reinhard Pfeiffer from Messe München underlined the potential in Saudi Arabia: "As per Dr. Abdullah, MWAN has been leading a major transformation journey of the sector in Saudi Arabia through extensive regulatory and planning efforts that fully embody circular economy principles, while creating hundreds of opportunities for local and global investors, to build an advanced and modern waste infrastructure over the next decade." This new partnership would "help to tap into new unexplored markets for environmental technologies in the MENA region."

The cooperation agreement was signed by Stefan Rummel (CEO of Messe München [left]), and the CEO of MWAN (Dr. Abdullah Al Sebaei [right]), in the presence of His Excellency Abdurrahman bin Abdul Mohsen Al-Fadhli (Minister of Economy, Water and Agriculture)

Photo: Messe München GmbH

High investment in sustainable development

According to the information, for the Kingdom of Saudi Arabia, the trade fair is an important part of the government's "Vision 2030" program, through which it is investing more heavily in the sustainable development of the economy. This would offer great growth potential for environmental technologies and the circular economy. The ambitious goals include 91 percent source segregated waste, 79 percent of waste prepared for recycling and 90 percent diversion from landfills by 2040.

For the water sector, desalinating seawater, expanding water networks and building wastewater treatment plants and associated infrastructure to meet national needs are all being accomplished while diligently ensuring the sustainable extraction and consumption of this valuable resource.

messe-muenchen.de

AIM: EFFECTIVE MANAGEMENT AND RECYCLING OF MINERAL WASTE IN EUROPE

The European Waste Management Association (FEAD) and the Fédération Internationale du Recyclage (FIR) have announced their cooperation to advance circular economy approaches within the mineral waste sector. By working together, the two organizations aim to promote effective management and recycling of mineral waste, "ultimately contributing to the European Union's environmental and waste management goals". Mineral waste, particularly construction and demolition waste (C&DW) and incinerator bottom ash (IBA) plays a crucial role in closing the loop for the construction value chain. C&DW accounts for more than a third of all waste generated in the European Union and in 2022, 295 million tons of aggregates were recycled in the 27 EU Member States. This partnership would focus on addressing key matters related to mineral waste, the biggest waste stream in Europe, the press release said. Through this partnership, both organizations would aim to foster new opportunities for stakeholders in the waste management and recycling industries. "Between FEAD's advocacy work and FIR's technical expertise on C&DW and IBA, this cooperation will help pave the way to help the EU achieve its circular economy targets."

fir-recycling.com, fead.be

POLYPLASTICS TO LAUNCH GLASS-FILLED RECYCLED PLASTIC

Japan-based Polyplastics Co., Ltd., an internationally leading company in engineering plastics, has announced plans to launch a 40 percent glass-reinforced grade of DURAFIDE (R) rG-PPS by December 2025 as part of its mechanical recycling business.

The company would develop "high-quality optimum formulations" of polyphenylene sulfide (PPS), which "will play a role in helping achieve 100 percent circularity of engineering plastics by expanding the applications of mechanically recycled materials". Furthermore, PPS is classified as one of the most important high-temperature thermoplastic polymers because it exhibits several desirable properties, like resistance to heat, acids, alkalis, mildew, bleaches, aging, sunlight, and abrasion.

As reported, the first iteration of Polyplastics' mechanical recycling business calls for collecting glass-reinforced PPS scrap from customers through an open mechanical recycling scheme known as post-industrial recycling (PIR). "The PPS scrap will be used as a raw material to make DURAFIDE (R) rG-PPS, which will be launched this year. In initial processes, strict acceptance inspections will be conducted and metal will be removed. In later processes, recycled materials

and some virgin materials will be reformulated to meet target specifications. The materials will undergo the same quality standards as those of virgin materials," the company assured. The open PIR scheme would help customers reduce and effectively use waste and significantly reduce carbon emissions for their products. "For now, the raw material from customers will be specific grades of DURAFIDE (R) glass-reinforced PPS."

Later, Polyplastics will develop a higher glass-filled grade as the second iteration of DURAFIDE (R) rG-PPS. According to the information, the company intends to establish a system to supply that grade and the 40 percent glass-reinforced grade to customers in Japan. "The re-compounding business and institution of the open PIR system require applications as well as the establishment of collection routes. The company seeks to collaborate with its customers as well as companies in the recycling and industrial waste treatment industry."

In the future, Polyplastics will build a "local production for local consumption" recycling chain within each geographic region.

polyplastics-global.com

Photo: Polyplastics

PURFI GLOBAL AND ARVIND LIMITED ANNOUNCE PLANS FOR FACILITY IN INDIA

The large-scale project is to address textile waste. As reported, the plant would produce high-quality rejuvenated fibers "to meet the elevated standards required by the global textile industry".

PurFi Global LLC and its joint venture partner, Arvind Limited have announced plans for a significant manufacturing scaleup to support the sustainability goals of global fashion and design companies. "Many brands and retailers have demonstrated leadership in advocating for a circular economy, committing to use 100 percent recycled or sustainably sourced materials by 2030," the press release said.

The joint venture – PurFi Arvind Manufacturing India (PAMI) – would activate ten production lines over the next four years, constructing a state-of-the-art textile circularity facility in Gujarat, India. "The site will launch operations with 3,500 metric tons plus a secondary line of 5,500 tons of rejuvenated fiber capacity annually, leveraging PurFi's proprietary technology to convert textile waste into fibers. Designed with scalability and efficiency in mind, the facility has the capacity to expand to ten large production lines over the next three years to meet the growing demand from global brands and retailers."

"We are committed to enabling leading brands and retailers to provide their customers with the best combination of fashion, quality, price, and sustainability," Joy Nunn, Chief Executive Officer of PurFi Global, was quoted. "Our ability to meet global demand for virgin-like rejuvenated fibers is unparalleled and is made possible through decades of innovation and a robust intellectual property portfolio. We have proven experience in transforming textile waste through our

The Companies and the Technology

PurFi Global has been working for more than twenty years with leading global brands to deploy its pioneering fiber rejuvenation technology, which produces high-quality rejuvenated fibers. The process begins with the collection and automated sorting of textile waste, followed by the removal of elastomers that would otherwise render the fabric waste unusable. PurFi's proprietary technology concludes with reverse spinning to create rejuvenated fibers. "This advanced process is applicable to a wide range of materials, including cotton, viscose, aramids, silk, linen, and many others, producing fiber qualities that match those of virgin materials," the company underlined. "This unique combination of scalability and performance ensures manufacturers and brands can confidently integrate sustainable materials into their supply chains."

PurFi's proprietary and proven closed-loop manufacturing process and solution would encompass "multiple patents, over 150 registered process Trade Secrets and over 700 proprietary process recipes which have also been registered globally as Trade Secrets that relate to Textile Rejuvenation, Sourcing and a system that tracks the waste from origin to end product". Over the past two decades, its technology has been used to process and repurpose textile waste for customers worldwide. The company has offices and operations in Tulsa, Oklahoma (USA), and Waregem, Belgium. The Belgian facility was established in 2019 and is a joint venture with the Concordia Textiles Group.

Arvind is a textile-to-retail conglomerate focusing on textiles, apparel, advanced materials, environmental solutions, telecom, and omnichannel commerce. Arvind Limited is an integrated solutions provider in textiles with strong fiber-to-fashion capabilities and also a "design powerhouse" implementing innovative concepts and generating intellectual property. The joint venture PurFi Arvind Manufacturing India (PAMI) was established in 2024 and is based in Gujarat, India. It combines the patented technology of PurFi Global with Arvind Limited, a company renowned for its manufacturing innovation. The joint venture leverages the strengths of both entities to transform textile waste into high-quality, circular fibers. The Gujarat facility exemplifies the shared vision of integrating sustainability into the fabric of the textile industry.

purfi.com, purfiglobal.com, arvind.com

Photo: Boer Group

manufacturing sites in the U.S., along with an established joint venture, PurFi Manufacturing Belgium, which is at the forefront of textile upcycling on a global level with more than five years of rejuvenated fiber and fabric production." With the significant commitment of major brands and retailers to purchase the rejuvenated fibers and the facility construction in India underway, the company would meet the increasing demand from brands and manufacturers. According to Punit Lalbhai, Vice Chairman of Arvind Limited, both

companies share a common value system committing to address the issue of textile waste "while advancing sustainability goals". This partnership would provide an innovative solution to tackle textile waste "and also strengthens our commitment to being 'Fundamentally Right'". The circular economy would be increasingly seen as essential for the future of the textile industry. "By tackling textile waste, we are paving the way for a systemic shift that will benefit consumers, producers, and the planet."

FORNNAX STARTS CONSTRUCTION OF NEW PLANT IN INDIA

In February this year, Fornnax Technology – a leading name in India's recycling equipment manufacturing sector – achieved a significant step regarding expansion. The groundbreaking ceremony signals the start of construction for its 23-acre manufacturing site in Gujarat, India.

The manufacturer, specializing in high-capacity and heavy-duty recycling equipment such as shredders and granulators, is set on a "strategic path to strengthen its foothold in both Indian and global markets, aspiring to become a global leader in the recycling industry". As underlined by the company, the new facility is poised to be among the largest in the world, aiming to produce approximately 250 machinery units annually by 2030. The foundation stone for this project was laid by Mr. Jignesh Kundaria, CEO and Director, alongside Mr. Kaushik Kundaria, Director of Fornnax. The event was attended by key leadership members and company staff from various departments, marking the beginning of a new chapter for the company "as it aims to meet the growing global demand for robust and reliable recycling equipment." According to Jignesh Kundaria, with the produced equipment Fornnax intends to address various waste categories such as tires, municipal solid waste (MSW), cables, e-waste, aluminum, ferrous metals, and more. "This facility will not only bolster our global presence but also significantly contribute to India's goal of achieving net zero emissions by 2070 while driving economic growth. We are confident that our advanced manufacturing of high-capacity and heavy-duty machinery and commitment to quality will meet the needs of our global clients seeking efficient recycling solutions."

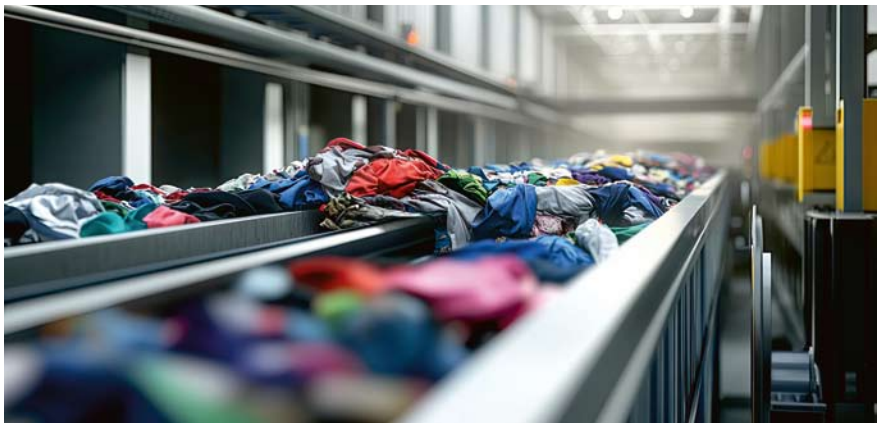
Photos: Fornnax

fornnax.com

Used Textiles in Europe:

SEPARATE COLLECTION FOR MORE RECYCLING

The European Waste Framework Directive requires all EU member states to set up separate collection systems for used textiles from 2025.



The European Waste Framework Directive is part of the implementation of the "EU Strategy for Sustainable and Circular Textiles". According to the European Union, this strategy addresses the production and consumption of textiles, whilst recognizing the importance of the textiles sector. "It implements the commitments of the European Green Deal, the Circular Economy Action Plan, and the European industrial strategy."

Textiles are the fabric of everyday life – in clothes and furniture, medical and protective equipment, buildings and vehicles. "However, urgent action is needed as their impact on the environment continues to grow. EU consumption of textiles has, on average, the fourth highest impact on the environment and climate change, after food, housing and mobility. It is also the third highest area of consumption for water and land use and fifth highest for the use of primary raw materials and greenhouse gas emissions," the EU Commission stated on its homepage. The strategy would look at the entire lifecycle of textile products and proposes coordinated actions to change how the Europeans produce and consume textiles. Its goal is to create a greener, more competitive textile sector that is better equipped to withstand global challenges.

The Commission's 2030 vision for textiles is that

- all textile products placed on the EU market are durable, repairable and recyclable, to a great extent made of recycled fibers, free of hazardous substances, produced in respect of social rights and the environment;
- "fast fashion is out of fashion" and consumers benefit longer from high quality affordable textiles;
- profitable reuse and repair services are widely available;
- the textiles sector is competitive, resilient and innovative with producers taking responsibility for their products along the value chain with sufficient capacities for recycling and minimal incineration and landfilling.

Relating thereto is a forward-looking set of actions. The Commission will

- "Set design requirements for textiles to make them last longer, easier to repair and recycle, as well as requirements on minimum recycled content;
- Introduce clearer information and a Digital Product Passport;
- Reverse overproduction and overconsumption, and discourage the destruction of unsold or returned textiles;

The Textile Waste Quantity is Huge

As estimated by the European Environment Agency (EEA), around 6.95 million tons of textile waste was generated within the European Union in 2020. "This corresponds to around 16 kilograms per capita, three quarters of which (11.6 kg) was disposed of as residual waste and thus largely incinerated," Messe Frankfurt's Texpertise network referred to the corresponding EEA report. The major share, 82 percent of all textile waste, was post-consumer waste, which came from consumers. "The rest came from textile production or unsold textiles, referred to as pre-consumer waste. So far, the EEA only has minimal data on this. An estimated four to nine percent of all textile products placed on the market in Europe are destroyed before their intended use," the Texpertise network wrote. According to the European Parliament, clothing and footwear alone account for 5.2 million tons of waste, equivalent to 12 kilograms of waste per person every year. "It is estimated that less than one percent of all textiles worldwide are recycled into new products."

texpertisenetwork.messefrankfurt.com/frankfurt/en/about.html
europarl.europa.eu

Photo: Liera / stock.adobe.com

- Address the unintentional release of micro plastics from synthetic textiles;
- Tackle greenwashing to empower consumers and raise awareness about sustainable fashion;
- Introduce mandatory and harmonized Extender Producer Responsibility rules for textiles in all Member States and incentivize producers to design products that are more sustainable;
- Restrict the export of textile waste and promote sustainable textiles globally;
- Incentivize circular business models, including reuse and repair sectors;
- Encourage companies and Member States to support the objectives of the strategy."

environment.ec.europa.eu/strategy/textiles-strategy_en

Examples of initiatives

Of course, recycling plays an important role: In 2020, the European project "New Cotton" started; it ended in March 2024.

As reported by CORDIS, the information provider about EU Research & Development projects, the textile industry generates 1.2 billion tons of CO_2 per year since huge quantities of textile waste are landfilled or burned. "However, existing solutions cannot resolve the problem, and there is a lack of feasible alternatives in the market. As the production of textiles is expected to rise by 63 percent by 2030, the textile industry has agreed with government institutions, environmental organizations, and consumers to move towards sustainable production and consumption."

The EU-funded "New Cotton" project aims to introduce cellulose carbamate technology, which will enable the transformation of textile waste into cost-effective, cotton-like fibers with enhanced qualities. The technology, based on the technology pioneered by Infinited Fiber Company in Finland, could process cotton-rich textile waste, including mixed fibers, and other cellulose-based waste feedstocks into new fibers and textiles.

The result of the project was as expected. By using advanced recycling technologies, sorted waste was transformed into high-quality fibers called "Infinna". These fibers, which are made entirely from 100 percent textile waste, were spun into yarns, woven into fabrics and crafted into garments, CORDIS gave account.

As reported on the project's homepage, twelve partners participated in the "New Cotton" project and each had "a unique role in defining a blueprint for circularity in textiles. Infinited Fiber Company created cellulose-based textile fibers (cellulose carbamate fibers) out of post-consumer textile waste. Frankenhuis and Xamk worked on the preprocessing and research for the pretreatment of textile waste. Manufacturers Inovafil, Tekstina, and Kipas used the regenerated fibers to produce yarns, woven fabrics, and denim respectively. RE-volve Waste, RISE, and Aalto University, collected and provide data, and conducted research and analysis. Fashion for Good lead on the communications to the industry. Design and manufacture of the fibers into clothing was done by companies in the H&M group and Adidas".

cordis.europa.eu
newcottonproject.eu

Sweden-based company The Loop Factory, founded in 2014, aims to provide a collaboration platform and foster an entrepreneurial culture for technology and material-driven innovations. Their goal is to help partners scale sustainable innovations more quickly. "With our expertise in innovation strategy, renewable materials, and unused resources, we design, test, and speed up innovative circular concepts together with our partners," one can read on the company's homepage. The firm works with local and global partners, "ranging from ambitious entrepreneurs and the public sector to global corporations".

The Loop Factory has published suggestions to prepare small and medium-sized enterprises (SMEs) for the new regulations. The recommendations include:

- "Data is extremely valuable within

AITEX will host this Year's Textile ETP Annual Conference

The event will take place on 13-14 May, 2025 in AITEX' facilities in Alcoy, Spain.

According to the European Technology Platform for the Future of Textiles and Clothing (Textile ETP), this year's focus will spotlight eco-design, and more specifically eco-design of clothing and consumer goods, as well as the sustainability of technical and smart textiles. The event will also be combined with the annual General Assembly of the Textile ETP. The European Technology Platform for the Future of Textiles and Clothing offers several membership options for companies, researchers, and other textile professionals.

textile-platform.eu/news/save-the-date-textile-etp-annual-conference-2025
aitex.es

EPR schemes. This includes data on sales volumes, geolocation of materials and products, accurate location inventory, and evidence supporting the impact of sustainability.
- Relationship management with producers and customers is essential to collecting all this data.
- Investigate opportunities to extend the product life or handle unsold goods – for example, repair, redesign, rental, renovation, second-hand, recycling, etc.
- Optimize material consumption in production and products.
- Design for circularity – for example, modular design.
- Oversee current environmental claims in marketing and set up a strategy for verifying the claims."

loopfactory.se

CHINA'S FIRST AI-POWERED HYPERSPECTRAL OPTICAL SORTER FOR MIXED TEXTILES

This year, Chinese DataBeyond Technology, a high-tech company specializing in AI and optoelectronic integration-based intelligent sorting equipment, has launched the country's first "AI-powered hyperspectral optical sorter for blended fabrics". The new machine integrates – according to the information – advanced artificial intelligence algorithms with hyperspectral recognition technology. "This breakthrough successfully addresses the long-standing challenges in the sorting of blended fabrics, marking a pivotal milestone in DataBeyond Technology's efforts to drive transformation and upgrades in the textile recycling industry." a press release said. The sorting of blended fabrics is a problem for the textile recycling industry, the company described the situation that is similar to the circumstances in many countries worldwide. "Blended textiles are made from a mix of various materials with complex and uneven distribution, making it difficult for traditional sorting methods to efficiently and accurately separate these materials. As a result, a large portion of blended fabric waste is either incinerated or landfilled, causing significant resource wastage and environmental damage." In response to this challenge, DataBeyond Technology developed the "AI-powered hyperspectral sorter for blended fabrics," enabling precise separation of textiles containing multiple material components.

The company is convinced that this technology provides a solution for the efficient sorting and recycling of blended fabrics. The developed novel instrument realizes:

- Precision Sorting: The sorter is equipped with hyperspectral sensors that capture 256 spectral bands, allowing for full-spectrum recognition of textile waste. It can accurately sort textiles with 30-80 percent polyester content, nylon content, spandex content, and cotton content, achieving a sorting accuracy rate of up to 99 percent. This provides high-quality raw materials for downstream chemical recycling processes.
- Flexible Adaptability: In response to the ever-changing market conditions, the sorter can be easily adjusted to meet customer needs. It allows for flexible switching between sorting targets, facilitating efficient matching with downstream processing requirements, and significantly increasing the resource value of blended fabric waste.

Screenshot: Video DataBeyond Technology

"The release of the 'AI-powered hyperspectral sorter for blended fabrics' marks a historic step forward in the recycling of textile waste," the Chinese firm emphasized. "This cutting-edge technology will enable the recycling industry to unlock greater value from blended textile waste, opening new profit opportunities for the textile recycling sector and accelerating the arrival of a new era of smart recycling in the industry."

databeyond.com

HMD AND ROKBAK OFFER FLEXIBLE FINANCING SOLUTIONS FOR WEST AFRICA

Rokbak has announced a new partnership with HMD, which brings flexible financing options supported by export credit agencies and private risk insurers for projects in West Africa.

A Rokbak RA40 hauler operating in a quarry environment

Photo: Rokbak

Since June 2024, when West African equipment dealer HMD officially introduced the Rokbak brand to Nigeria, Ghana, Senegal, Benin, Guinea, and Côte d'Ivoire, the articulated dump trucks RA30 and RA40 have proven a strong fit for the region's challenging landscapes. "However, it is not just the haulers' robust design and fuel efficiency that are drawing attention – it is also the availability of attractive financing," the company emphasized. Through UK Export Finance (UKEF), the Swedish Export Credit Agency (EKN), and a network of private risk insurers, HMD customers could access competitive financing packages, designed to facilitate the purchase of Scottish-made articulated dump trucks from Rokbak – part of the Volvo Group – for large scale construction, infrastructure, quarrying and mining projects.

These flexible financing solutions would reduce the financial burden of fleet expansion with affordable interest rates, extended repayment periods, and structured payment plans tailored to meet the demands of West African operations. This support would be particularly valuable for projects requiring multiple articulated dump trucks or complete fleet solutions, allowing growing businesses to enhance their capabilities with high-quality equipment confidently.

Driving growth across West Africa

As reported, the offer of financing backed by export credit agencies and private risk insurers is one element of Rokbak's long-term growth strategy in West Africa together with its dealers. Africa's construction market is currently valued at 58.42 billion US-Dollar and is projected to grow to 74.81 billion US-Dollar by 2029, the company underlined. "Notably, West Africa's construction sector is witnessing significant expansion, fueled by rapid urbanization, infrastructure development, and thriving mining activities. With a focus on strengthening local partnerships, increasing brand visibility, and providing operator-training programs, more and more contractors in the region will be able to benefit from the RA30 and RA40 haulers' robust and reliable performance."

rokbak.com

Compact and Newly Invented:

THE HAMMEL-SHREDDER TYPE VB 850 DK

HAMMEL Recyclingtechnik GmbH, based in central Germany, is a manufacturer of pre-shredders and secondary shredders and complete processing systems that have been sold worldwide from Bad Salzungen in Thuringia since 1996.

HAMMEL pre-shredder VB 850 DK – processing of aluminium

The HAMMEL product range of pre-shredders contains five models, which are available as stationary electric or mobile diesel-powered versions. The second largest model is the HAMMEL shredder type VB 850 DK. The mobile version is powered by a Cummins STAGE 5 diesel engine with approx. 525 HP. With the optimised drive concept with a coordinated hydraulic system and a powerful 2-tower gearbox, the shredder is able to process large-volume and bulky input materials quickly and easily.

Thanks to the 2-shaft principle and multifunctionality, the shredding of wood waste (roots, stumps, pallets, logs, etc.) and other materials such as bulky and household waste, aluminum profiles and packaging, car bodies and light or mixed scrap is easy to carry out. It provides customers with complete flexibility in usage. The machine is equipped with a practical 'EASY To USE' control system, which allows different shredding programs to be selected depending on the material to be shredded. Clear text error messages on the color display enable quick solutions to be found for service and maintenance work. The HAMMEL VB 850 DK is self-driving via a track system and can be easily transported. The compact design with a transport width of only 2.5 m offers mobility advantages for road transport.

The long discharge conveyor with a discharge height of approx. 4,800 mm can be adjusted hydraulically, which enables a high stockpiling of the source material.

The shredder has already been in use for some time. Thanks to the company's innovative approach, the models are adapted and modified to meet market demands and customer requirements.

VB 850 DK reinvented – optimisations from HAMMEL

- Newly designed discharge conveyor with discharge height of approx. 5,000 mm
- Magnet can be moved parallel to the discharge conveyor (up to max. 500 mm between conveyor belt and magnet)
- Improved magnet position for optimum metal separation with higher discharge height
- Direct, maintenance-friendly belt drive
- Higher belt speed of approx. 3 m/s (infinitely variable)
- 2-wing front door for easy handling and cleaning
- New warning light system with various color functions

The modifications have already been implemented in the production and some machines are delivered to customers or are on demo tour. Visit the events and find out more about new machine developments and new ideas. Further information at:
hammel.de

Photos: HAMMEL Recyclingtechnik GmbH

New material handler with hybrid system for demanding scrap recycling: The SENNEBOGEN 850 G Hybrid

NEW SENNEBOGEN 850 G SERIES MATERIAL HANDLER WITH GREEN HYBRID SYSTEM

More economical, faster, more comfortable – these are the keywords to describe the new generation of material handlers from SENNEBOGEN. In the medium size class with an operating weight from 62 t, the versatile 850 in the G series has been relaunched and not only equipped with the new Maxcab including a new control system, but also enhanced with the Green Hybrid energy recovery system.

The G-series is the new benchmark in the medium size class of material handlers too. Particularly developed for demanding steel scrap handling and port handling, the SENNEBOGEN 850 can also be used in a wide range of applications, not at least due to its diverse equipment options with reaches between 17 and 21 meters. SENNEBOGEN's proven modular design principle also allows the new 850 G Hybrid to be configured according to customer requirements, including with undercarriage variants from stationary to mobile. Equipped with the new SENcon control system and the Green Hybrid recuperation system, the machine also proves to be extremely economical and efficient.

Maximum performance with great energy savings thanks to the Green Hybrid recuperation system

The new 850 G Hybrid combines impressive performance with state-of-the-art technology. The speed of the work functions – and therefore also the handling performance – has been improved and fuel consumption significantly reduced at the same time. A bonus for the environment and your wallet.

As part of a rightsizing, the new material handler now has a highly efficient 231 kW Stage V diesel engine, which runs at a standard speed of 1725 rpm. This not only reduces fuel consumption, but also the machine's noise emissions in the long term. Special eco settings and the optional fueling with HVO enable a particularly environmentally friendly operation. Large-dimensioned hydraulic valves and lines allow the best efficiency levels to be achieved and provide relief for the pump system, enabling the material handler to work in a particularly resource-saving and efficient manner.

The absolute plus in energy saving and efficiency is achieved by the Green Hybrid recuperation system integrated for the first time in this machine size. The energy

Photos: SENNEBOGEN Maschinenfabrik GmbH

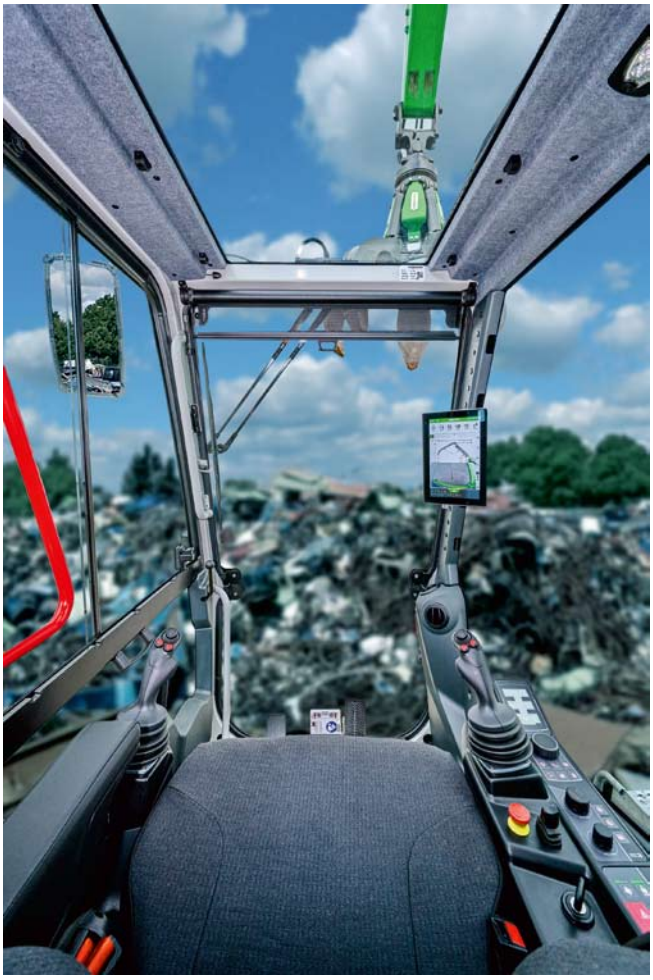
recovery system consists of a gas pressure accumulator installed in the rear of the machine and a third hydraulic cylinder on the boom. Similar to a tensioned spring, this system stores the energy generated when the boom is lowered in the nitrogen accumulator and releases it back into the lifting cylinders during the next lifting operation. This innovative energy-saving method has not only proven to be particularly reliable and safe for over 12 years, but also saves around 30 percent fuel – and therefore around 22 tons of CO_2 per year. At the same time, the machine's output is increased by 80 kW to a total system output of 311 kW.

More comfort and safety for the driver

The redesigned Maxcab installed in the 850 G Hybrid and the new-generation SENcon control system launched at bauma leave nothing to be desired for the driver. The standard cab elevation has been significantly stabilized by the centrally articulated cab lift cylinder and increased to 2.80 meter (m), so that a comfortable viewing height of 6.10 m is achieved. An optional height of 6.80 m is even possible. The Maxcab impresses with a completely revised interior design that meets the highest standards of ergonomics and comfort. High-quality materials and a well thought-out interior design create a pleasant working environment, while the continuous large windows ensure a generous feeling of space. The new and powerful automatic air conditioning system and a total of ten built-in air vents ensure an optimally tempered working environment regardless of the weather.

The heart of the new Maxcab is the 10-inch touch display, which offers quick access to all important functions. In addition, the most important functions can be assigned

The new SENNEBOGEN 850 G Hybrid impresses in terms of energy efficiency and handling capacity



Equipped with the revised Maxcab comfort cab and the brand new SENcon control system of the latest generation, the SENNEBOGEN 850 G Hybrid allows fatigue-free working and maximum machine availability

to buttons and switches. That is because the machine can be personalized to the highest degree for the respective operator or a specific type of application as part of the driver profiles. The driver is also supported by intelligent assistance systems that not only prepare the machine for (partially) automated operation in the future, but also ensure optimized performance and increased safety when handling the machine.

Optimization potential and cost savings for the fleet operator

The new SENcon control system also increases the communication capability of the material handler, which is not only beneficial for the operator, but also for the machine owner or fleet operator. On the one hand, the connection with the SENNEBOGEN telematics system SENtrack provides the operator with a large amount of data, which allows him to derive analyses – for example on performance or machine

condition. In addition, concrete cost savings can be realized by avoiding on-site customer service visits. Networking with the SENNEBOGEN troubleshooter helps the operator to rectify errors independently. On the other hand, customer service can connect to the machine and offer solutions remotely. Software updates can also be installed remotely. An important function that saves time and money and increases machine availability.

Further information on the new SENcon control system can be found here: https://www.sennebogen.com/news/news-presse/sencon-sennebogen-steuerungssystem-auf-neuer-technologie-plattform

On display at bauma 2025 in Munich

The new 850 G Hybrid will be presented to trade visitors at this year's bauma in Munich: as one of ten machines at the SENNEBOGEN booth in the outdoor area FM.712, Messe München.

As with all machines in the new SENNEBOGEN G series, the robust and clear machine design and easily accessible maintenance points prove to be particularly valuable in terms of ease of servicing, as they ensure reliability and safety in day-to-day use of the machine.

GLASS RECYCLING WITH ARTIFICIAL INTELLIGENCE

The new Ecoglass equipment from PICVISA incorporates Artificial Intelligence (AI), enhancing glass sorting and optimizing the recycling process. Spain-based PICVISA, a leading company in optical sorting solutions for recycling and waste management, integrates artificial intelligence (AI) in its Ecoglass system, the company's optical sorting system for glass treatment in recycling plants. "This technology enables more precise separation of glass waste, increasing the recovery of recyclable material and minimizing waste," the technical-based firm assured.

Glass is 100 percent recyclable and can be reused indefinitely without losing quality. However, only 78 percent of glass packaging is recycled in Europe, according to the European Container Glass Federation (FEVE). This means that millions of tons end up in landfills or are wasted in sorting processes each year. "The challenge lies in separating impurities such as ceramics, porcelain, or plastics, as well as identifying dark-colored glass, which is often excluded from the recycling stream. With the incorporation of AI in Ecoglass, recovery rates can be increased, and the quality of recycled glass can be improved, minimizing the amount of discarded material", the internationally active Spanish provider of technical solutions underlined.

As stated by PICVISA, the key advantages of the new version include:

- Enhanced recovery of recyclable glass. AI reduces the loss of valuable material, helping to increase recycling rates and preventing more glass from ending up in landfills.
- Advanced detection of dark-colored glass. Through intelligent image processing, Ecoglass can identify and accurately classify dark-colored glass, which has traditionally been difficult to recover.
- Morphological identification of contaminants. AI distinguishes materials not only by color but also by shape, separating elements such as ceramics, plastics, or metals that can affect the quality of recycled glass.
- Reduced manual intervention and greater energy efficiency. AI optimizes decision-making in sorting, reducing the need for human intervention and minimizing equipment wear, leading to lower operational and maintenance costs.
- Self-learning and continuous adaptation. Thanks to the self-learning capabilities of its algorithms, the system improves its performance over time, adapting to new waste compositions and increasing its precision.

picvisa.com

Photo: PICVISA

MODERN SEPARATION EQUIPMENT INCREASES FERROUS AND NONFERROUS RECOVERY RATES FOR MSW/MRF FACILITIES

The business of collecting, processing and recovering valuable material, both ferrous and nonferrous, has spurred a wealth of mixed waste material recovery facilities (MRFs) to install the latest equipment to "mine" for the highest-grade product in municipal solid waste (MSW). A significant issue in the operation of the MRF is the choice between mechanical or manual separation techniques. Older, traditional MRFs rely heavily on manual sorting, which is both expensive and inefficient when handling large volumes of material.

Despite the trade-offs between labor and capital costs, most long-term analyses show that automated processing is more cost effective than manual sorting. Automating the sorting process also has the advantages of reducing the health and safety risks that result from workers physically handling materials.

That is why many MRFs now employ total metal recovery systems to separate, sort and recover metal. Municipalities today utilize some of the most innovative solutions when it comes to separation of valuable metals from the mixed waste stream.

Allocating dollars for equipment technology helps local waste recyclers become efficient, low-cost scrap processors since the newer equipment recovers higher levels of marketable grades of metal and plastics but also saves on energy consumption. Research and development teams at high-tech manufacturers such as Eriez are responsible for many recycling industry product breakthroughs that decrease the cost of sending unrecovered metals and plastics to landfills, recycle valuable materials and generate profits for MRFs around the country. These equipment breakthroughs now maximize recovery – in as small of a footprint as possible – while offering efficiency and safety benefits at the same time.

Technology turns into payback

With the latest in magnetic separation equipment, both mixed waste and single stream MRFs can recover nearly 95 percent of the metals passing through their yards instead of sending those metals to the landfill. These facilities save money and enjoy an ongoing revenue stream from metal reclamation by sending less to the landfill. Technological advancements in separation equipment allow recyclers to recover valuable ferrous and nonferrous metals less than 1-inch (2.54 cm) in diameter from the fines waste stream. That means reducing the amount of waste slated for the landfill and reclaiming thousands of pounds of metal each day.

Eriez works closely with complete systems providers (OEMs) when recommending metal separation equipment. Technicians consider expected capacities, material composition ratios, material size and other variables, which factor into the type of equipment needed for any MRF. The processing and transformation of recyclables into useful material is accomplished starting with various separation equipment within the facility. For example, Suspended Cross-Belt Magnets, Drum Magnets and AIP Magnetic Pulleys are used to recover ferrous metals. An Eddy Current Separator (ECS) is used to recover aluminum cans (UBCs) and other nonferrous metals. Recent Eriez Eddy Current testing at a MRF in Florida showed UBC recovery rates in excess of 99 percent.

Separation equipment works in tandem for total recovery

A typical MRF utilizes a drum feeder to feed material into the system. These facilities then use a series of

Photo: Eriez

disc screeners to separate newspaper, cardboard and other papers. The separation continues with an Eriez Suspended Self-Cleaning Magnet to recover ferrous material, like tin-plated steel cans. The magnet is suspended either cross-belt (perpendicular to the product flow) or inline (parallel) above the product flow.

Self-cleanings magnet systems, such as those offered by Eriez, feature a rubber conveyor belt, bearings, rugged but simple continuous channel frame, adjustable take-ups and shaft-mounted reducer with V-belt coupling to a totally enclosed fan-cooled (TEFC) motor.

Magnetic pulleys and magnetic drum separators speed reclamation

Smaller-sized metal can be recovered downstream with a magnetic pulley, sometimes called a Permanent Magnet Axial Interpole (AIP) Pulley. These pulleys transform a belt conveyor into a powerful self-cleaning magnetic separator. Ferrous material traveling down the belt conveyor enters the pulley's magnetic field as it reaches the end of the conveyor. The tramp iron is attracted and held to the belt until it reaches the underside, passes out of the magnetic field and is separately discharged. Non-magnetic material is discharged over the pulley at its normal trajectory.

Multiple combinations of diameters from 8 to 36 inches and belt widths from 8 to 60 inches are offered by Eriez. MRFs typically use these magnetic pulleys as a secondary ferrous recovery tool when hard-to-separate ferrous materials are involved.

Heavy-Duty Magnetic Drum Separators are options for high volume ferrous separation. These powerful magnetic drums feature a non-magnetic exterior shell that is driven around a fixed magnetic element. Ferrous metals are drawn out of the waste stream by the powerful magnetic element and held against the revolving shell. The ferrous metal is released when it reaches a discharge point beyond the magnetic field.

Permanent Deep Field Magnetic Drums are found in many MRF operations. Certain Eriez models contain Rare Earth permanent magnets and bucking poles to project a deep magnetic field capable of recovering ferrous from distances of up to 15 inches. The drum shell that contacts the ferrous material is made of heavy manganese steel and is abrasion resistant for extending operating life.

Nonferrous recovery continues with eddy current separators

The remaining material stream passes over Eddy Current Separators that further separate the nonferrous materials, especially aluminum cans (UBCs). As aluminum cans or other nonferrous metals pass over the drum, the alternating magnetic field creates eddy currents that repel the material away from the conveyor. While other materials drop off at the end of the conveyor, the nonferrous metals are propelled over a splitter for separation.
Eriez' most recent addition to its line of Eddy Current Separators features an eccentric magnetic rotor for separation of nonferrous metals at MRFs. The unit, the RevX-E Eddy Current Separator, is designed with an eccentrically mounted magnetic rotor within the nonconductive shell.

This eccentric rotor concentrates its eddy current forces into a separation zone at the end of the belt. By focusing its field, this design protects the equipment from ferrous material in the flow. The eccentric rotor design reduces long-term wear caused by ferrous build-up. For coarse materials greater than one inch, the RevX-E Model LT2 provides excellent separation with a deep field rotor designed for maximum trajectory. For nonferrous fines measuring less than one inch, Model ST2 with its high-frequency rotor configuration concentrates the eddy currents closer to the belt's surface, improving separation of this difficult material.

Also part of MRF operations are vibratory feeders and sensor sorting

equipment. Brute Force Feeders and Electromagnetic Feeders with their heavy-duty construction are recommended for multiple applications.

Eriez' heavy duty line of Brute Force Feeders provide a cost-effective means to feed or screen large volumes of solid waste material where limited minimum feed rate adjustability is required. These units are incredibly fast, durable and reliable. They operate quietly and efficiently. Multiple sizes are available and Eriez can customize trays to satisfy customers' specific requirements. Brute Force Feeders are an ideal choice for spreading materials across the working width of separation equipment.

This article was written by Chris Ramsdell, Product Manager – Recycling Equipment at Eriez, Erie, PA. Contact Ramsdell at +1 814-835-6000 or email at cramsdell@eriez.com. Visit eriez.com for documents, product spec sheets and informational material for the equipment featured in this article.

Despite the improvement in recovery, MRF operators still know intuitively that they continue to miss metal as they watch potential profits go to the landfill. That's where some waste recycling operations have installed the Eriez Metal Loss Monitor (MLM) to help confirm those losses. The MLM is typically positioned on the final waste stream in these facilities. The MLM continually scans the residue stream for metal that has escaped the process and headed for landfill disposal. The MLM takes the guesswork out of metal recovery, giving users the ability to observe the performance of their systems for variations over time. With the MLM in place, maintenance issues and adjustment requirements are quickly spotted when losses spike. The data gathered also offers beneficial insight needed to properly evaluate whether additional or different separators should be used to reduce metal losses.

eriez.com

XRF TECHNOLOGY FOR A BETTER METAL SORTING

Redwave, the center of excellence for recycling and sorting technologies within Austria-based BT-Systems GmbH, offers a new solution for the metal recycling industry with its latest generation of REDWAVE XRF sorting machines.

By integrating the spectral analysis technology into this sorting system, the company is unlocking new opportunities for metal recycling, particularly in aluminum recovery, the provider is convinced. "This system enhancement now enables the processing of a wide range of material streams, including Zorba, e-scrap, used beverage cans (UBCs), IBA, and mixed metal fractions, while ensuring the accurate identification of aluminum alloys with high purity and quality."

Flexibility and cost-effectiveness

BT-Systems GmbH's REDWAVE XRF sorting machines have long been used successfully for separating aluminum and heavy metals such as copper, zinc, brass and lead, the company gave account. "Until now, aluminum could only be separated based on accompanying elements like copper or zinc, making the precise identification and sorting of various aluminum alloys challenging. These technological limitations are now a thing of the past." By combining spectral analysis with XRF fluorescence technology in one Redwave sorting system, a broader spectrum of material composition could now be analyzed. "Compared to other technologies, this system is equally effective with materials that have contaminated surfaces, making it suitable for nearly all materials," the company emphasized. "This advancement opens up entirely new possibilities in aluminum separation and significantly improves material purity and recycling quality."

redwave.com
bt-systems.at

REDWAVE XRF with spectral analysis

Photo: Redwave

AUSTRIAN TECHNOLOGY FOR INDIAN RECYCLER ALPHA ECOPLAST

In mid-October 2024, Indian company Alpha Ecoplast Pvt. Ltd., a member of Alpha Group, commissioned a Starlinger recoSTAR PET 215 HC iV+ PET bottle-to-bottle recycling system in its new facility near Kosamba, Gujarat State (India).

According to the Austrian machinery manufacturer, the recycling plant features Starlinger's biggest single extruder size, reaching an output of up to 2,700 kilograms of bottle-grade pellets per hour. It has a pre-drying unit, high-vacuum degassing, a continuous filtration system, and an underwater pelletizer. "The viscoSTAR SSP reactor installed at the end of the recycling process further increases the viscosity and level of decontamination of the produced pellets. The rPET pellets produced on Starlinger's recoSTAR PET recycling lines have been approved for food-contact applications by national and international authorities such as the FDA (USA) and EFSA (EU), as well as by important brand owners in the food and beverage sector."

Alpha Ecoplast recycles domestically collected post-consumer PET bottles and produces bottle-grade rPET pellets as well as food-grade suitable rPET flakes, which it supplies to the Indian and international markets. To meet the rapidly growing demand on the market, Alpha Ecoplast already placed an order for a second Starlinger PET bottle-to-bottle recycling system of the same size, the Austrian firm informed.

alphaecoplast.com
starlinger.com

The Starlinger recoSTAR PET 215 HC iV+ PET bottle-to-bottle recycling system installed at Alpha Ecoplast's new recycling facility, which went operational in August 2024 and has a recycling capacity of more than three billion plastic bottles per year

Photo: Alpha Ecoplast

RACE: RECYCLING AND COMPOUNDING EXPO

May 14 – 15, 2025, Mumbai (India)

According to the organizers, the launch of the RACE: Recycling and Compounding Expo comes at a time of rapid growth and development for both plastics compounding and plastics recycling in India. "The exhibition will feature leading industry players and focused conference programs, offering attendees the opportunity to learn about the latest technologies and trends, compare suppliers, and make valuable connections."

RACE would build on the success of the Compounding World and Plastics Recycling World Expos, held in Europe and America over the past six years, and on the RACE plastics recycling conferences, held in India since 2019.

The event is being organized by Mumbai-based Polymerupdate in conjunction with UK-headquartered AMI (Applied Market Information Ltd.). Polymerupdate is a provider of information and data for the polymer market and the organizer of the RACE plastics recycling conferences. This collaboration would bring together "the expertise and resources of both companies to deliver an exceptional experience for exhibitors and visitors alike", the British partner underlined.

plasticsrecyclingexpoindia.com
polymerupdate.com
amiplastics.com

TEXTILES RECYCLING EXPO

June 4 – 5, 2025, Brussels (Belgium)

According to the organizers, Applied Market Information Ltd (AMI), this exhibition is the first of its kind, focusing specifically on solving the pressing issue of textile waste, including the recycling of fabrics, clothing, footwear, fibers and non-woven. This event will serve as a platform for industry leaders and stakeholders to come together to advance textile waste recycling. "Designed to foster collaboration and spark innovation, the Textiles Recycling Expo and its conference theatre are free to attend. This decision is aimed at attracting a large international audience from across the complete supply chain, including leading recyclers, waste managers, textile manufacturers, clothing suppliers, retailers, and other stakeholders." As reported, the Textiles Recycling Expo is supported by leading industry organizations, including EuRIC, Fedustria, ReHubs, Textiles Recycling Association and Plastics Recycling World.

textilesrecyclingexpo.com

GLOBAL RECYCLING – The Magazine for Business Opportunities & International Markets

11. Volume 2025
ISSN-Print 2365-7928, ISSN-Internet 2365-7936

Publisher:
MSV Mediaservice & Verlag GmbH
Gottlieb-Haug-Str. 2, 89143 Blaubeuren, GERMANY
Tel.: +49 (0) 73 44 / 928 0 320, Fax: +49 (0) 73 44 / 928 0 328
E-Mail: msvgmbh@t-online.de
Responsible for the Content: Oliver Kürth

Editor-in-Chief:
Brigitte Weber, Tel.: +49 (0) 26 43 / 68 39, E-Mail: weber@msvgmbh.eu

Advertising Sales:
Diana Betz, Tel.: +49 (0) 73 44 / 928 0 319, E-Mail: betz@msvgmbh.eu
Advertisement Price List No. 42 currently valid.
Media Planner 2025: global-recycling.info/media-kit

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• aus 100 % Altpapier
RG4
Dieses Druckerzeugnis ist mit dem Blauen Engel ausgezeichnet.

Publication Frequency:
The magazine appears three times a year. If the magazine cannot appear due to force majeure, such as a strike, this shall not give rise to any claims against the publishing house. Attributed contributions do not necessarily represent the opinion of the editors. For unsolicited sent-in manuscripts and photo material the publishing house does not assume any liability. No part of this publication may be reproduced, included in online services and the Internet or transmitted by any means without written permission of the MSV GmbH. All information have been compiled with the greatest care, however, no responsibility is taken for the correctness.

Printers:
Bonifatius GmbH, 33100 Paderborn

Closing for the Next Issue:
2/2025 – 10.06.2025 (Release Date: 08.07.2025)
Topics: Software/Digital Solutions, Industry 4.0, AI, IoT, Plastic Recycling, Paper Recycling, Textile Recycling, Chemical Recycling (Scandinavia-Special)
3/2025 – 09.09.2025 (Release Date: 08.10.2025)

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