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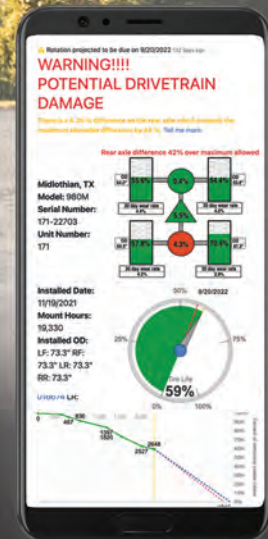
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Nanci Schuld and the team at FE Trading Group specialize in helping suppliers and mills solve their logistical problems.

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ON THE COVER
NANCI SCHULD, CO-FOUNDER, PRESIDENT
AND CHIEF OPERATING OFFICER OF
FE TRADING GROUP
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Before installing a 40,000-square-foot Tuff Mix concrete tipping slab in 2011, Gerdau Ameristeel, Petersburg, Virginia, was replacing its concrete slab every 18 months. The plant needed heavy-duty concrete that could stand up to considerable abuse and the occasional 200,000-pound wheel load. By 2018, that pad had no cracks, displacement or deformation, delivering more than four times the longevity and saving Gerdau millions of dollars in replacement costs and lost production.

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Scrap pads (A) often deteriorate within ~18 months before requiring replacement, while Tuff Mix slabs (B) can last upwards of 10+ years.



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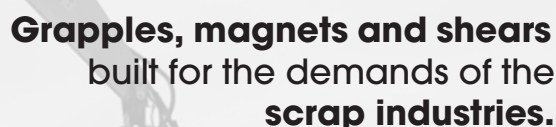


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ANOTHER INDUSTRY LEADER PLACES ITS TRUST IN **GBALERS**

Marin Sanitary Service upgrades for higher production and continued reliability.

In the 1950s, Joseph John Garbarino started working at Marin Sanitary Service, San Rafael, California. Eventually, he bought out five of the seven partners and took control of the company with his cousin, also named Joe Garbarino. Who knew that Marin Sanitary and its subsidiaries would continue to revolutionize the waste and recycling industry more than seven decades later, but it is.

With an extensive range of services that includes dual-stream residential recycling collection, C&D Recycling, commercial and household municipal solid waste (MSW) collection and green waste recycling, the family of companies remains a true pioneer all while recycling some 67 percent of the materials it collects and processes at its facilities.

John Oranje, vice president of facilities for Marin and Joseph's son-in-law, says part of the company's success is selecting the best possible equipment for the job. "When I joined the company in 1990, we had pretty rudimentary systems and equipment, but that's the way recycling was back then. As equipment and technology have evolved, we've done our homework to secure the best possible equipment."

Ten years ago, that entailed the purchase of two Commander auto-tie balers from GBaler USA. "When they installed one of the machines in the area, GBaler invited me down to take

a look. I went with two of my mechanics, and we were very impressed. After a couple more visits, we bought two of them," says Oranje.

GBalers deliver

Those machines have been producing for the company ever since.

"We have an aggressive maintenance program here; we like to look after our equipment. But the truth is, these machines have required very little. I've run balers from a wide range of suppliers and never experienced the consistent reliability we've had with the GBalers."

Being a California-based company, export markets for recyclables are important. "Our previous baler struggled and was not able to make export bales. With the GBalers, we consistently maximize our weights for 40-foot containers," he says. "That's important. More important, however, is we're able to use the GBaler for everything."

Marin bales nearly everything imaginable through its auto-tie single-ram GBalers. That range of commodities includes PET, natural and colored HDPE, mixed ridged plastics, aluminum, UBCs, tin cans, OCC, office pack, mixed paper and high-grade fiber. The company has even baled carpet padding.

"The machines make beautiful bales," Oranje says. "We make weight for all materials, and the bales are tight and secure. For things like our plastics, we simply run an extra wire on the 1, 3 and 5 ties, and we're good. The bales have perfect integrity.



From left, Uriel Mendoza, Jonathan Oranje and John Oranje

"Because the machines are auto ties, we use black annealed wire, saving on wire costs," he continues. "They are also much faster than two-rams, which delivers consistently higher production for us."

Time for an upgrade

After 10 years of service, the two GBaler Commanders are in great shape but also fully depreciated. Marin needs added baling capacity, so the company has just upgraded to two GBaler Beasts. These 110,000-pound machines are high throughput auto-tie balers capable of baling 35 tons per hour of OCC.

"We've been so happy with the GBalers that we're upgrading to larger machines," Oranje says. "There are so many features on the GBaler that set it apart from other machines. Quality is built in from the ground up. That makes them easy to maintain and has given us extremely low operating costs. I don't see another baler company offering anything close."



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Uncertainty meets resiliency

As I write this, President Donald Trump has been in office 57 days. In that time, all previous exclusions and quotas that existed under the Section 232 tariffs on imports of aluminum and steel to the U.S. have been eliminated, meaning the tariff applies in full to these metals entering the U.S. as of March 12.

Additionally, Trump used the International Emergency Economic Powers Act to enact 25 percent tariffs on all goods from Canada and Mexico entering the U.S., saying the moves were designed to combat the threat to U.S. national security, including public health, posed by drug trafficking. Those tariffs applied

to most products entering the U.S., including recycled materials, as of March 4 after the president extended the original effective date of Feb. 1. However, the White House granted another one-month delay for tariffs on automakers with vehicles that comply with the United States-Mexico-Canada Agreement (USMCA) March 6, which was extended to all USMCA-compliant goods, including metals recovered for recycling, later that day.

The on-again-off-again nature of the tariffs has created uncertainty for U.S. recyclers and consumers of recyclable materials.

While many recyclers I've spoken to over this time say they are used to responding to changing market conditions, they add that the uncertainty accompanying the tariffs makes things especially challenging.

Nanci Schuld, CEO of FE Trading, the subject of this month's cover story, "The problem solver," starting on Page 36, says she loves a challenge, but the uncertainty created by the ephemeral nature of the tariffs are not the typical challenge she's used to.

"It's very hard to decipher what all the impacts will be when nobody is certain what will be tariffed and when," she says.

While Schuld says tariffs on new steel imported into the U.S. should increase demand and pricing for domestic steel, which should increase scrap pricing, as well, retaliatory tariffs could come into play, affecting demand for U.S. exports of recyclable materials.

But Schuld is a big believer in the resiliency of the industry, saying, "No matter what happens, it seems like everybody moves forward, and if we have to change course, we change course."

While the days and months ahead could prove uncertain and challenging for recyclers in the U.S. and their domestic and export customers, the industry has emerged from other challenging periods stronger and more determined. This likely is no exception. **RT**

“While the days and months ahead could prove uncertain and challenging for recyclers in the U.S. and their domestic and export customers, the industry has emerged from other challenging periods stronger and more determined.”



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1 What is different about the new STEINERT KSS | EVO 6.0 versus previous generations?

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2 What versions of STEINERT KSS | EVO 6.0 are available?

STEINERT KSS | CLI combines color detection, shape detection (3D laser) and an inductive sensor and is typically used in sorting wire (ICW) or other nonferrous metals with clean surfaces.

The STEINERT KSS | XT CLI adds X-ray transmission (XRT) to these data inputs and allows for improved sorting decisions in free magnesium, cast aluminum and wrought aluminum.

Both models will be available in 1.2-meter and 2-meter working widths.

The selection of STEINERT KSS sensor technologies also can be tailored to your specific sorting needs with its modular design.

There is a STEINERT KSS | XT CLI line at our Walton, Kentucky, office if you'd like to see your material stream processed in person.

3 Why is the STEINERT KSS | XT CLI the better choice for aluminum scrap refinement

than the STEINERT XSS T EVO 5.0?

While the latter offers XRT detection to sort by density, the STEINERT KSS | XT CLI offers three sensors in addition to XRT that allow for better purity and recovery on a wider range of infeed materials. For example, the ability to make a low-silicon wrought aluminum concentrate from zorba is a benefit to the KSS platform.

The additional sensors allow us to hit melt qualities that are not achievable with XRT alone, specifically from wider infeed specs.

4 How does using the STEINERT KSS | XT CLI EVO 6.0 contribute to improving metal recovery rates and reducing waste?

By employing four sensors and collecting more data on every piece of material, the sorting system can improve recovery and purity simultaneously. This reduces the need for rerunning material, improves premiums for customers and maximizes the value pulled from the material stream.

5 As global demand for high-purity scrap increases, how does this technology help recyclers stay competitive?

Market agility is high with this platform. The STEINERT KSS | XT CLI can switch seamlessly between twitch/zebra from zorba and cast/wrought from twitch and can place free magnesium as desired—all sorting needs from the zorba stream alone! This flexibility improves equipment usability and our customers' profitability as markets shift.



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From left: Director Kristin Richards, Illinois Department of Commerce and Economic Opportunity; Illinois Reps. Jay Hoffman, 113th District, and Nikki Budzinski, 13th District; Illinois Lt. Gov. Juliana Stratton; Illinois Gov. JB Pritzker; Greg Keown, president of Rolling & Recycling North America, Wieland; Jeff Byrd, vice president of Special Projects, Wieland; Illinois Rep. Amy Elik, District 111; Darren Carlton, mayor of East Alton, Illinois; Illinois Sen. Erica Harris, 56th District; and Eckhart Zimmermann, vice president of Global Engineering, Wieland

■ METALS

Wieland begins project to modernize Illinois facility

Wieland, a leading global supplier of copper and copper alloy products, has broken ground on a \$500 million modernization project at its East Alton, Illinois, rolling mill that will expand the site's capabilities, enhance operational efficiency and deliver higher quality and reliability standards, according to the company.

Wieland, based in Ulm, Germany, acquired the integrated brass mill in East Alton in 2019 when it purchased Global Brass and Copper Holdings Inc. (GBC), Schaumburg, Illinois. GBC produced sheet, strip, foil, rod, tube and fabricated metal components that were sold under the Olin Brass, Chase Brass and A.J. Oster brand names.

Wieland's modernization plans include adding a hot rolling mill the company says will enable it to increase and improve production of essential copper and copper alloy components. These components are crucial for domestic

manufacturers covering a variety of industries, such as automotive, defense and energy infrastructure.

"These enhancements will expand Wieland's future capacity and strengthen its position as a reliable, sustainable and high-quality domestic supplier to key U.S. manufacturing industries and customers," Wieland says in a news release announcing the investment.

Greg Keown, president of Rolling & Recycling North America at Wieland, says he is grateful for Gov. JB Pritzker, Deputy Gov. Andy Manar, Sens. Dick Durbin and Tammy Duckworth, Rep. Nikki Budzinski, the Illinois Department of Commerce and Economic Opportunity, East Alton Mayor Darren Carlton and Madison County for their help with the project.

"Wieland has become an integral part of the East Alton community, and I couldn't be more thrilled to celebrate their further investments in Illinois,"

Pritzker says in a statement. "This more-efficient and modern facility will be a beacon of the power of private-public partnership, innovation and understanding of the needs of the changing 21st century economy."

Wieland expects the project to be completed by mid-2028.

The company has a global network of more than 80 production sites, service and trading companies, offering a broad product, technology and service portfolio. From prototype to series production, Wieland develops solutions for automotive, aerospace, electronics, refrigeration, air conditioning and many other industries using high-performance copper materials.

"This investment positions Wieland as the undisputed leader in North American rolled products and underscores our commitment to the revitalization of American manufacturing," Wieland Group CEO Erwin Mayr says.



■ PAPER

ND Paper to restart paper machine in Wisconsin

After sitting idle for nearly a year, ND Paper, the U.S. division of Chinese containerboard producer Nine Dragons Paper (Holdings) Ltd., has revealed plans to restart PM 25 at its recycled paper mill in Biron, Wisconsin.

In late March 2024, the company laid off about 70 employees at the Biron site and consolidated operations to its other

paper machine, PM 26, while PM 25 took market-related downtime.

PM 25 was rebuilt in 2019 and converted from producing coated publication papers to produce recycled packaging grades. The machine currently produces recycled kraft, linerboard and corrugated medium, and ND Paper expects to restart PM 25 in the second half of this year, adding additional capacity to its existing recycled packaging product portfolio.

PM 26, meanwhile, was converted in 2022 from producing coated publication papers to recycled packaging grades.

The Biron mill first began producing paper in 1896, and after changing hands over the years, ND Paper acquired the facility in 2018.

The mill processes nearly 691.6 million pounds of old corrugated containers (OCC), 166,000 pounds of mixed paper and a little more than 6,100 pounds of double-lined kraft annually.

The recycled furnish is supplied by ND Paper's OCC pulping facilities. The first, installed in 2019, produces about 700 metric tons of pulp daily, and the second is a new line with a starting production rate of about 1,200 metric tons per day that is expected to ramp up to more than 2,000 metric tons per day, according to ND Paper.

"Biron has established itself as a reliable, quality producer in packaging grades," the Oak Brook, Illinois-based company says in a news release. "Adding the capacity of PM 25 back to the system will provide the ability to serve more customers with our breadth of products."

Photo courtesy of ND Paper

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■ PLASTICS

US plastic scrap imports reach record high in '24

Data from the U.S. International Trade Commission show the United States rewrote its own record regarding plastic scrap imports last year, led by polyethylene terephthalate (PET).

According to a recent report by Emily Friedman, the Houston-based senior recycled plastics editor at London-based commodities consulting firm ICIS, the U.S. remained a net importer of plastic scrap in 2024, bringing in a record 492,101 tons. More specifically, PET imports totaled a record 250,961 tons—a 23 percent increase over 2023.

At the same time, Friedman reports that PET scrap exports to Mexico reached a record high of 46,307 tons—an increase

of 32 percent over the previous year.

2024 trade data from the U.S. Census Bureau show U.S. imports of plastic scrap, which are noted by harmonized system (HS) code 3915, increased by 10 percent year over year.

Plastic scrap imports include items such as used bottles, purge, leftover pairings and flake.

“Throughout 2024, stagnant PET bottle collection volumes, paired with increasing bottle exports, led to a need for imported PET scrap material,” Friedman says. “This was further supported by the cost proposition of cheaper imported flake. ... As a result, recycled flake imports are seen as both a help and harm to the broader U.S. recycling market.”

According to the report prepared by Friedman, Canada remained the top exporter to the U.S. last year, followed by Thailand, Ecuador and Japan.

Conversely, the report says other U.S.

plastic scrap imports, such as polyethylene (PE), polystyrene and polyvinyl chloride, remained “steady,” with PE imports falling 1 percent. However, Canada and Mexico remained the largest exporters to the U.S. at 69 percent and 18 percent, respectively.

Additionally, Friedman writes that while total U.S. plastic scrap exports decreased 2 percent in 2024, exports of PET scrap, largely in bale form, rose 24 percent year over year. Mexico made up 57 percent of the 81,018 tons exported, followed by Malaysia (12 percent) and Vietnam (7 percent).

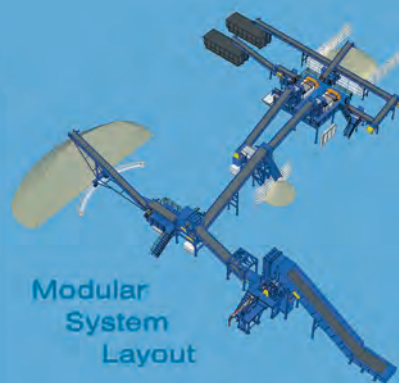
“This growing trade relationship is largely attributed to new capacity in Mexico, paired with strong local demand, which has elevated local bale prices,” Friedman writes of PET bale exports to Mexico. “Mexican recyclers have been purchasing U.S. PET bales as a lower-cost option with higher availability.”

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■ MUNICIPAL/IC&I

Cards Recycling, Total Environmental form strategic partnership

Arkansas-based companies Cards Recycling and Total Environmental have formed what they say is a strategic partnership aimed at driving innovation and efficiency in the state's recycling industry.

The companies will combine their strengths to deliver "enhanced solutions" for landfill diversion they say will create new opportunities for all municipalities, commercial and industrial businesses and residential customers.

Through this partnership, Cards and Total will use their existing infrastructure to process additional single-stream volumes at Cards Recycling's 14-ton-per-hour single-stream material recovery facility (MRF) in Springdale, Arkansas, while Total's recycling plants will be optimized for specialized fiber processing and other unique recycling opportunities.

"We are excited to collaborate with Total Environmental," Cards CEO Dustin Reynolds says. "This strategic partnership enables us to leverage our collective assets to deliver unparalleled recycling services that will meet customer demands and create more opportunities for businesses and residents.



We have made a significant investment in a state-of-the-art recycling operation that will foster both growth and further innovation in processing recycled waste streams."

According to Cards, this collaboration also provides both companies with the ability to offer more services to new markets, benefiting customers and communities in northwest and central Arkansas. Together, the two companies aim to process more recyclables, improve customer experience and extend their single-stream market reach.

"Cards' expertise in single-stream recycling complements Total's ability to divert more from landfills and better serve all customers," says Ed Mount, owner of Total Environmental, which provides businesses with recycling services that include recycling equipment rental/leasing along with auditing, training and sustainability reporting. "Together, we can offer an unmatched experience for customers that desire recycling at home and at work while pushing the boundaries of innovation," he adds.

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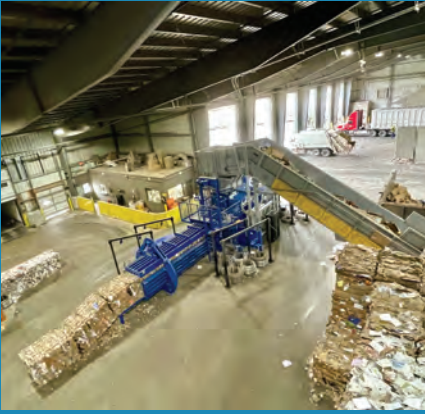
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A new baler for a NEW MATERIAL STREAM

Increased tonnages, especially more OCC, prompted Dem-Con Cos. to invest in a new baler that would address changing material streams and provide true redundancy.

The ever-changing makeup of single-stream recycling materials and overall increasing tonnages prompted Shakopee, Minnesota-based family-owned solid waste and recycling company Dem-Con Cos. to install a new baler in September 2024.

"The single stream in general ... year over year it just keeps growing," Dem-Con Facilities Manager Tim Ries says. "We were at a point where we would end up here until 3 [or] 4 o'clock in the morning to finish up baling, especially during the holiday season."

Particularly, Dem-Con's material recovery facility (MRF) in Shakopee was seeing increased volumes of old corrugated containers (OCC).

"We used to see the blip during the holidays and we could handle that surge, but now at any given time, you go out to look at the pile and you're not sure if it's commercial or a residential mix, but just the amount of OCC in the pile was a driving factor," Director of MRF Operations Lonnie Pauly says. "We had to get another machine in there."

After considering several options, Dem-Con eventually chose a Konti 600

cross-tie baler from German equipment company Kadant PAAL, which has North American headquarters in Lebanon, Ohio.

Standout features of the Konti 600, according to Kadant PAAL, include an optimized knife, stamper and channel design; modern axial piston pumps with low drive power; an advanced positional ram measurement system; an automatic tying system using steel or polyethylene terephthalate, or PET, wire; and real-time access to the baler's performance and operational data provided by the PAALconnect app.

The company also highlights several benefits of its Konti product line, including high throughput and bale weights, low energy consumption, easy access to the tying unit, simple operation and maintenance and low total cost of ownership.

Redundancy also was top of mind for Dem-Con, which uses a smaller, two-ram baler to process containers, and Pauly says with this latest installation, the MRF has redundancy for both fiber and containers in one machine.

"We looked at multiple balers and

we came down to a [Konti 600] because we were looking to mostly [bale] fiber with it and they have the cross-tie function, which really led us towards that baler because we want redundancy in baling plastics and all materials through it," Ries adds.

"The big thing for me was the cross-tie [function]. Most single-rams typically can't [process] containers very well, so you have the cross tie for containers and the bale really holds together. ... It's been a game-changer for us."

The simple operation and maintenance also sold Ries on the Konti 600.

"Typically, to reline a baler like that, you're looking at four days," he says. "With this baler, we can probably cut that in half because the wear plates are bolted in and not welded ... It was fairly easy to pick up, from greasing it to checking the knives, tensions in the chains and everything else."

And since the baler's installation last September, Ries says the machine has been "running strong," adding, "Since September, we pushed a lot of material through it and it hasn't skipped a beat."



MAKING AN IMPACT ON PLASTICS

Recent installations from Machinex show the equipment manufacturer's plastics sorting prowess.



Whether sorting plastics for the specific needs of an advanced recycler or separating material inside a more traditional material recovery facility (MRF), Machinex has designed turnkey solutions that meet its customers' needs while guiding them through every phase of a facility's development.

PREPPING FOR SUCCESS

Dustin Olson, CEO of Orlando, Florida-based advanced recycler PureCycle Technologies Inc., is one such customer benefiting from Machinex's array of proprietary sorting technologies.

PureCycle, which specializes in transforming recovered polypropylene (PP) into what it calls "ultrapure" recycled resin, recently opened its first regional preprocessing facility, or PreP, in Denver, Pennsylvania, utilizing a

100 percent-automated sorting system designed by the Plessisville, Quebec-based equipment manufacturer.

Since commissioning began last October, the 325,000-square-foot PreP facility has been processing approximately 10-12 tons of material per hour and 2.5 million pounds per month, sorting PP, high-density polyethylene (HDPE), polyethylene terephthalate (PET), aluminum, ferrous metals and residuals from bales purchased from MRFs or postindustrial PP plants.

The facility utilizes four MACH Hyspec® optical sorters, two Samurai® sorting robots equipped with Machinex's MACH Intell® business intelligence platform, two Machinex II-Ram balers, a magnet, an eddy current and a MACH Trommel that work in concert to increase the purity of PP that PureCycle needs for its advanced recycling process performed at its flagship facility in Ironton, Ohio.



Other commodities, such as HDPE, PET and various metals, are sorted out of the PreP's material stream and sold to other recyclers on a spot basis.

"[What stands out] is how all the pieces work together in unison to provide the required throughput and quality," Olson says. "What stood out about Machinex's offerings was that they listened to what our needs were and made recommendations that would make the facility successful and exceed our expectations."

The effects of Machinex's plastic sorting capabilities have been felt immediately at the PreP.

Olson says PureCycle prefers at least 90 percent purity for its PP bales, but often found bales it was purchasing fell below that threshold. With Machinex's technology, the facility has produced bales of at least 90-95 percent PP for purification.

"The equipment has performed as advertised, meeting its nameplate throughput and producing quality products," Olson says. "The higher-purity polypropylene bales allow for the company's Ironton facility to run more efficiently."

"Machinex has been great to work with from design, construction, commissioning and training. We chose Machinex because they provided the most cost-effective solution to what we were looking for. The design, customer service and warranty fell in line with what we needed."

THINKING BIG AT THE MRF

Last August, Rumpke Waste & Recycling opened a 226,000-square-foot MRF in Columbus, Ohio—the largest residential

and commercial single-stream facility in North America—featuring a sorting system custom-designed by Machinex.

The 60-tons-per-hour facility features 19 MACH Hyspec® optical sorters, some of which are combined with MACH Vision™ artificial intelligence (AI) technology, and four MACH Ballistic Separators. Through the use of trommels as a front-end solution, the MRF has been able to size material before the presort line, allowing it to cut down on manual sorters.

"I believe Machinex has the best designers for the customer's needs in the industry," says Jeff Snyder, Rumpke's senior vice president of recycling and sustainability. "I think they really keep that in mind and there's very few things they say they can't do or at least try to do."

The MRF has the ability to process up to 250,000 tons of recyclables per year from more than 50 Ohio counties. For plastics sorting, in particular, the facility uses nine MACH Hyspec® opticals and, with the help of AI, can segregate colored bottles and thermoformed plastic containers from clear PET bottles, as well as sort PP and HDPE in natural and mixed-color grades.

Additionally, Snyder says Machinex's technology has allowed the MRF to process small-format plastics such as vitamin bottles, small PP bottle caps or pet food containers, for example. Overall, the full system has allowed Rumpke to achieve a recovery rate of as high as 99 percent since startup.

While boosting the MRF's recovery rate, Machinex's opticals also have allowed Rumpke to process plastics, in particular,

without the need for manual sorters. "We have optics cleaning up optics, and sorting is done with all optics on the plastics side," Snyder says, adding that an additional optical situated at the end of the container line is able to spot plastics that were missed on the first pass-through and send them back through the system.

From the beginning of the MRF project to its opening, Machinex worked with Rumpke's general contractor and architecture firm to ensure the system fit the recycler's exact specifications.

"It's more than just showing up with equipment and installing equipment," Snyder says. "There's so much more when you're thinking about electricity and air and you think about the integration within our IT systems and just being able to understand how [the system] is going to fit inside the building with our general contractor. That integration was critical to me. It was extremely important to make this project a success."

"I think the integration Machinex brings, the expertise that they bring, the technology they bring, is [the best] bar none. They do everything from balers to AI to sortation to trommels. You name it, they do it all. It's nice to have a turnkey equipment provider that does it from start to finish."

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TIGHT SUPPLY KEEPS PRICES BUOYANT

MULTIPLE REPORTS IN EARLY MARCH indicated that U.S. processing and trading sources were confident the March domestic mill buying season would result in more price gains for ferrous scrap.

In the previous two buying periods, waves of severe winter weather caused reduced generation and collection of recovered steel, allowing shippers to ask more per ton for scrap that, in the case of some mills, was needed to restock their inventories at the start of the new year.

If mills and foundries pay more for their scrap this spring, weather seems less likely to be the culprit. That begs the question if supply remains tight for economic reasons or if demand has strengthened compared with several months earlier.

The U.S. economic outlook in early 2025 has been murky for several reasons, but some of the murkiness starts at the top—in the White House.

After a recycling executive expressed his dismay about back-and-forth tariff policies to *Recycling Today* in February, a

supplier to the metal recycling sector is expressing a similar sentiment in March.

“Everyone I talk to is just frustrated with the back-and-forth statements and shifting deadline dates,” he says. “How do you conduct transactions, let alone make investments, in that environment?”

Business planners seem to have expected a turbulent transition from the prior presidential administration to the current one, with several January economic indicator-related statistics pointing downward.

In mid-February, the Rolling Meadows, Illinois-based Metals Service Center Institute reported that shipments of aluminum products from U.S. service centers decreased 9.8 percent in January compared with January 2024 and steel shipments declined 1.4 percent.

Prospects in the metals-intensive automotive sector also seemed uncertain, at least by one statistical measure. Wards Intelligence reports light vehicle (autos, pickup trucks and SUVs)

“
Everyone
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– recycling industry
supplier

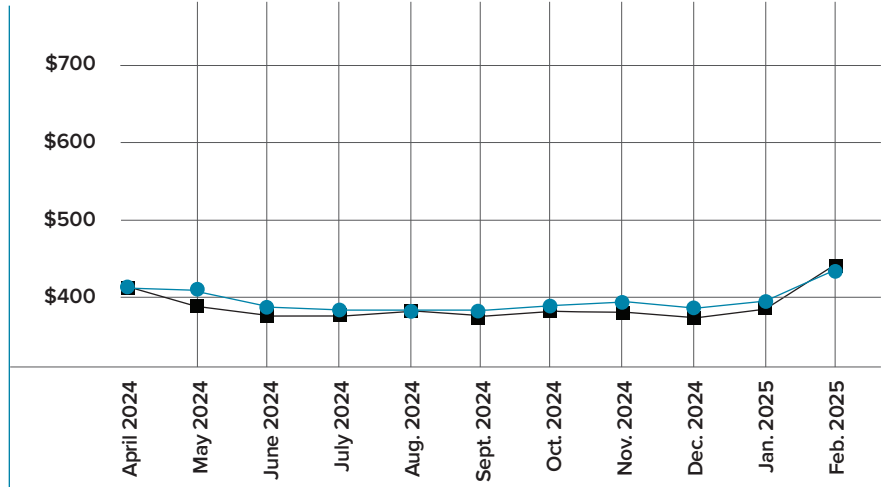
production in North America fell by 10 percent year on year this January. Winter weather could have been a factor in auto sector demand and production, according to Wards.

The construction sector has been a bright spot for generation and demand in the years since COVID-19 restrictions, but early 2025 indicators in that sector are flashing yellow, too.

While gains were made in residential and overall nonresidential sector employment early this year, according to the Associated General Contractors of America, based in Arlington, Virginia, by the end of January, 2,300 fewer people were employed by heavy and civil engineering firms and another 1,900 jobs were shed in the specialty trades.

A potential dark cloud over the construction sector is seen in January architectural billing index survey results, with figures for all four U.S. regions falling below the break-even number of 50.

Survey results gathered



● Davis Index, No. 1 Busheling: National average price in U.S. dollars per gross ton delivered to U.S. consumer ■ RMDAS Ferrous Scrap Price Index: Per gross ton for No. 2 shredded scrap, defined as 0.17 percent or greater copper content, effective the 20th of each respective buy month



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West Coast
\$318.65

for the American Institute of Architects (AIA)/Deltek Architecture Billings Index (ABI) show the U.S. West having the highest index at 48.8, followed by the South at 46, the Midwest at 45.6 and the Northeast at 41.1. Scores below 50 indicate decreasing business conditions, according to the report.

According to the AIA and ABI, billings remain weakest at firms with a commercial/industrial specialization, with a national average index figure of 43.1 in that category, followed by 45 for the residential sector and 47.1 for the institutional category.

However, as of early

March, neither the tariff uncertainty nor the lukewarm export market for U.S. recycled steel had dimmed upward price momentum.

On the export front, in the first week of March, Davis Index reported mills in Turkey had purchased 60 percent less imported scrap from the U.S. in January, helping lead to prices that were not moving upward in March.

Offering better news that same week, Davis Index noted shredded scrap sold at an average price of \$431 per ton to domestic mills in early March, maintaining price gains that have accrued throughout the year.

The Raw Material Data Aggregation Service of Pittsburgh-based MSA Inc. reports No. 2 shredded scrap reached more than \$400 per ton in February for the first time in 10 months.

The industry likely is watching the news with particular attention this spring as it tries to gauge the health of the domestic steel and overseas trading sector.

Through February, the Washington-based American Iron and Steel Institute reports year-to-date steel production at 14.18 million tons, down 1.3 percent from the nearly 14.4 million tons during the same period in 2024.

Davis Index Private Ltd. is headquartered in Singapore with market analysts in Barcelona, Spain; Chicago; Dallas; Dnipro, Ukraine; Los Angeles; Mexico City; Pune, India; Singapore; and Toronto. Davis publishes physical market price indexes in more than 80 countries, and its market coverage comprises ferrous and nonferrous scrap, secondary nonferrous alloys, base metal premiums, finished steel products in specific geographies, bulk freight and container freight. Davis publishes indexes on a daily, biweekly, weekly and monthly basis, depending on the type of material and the open-market trade volume for each material. Methodology information is at <https://davistexteditor.s3.amazonaws.com/DavisIndexMethodology.pdf>. To subscribe, visit www.davisindex.com.

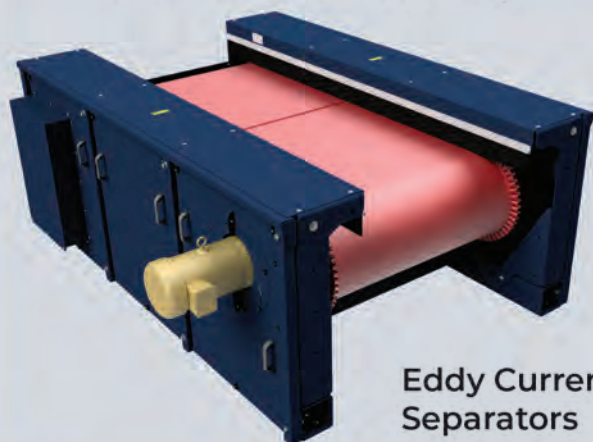


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INCREASING CIRCULARITY BY BOOSTING SORTING PERFORMANCE

Artificial Intelligence according to Pellenc ST



In recent years, sorting centers have seen a gradual transformation of their material input streams.

They now are faced with larger incoming volumes containing more complex materials that are therefore more difficult to sort. With more technical and fragmented materials, guaranteeing the quality and capture of recoverable products is becoming a real challenge. Innovation therefore takes center stage in the strategies of industrial recycling companies.

For more than 20 years, the teams at Pellenc ST have been developing advanced sorting solutions to recover waste and support operators in their quest for performance. With current infrared and visible spectrometry solutions, optical sorters already are capable of advanced sorting operations, such as the separation of PET trays/bottles or PET single-use trays/multiuse trays. On the other hand, for certain complex separation requests, existing equipment still does not offer a solution. This is where artificial intelligence comes in.

At Pellenc ST, it is used wisely, in addition to existing solutions, to boost performance and help operators manage their industrial equipment and control their quality. By combining NIR/VIS and DEEP LEARNING technologies, optical sorters gain analysis speed and can then provide a solution for the most complex sorting tasks. In concrete terms, the neural network is trained with millions of images to be able to identify the unique characteristics of objects, such as their shape, size or other visual differences.

Last year, Pellenc ST launched its first solutions

equipped with artificial intelligence for the cleaning of PE streams and the complex separation of paper/cardboard. By relying on its CNS BRAIN™ technology, Pellenc ST is taking on a new challenge in the field of PET sorting.

“We have developed a new artificial intelligence model capable of recognizing transparent PET bottles covered with a sleeve or a large label, which are difficult to recognize using NIR/VIS alone. Our model



already detects more than 85% of sleeved bottles, and we expect to exceed the 90% mark in the near future,” says Kevin Alazet, artificial intelligence manager for Pellenc ST.

This solution also helps to reduce losses, which have fallen from 7% to less than 2%.

In addition, CNS BRAIN™ is one of the artificial intelligence options Pellenc ST offers that does not require additional equipment and nor generates additional energy consumption or maintenance needs. In this way, artificial intelligence can provide a real boost to competitiveness while remaining frugal when it comes to its carbon footprint.

For even more difficult applications, Pellenc ST equips its machines with an additional camera and offers the AISORT™ option. This innovation makes it possible to address new use cases by offering the industry new separation possibilities. The best example is that of food/nonfood separation.

Food and nonfood packaging often are made from the same or similar materials. This means conventional sorting systems have difficulty distinguishing between and sorting this packaging. Thanks to the artificial intelligence module and multisensor fusion, optical sorters Pellenc ST supplies address this issue and obtain high-quality recycled products through extremely accurate sorting.



Pellenc ST also offers quality control solutions equipped with artificial intelligence. Installed at the end of the sorting line, AISEE™ gantries monitor the quality level of the stream, as well as the overall efficiency of the sorting center. By providing real-time information on the composition of the stream, AISEE™ becomes a real decision-making tool. Supplemented by the support of experts well-versed in the issues of the waste industry, this data becomes intelligent and is a valuable source of knowledge.

Once collected and analyzed, it is translated into personalized dashboards and reports, which are essential for operators to guarantee the required purity levels, maintain availability rates and speed up commissioning phases.

Finally, all the equipment supplied by Pellenc ST is ISO 27001 certified, guaranteeing the robustness, security and sovereignty of data.

With these new solutions, Pellenc ST is beefing up its offering and expanding its technological portfolio to pursue its mission to support the sectors to recover more materials and make the economy a little more circular and regenerative every day.

We welcome the opportunity for our customers and partners to visit our test center and experience our optical sorters in person. Please reach out to pellencstamerica@pellencst.com to organize an equipment demo.



In 2024, we installed both the AISORT and CNS BRAIN technologies into our test center, located in Pineville, NC. Due to these incredible upgrades, it not only allows us to demonstrate the AI sorting tasks of today but also means that we have a significantly reduced time to market when talking about the AI sorting tasks of tomorrow. We can now locally create the database using material from the U.S. market and work alongside our North American customers and partners in real time to ensure that the sorting is meeting all of their performance needs."

DANIEL POORMAN

Tests Manager, Pellenc ST Americas

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TARIFF UNCERTAINTY AFFECTS NONFERROUS SCRAP FLOWS

PRESIDENT DONALD TRUMP IMPLEMENTED TARIFFS

March 2 on Canada and Mexico under the International Emergency Economic Powers Act, saying they were designed to combat the national security and public health threats drug trafficking poses.

The tariffs, which went into effect March 4, were paused for one month starting March 6 for imports that comply with the United States-Mexico-Canada Agreement, including automobiles and recovered metals for recycling.

Tariffs on recyclables threaten significant disruption for U.S. recyclers, according to Adam Shaffer, vice president of international trade and global affairs at the Recycled Materials Association (ReMA), based in Washington.

“Our membership is quite diverse, so even though the U.S. is a net exporter of recycled materials to both Canada and Mexico across the commodity spectrum, many of our members are also importing

from these countries, too,” he says. “Additionally, Canada has already announced its consultations for retaliatory tariffs—and that second list of proposed retaliation includes a significant number of U.S. exports of recycled materials that would be subject to new tariffs.”

Even after the tariffs were delayed, because of inconsistencies with the use of HTS, or Harmonized Tariff Schedule, codes, they were being levied on some scrap shipments, says Patrick Merrick, president of W. Silver Recycling Inc., El Paso, Texas, which has operations in the U.S. and Mexico.

“If the generator doesn’t declare them appropriately as the right HTS code of scrap, then it may trigger a potential tariff,” he says.

The uncertainty about tariffs has contributed to a slowdown in prime scrap generation, Merrick says. “But I think there’s just a general slowdown, obviously, in consumption of goods.”

He predicts that scrap

“Global trade seems to be not flowing the way that it had because of a lot of uncertainty, as well.”

– Patrick Merrick of W. Silver Recycling

generation will remain choppy until the tariff situation clarifies.

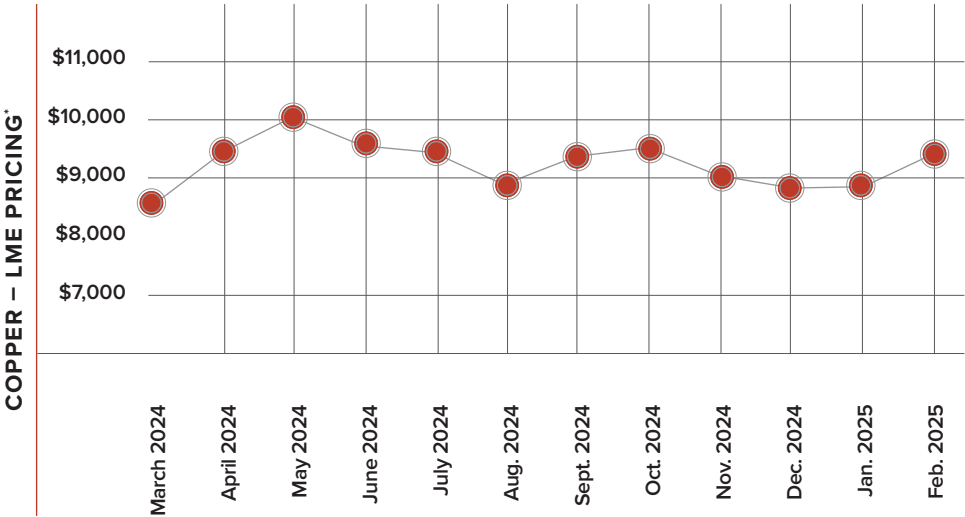
An executive with a scrap processing firm with operations in Texas, the Midwest and Southeast says industrial generation was good through February, though retail trade was soft, which he attributes primarily to weather conditions given the strong pricing.

He notes strong domestic demand, saying that mills “seem like they are busy and in the marketplace.”

Merrick agrees but adds that some consumers, mainly of copper and brass scrap, have been pushing out their delivery dates because of ample inventory.

“Global trade seems to be not flowing the way that it had because of a lot of uncertainty, as well,” he says, adding that the potential for retaliatory tariffs is contributing to the uncertainty.

The other scrap company executive also says export demand, particularly from Korea and India, seems soft as pricing is not as attractive as it was late last year for importers.



*Average monthly settlement price, cash buyer, in U.S. dollars per metric ton; source: London Metal Exchange, www.lme.com



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PACKAGING FIRMS CONTINUE PRICE HIKES

AT THE END OF LAST YEAR, several packaging companies announced price increases for fiber-based products, citing market conditions and shifting consumer trends away from goods to services, and those price hikes have continued through the early part of this year.

The latest is Delaware, Ohio-based packaging company Greif Inc., which announced plans in late March to implement a price increase for all grades of uncoated recycled paperboard (URB) products as well as on all tube and core protective packaging.

The company is increasing URB product prices between \$50 and \$70 per short ton, effective April 21, and by a minimum of 7.5 percent on all tube and core protective packaging products, effective April 28.

According to Greif, the URB price increase is in response to increasing manufacturing costs for its products, while the tube and core price increase is a consequence of the URB price increase, the primary raw

material in those products. Late last year during a call with investors, Greif officials said the company was in the process of rolling out a \$70-per-ton price increase on linerboard and a \$100-per-ton increase on corrugated medium that was set to take effect at the start of 2025 to offset higher old corrugated containers (OCC) feedstock costs.

Also this March, Sonoco Products Co. revealed plans to implement a price increase for all grades of URB.

The Hartsville, South Carolina-based packaging company planned to increase its URB prices by \$70 per ton in the U.S. and Canada, effective with shipments beginning April 10.

According to John Florence, general counsel, secretary, vice president and general manager of industrial paper packaging North America at Sonoco, the price increase is necessitated by continued inflation in input costs and tightening market conditions.

“Sonoco is committed to continuously improving our

“
This change more accurately reflects current market conditions and the value of our products and service offerings while ensuring the sustainability of our operations.”

– John Florence
of Sonoco

product offerings and pricing strategies to serve our customers better,” he says.

“We are also realigning to value-based pricing and transitioning away from offering [OCC] price mechanisms, which are not true reflections of our overall value and cost to serve customers. This change more accurately reflects current market conditions and the value of our products and service offerings while ensuring the sustainability of our operations.”

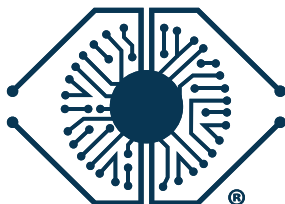
Sonoco also will increase prices for all converted paperboard products by a minimum of 8 percent, effective with shipments on and after April 15. This increase includes paperboard tubes, cores, cones, partitions, protective packaging and other specialty products.

Greif and Sonoco join Packaging Corp. of America, International Paper, Georgia-Pacific and Smurfit Westrock as major packaging companies to announce planned price increases this year.

A January report from Fastmarkets RISI described



* OCC ■ Mixed Paper (54); Average U.S. dollars per short ton for open market purchases by mills for delivery in March reported by Fastmarkets RISI's PPI Pulp & Paper Week March 5. Prices used with permission from PPI Pulp & Paper Week. Visit www.fastmarkets.com/thanks-for-your-interest-in-a-demo-of-our-portal for more information.



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the price increases as margin-driven, similar to cost-driven price increases in 2024, but without the upward pressure from OCC costs which, despite holding steady since December 2024, had fallen the entire second half of that year.

The March 5 issue of *Pulp & Paper Week* has the U.S. average OCC price

at \$66 for the fourth straight month, while mixed paper also has been mostly flat since December 2024, averaging \$38 per ton in the U.S.

"We recently have introduced ... technological advances that further reinforce this position of being the best customer service company in the world,"

Greif CEO Ole Rosgaard said during the company's Investor Day presentation late last year when speaking about upcoming price increases.

"[Customer service] drives our customers towards loyalty, it increases our share of wallet and it gives us the right to sell at premium margins," Rosegaard continued. "So, when we come to our customers and we ask for a fair price increase, we get less pushback from that customer. So, in other words, it's very simple: Motivated people provide world-class customer service, which grows your volume and helps you achieve premium margins."

Export	Destination	New York	LA	SF/Oakland
Mixed (54)	Asia	80-83	80-83	75-78
OCC (11)	Asia	140-143	140-143	135-138
SRPN (56)	Asia	90-93	88-91	78-81
SOP (37)	Asia	217-220	212-215	202-205

Domestic	New England	New York	Buffalo	Midwest (Chicago)	Southeast	Southwest	Los Angeles	San Francisco	Pacific Northwest
Mixed (54)	35-40	35-40	35-40	55-60	40-45	35-40	30-35	25-30	25-30
OCC (11)	75-80	75-80	75-80	75-80	75-80	70-75	50-55	30-35	45-50
SRPN (56)	60-65	60-65	60-65	65-70	60-65	60-65	40-45	30-35	30-35
SOP (37)	•	130-140		130-140	130-140	135-145	155-165	•	95-105

*U.S. dollars per ton for open market purchases by mills. Domestic prices are FOB seller's dock for delivery in March reported by Fastmarkets RISI's *PPI Pulp & Paper Week* March 5, while export prices are FAS port of origin. New York includes ports in northern New Jersey and LA includes Long Beach and LA ports. Prices used with permission from *PPI Pulp & Paper Week*, <https://auth.fastmarkets.com>.

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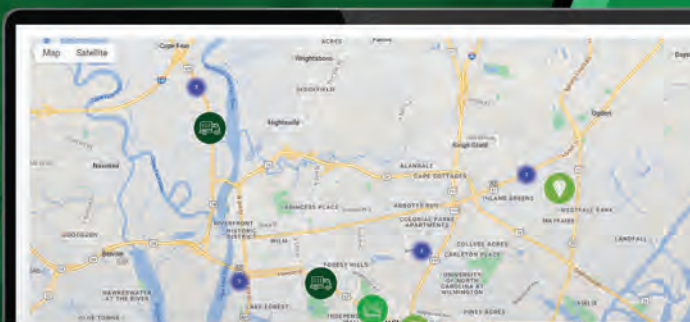
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Sticking with the best

When Oregon Beverage Recycling Cooperative needed a new baler to keep up with high volumes and demanding conditions, its long-standing relationship with Balemaster made the choice simple.

The Oregon Beverage Recycling Cooperative (OBRC), based in Clackamas, Oregon, recently installed a new baler at its recycling facility in Eugene, Oregon, and its long-standing relationship with Crown Point, Indiana-based equipment maker Balemaster made the choice a no-brainer.

"We have a great distributor of Balemaster equipment that I inherited when I took my role, and I've been with our company for nearly 19 years at this point and in my current role for almost three years," OBRC Chief Operating Officer Troy Ballew says, emphasizing the relationship between OBRC, Balemaster and its Pacific Northwest distribution partner, Kirk Sales International and its owner, Mai Kirk.

"We had a president at the time ... and he was a very good operator and he chose to go with the best, and Balemaster, in our opinion, is one of the best. They make a really good product that we know we can rely on, and we have very demanding conditions that we operate in. So, we've just continued that relationship over the years and it's never let us down."

OBRC recycles up to 2.2 billion beverage containers annually in the state of Oregon, with nearly 60 percent being aluminum containers, and much of that aluminum is processed with a Balemaster E-915 auto-tie baler—a machine that has held up in often demanding conditions.

"It's a dirty, smelly, wet, sticky business and we have to have equipment that can hold up in that environment," Ballew says.

The E-series is the flagship model of the Balemaster auto-tie product line. The horizontal baler offers an ideal combination of accessories to meet unique



scrap handling and recycling requirements, with features that promise few adjustments and reduced maintenance costs.

Standout features include a heavy-duty automatic wire-tier with a simplistic design that completes the tie-off cycle in less than 30 seconds, a comprehensive touch screen controller with more than 50 information screens, advanced dust control, a unique bale density control system for automatic and continuous regulation and energy-efficient hydraulic power packs. Two of OBRC's facilities essentially operate 24/7, so prioritizing minimal downtime was critical to maintaining that pace.

"We need something that we can rely on and we know isn't going to go down and is going to be nearly bulletproof," Ballew says. "Things break, things happen, but for us, in our environment and the business we're in, we need [the baler] to be extremely reliable."

"It's like a river of material that's always flowing into our facilities, so we can't stop it at the front door and say, 'Oh, we broke down. We're going to be down for two weeks ... while we wait for a new baler.' It just doesn't work that way. We've got to have something that we know day in and day out is going to operate for us."

More than its reliable, high-performing equipment, Ballew has appreciated the Balemaster customer service and attention to detail that made for a seamless transition to a new baler.

"One of the things that really stuck out to me was that I was able to sit down with [the Balemaster team] and they came to my facility, they looked at what we were doing, they looked at the exact flow of our materials and gave me a recommendation within their whole diverse group of balers," Ballew says. "That's important to me because they're vested in my interest."

And if he needs someone on-site to help figure out a problem—which Ballew says doesn't happen very often—the Balemaster team is quick and responsive.

"We can go to them in an emergency and they're there," he says. "If many years go by and a pump goes out, I can rest assured that if I call them in a pinch and need it, they'll find that for me and they'll have it in stock."

"One of the things that I appreciate is that I can see how well-built the equipment is. ... It's a solid piece of equipment that I could rely on back when we bought it [originally] and I'm going to be able to rely on it going forward."



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RECYCLED RESINS GROW IN THE HEARTLAND

PACKAGING PRODUCERS CAN LOOK TO INDIANA for recycled-content inspiration, as two different partnerships recently have opened the doors of recycling facilities in the state that will consume large quantities of plastic scrap and transform them into flake and pellets for use in food and nonfood applications.

One of the facilities, in Connersville, is owned by Canadian company Nova Chemicals Corp. and operated by North Carolina-based packaging manufacturer Novolex. The 450,000-square-foot facility converts bales of postconsumer low-density polyethylene film into Nova's line of Syndigo recycled polyethylene (rPE) pellets.

Once its four mechanical recycling lines are fully operational later this year, the facility will be able to process 140 million pounds of film annually, collecting the material from retailers and distribution centers across the Midwest.

The facility also is equipped

with a full testing laboratory on par with what Nova uses for its virgin PE products, and the company says it has inked feedstock agreements with Novolex, Amcor and Winpak. Nova also plans to allocate some of its rPE product to shorter-term contracts.

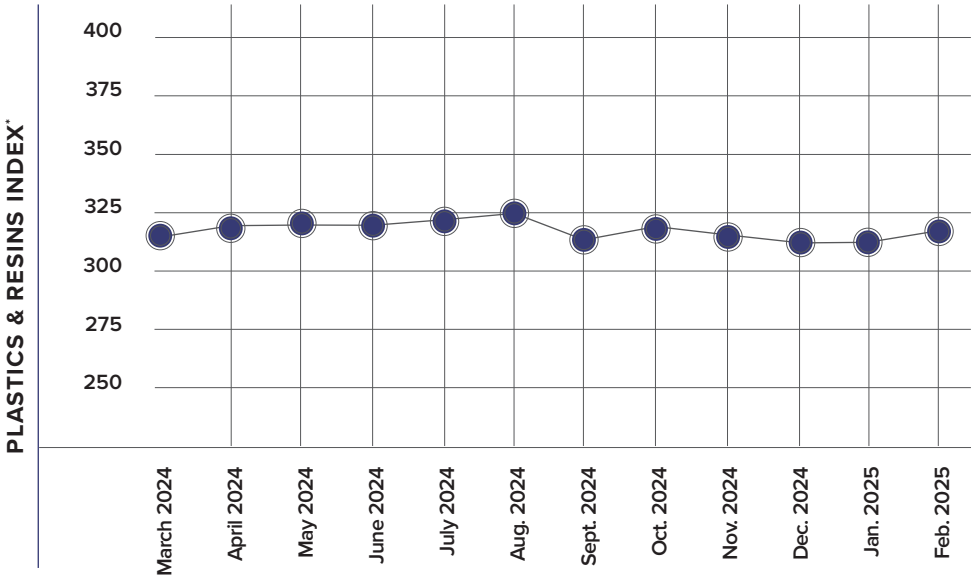
"The market is still developing for recycled materials—film especially," says Alan Schrob, Nova's director of mechanical recycling. "A lot of it is collected and downcycled. A big opportunity for the industry is upcycling it into products that can be used over and over, or [to] take it and put it into a process like ours."

In March, Republic Services Inc., headquartered in Phoenix, opened its second Polymer Center in Indianapolis. Its first Polymer Center is in Las Vegas. The Indianapolis mechanical recycling plant, which processes polyethylene terephthalate (PET), high-density polyethylene and polypropylene, is colocated with a Blue Polymers facility, a joint

“
The market is still developing for recycled materials—film especially. A lot of it is collected and downcycled. A big opportunity for the industry is upcycling it into products that can be used over and over, or [to] take it and put it into a process like ours.”

– Alan Schrob
of Nova Chemicals Corp.

venture with Luxembourg-based Ravago.
The sites span a combined 300,000 square feet and can produce 175 million pounds of recycled flake and pellets annually for use in packaging.
Republic primarily plans to source via residential collection across several neighboring states, with the capacity to take in 80,000 metric tons per year. While the olefins produced at the complex and much of the recycled PET (rPET) already have customers lined up, a small portion of the rPET will be made available on the spot market.
“We have the ability to take various grades of recovered resins from multiple markets and produce materials that are drop-in ready for packaging,” Republic Vice President of Recycling and Sustainability Pete Keller says. “We think we’re going to be offering material to the market that it has not had access to before, and [we hope] to have high uptime, high yields and a consistent movement of material.”



*Producer price index is based on December 1980 average prices as 100; source: U.S. Bureau of Labor Statistics



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Juan Luis Pagán

Innovation and evolution in metal recycling in Puerto Rico

Fifty years ago, when his father opened a scrapyard, Juan Luis Pagán says the scrap business was very simple.

"We began as a simple collection yard, sorting metal manually and trading it locally," says Pagán, the current owner of Talleres de Reciclaje de Metales Inc. in Puerto Rico, a third-generation family business with more than a half century of history in metal recycling on the island.

THE CHALLENGE OF MODERNIZATION

When Pagán began working alongside his father, he faced natural resistance to change.

"My father was convinced we didn't need to change our way of operating," he says. "He would say, 'If it works, why change it?'" Besides, he had many doubts about whether we could recover the investment in new machinery."

After persistent efforts and debate, Pagán convinced his father to acquire a shear baler, representing their first major investment in modernization.

"It was a difficult moment, but I knew we needed to be more efficient," Pagán says. "Fortunately, the operation was a success: we doubled production and improved our market competitiveness."

As a result of this growth, in 2021, they expanded the yard and acquired the adjoining land to better organize the ferrous operations.

THE SEARCH FOR A SHREDDER

In the following years, Pagán had his mind set on acquiring a shredder, but the high investment cost of traditional units was a significant obstacle.

"I spent a lot of time researching online, watching videos and contacting suppliers, but the investment required

seemed impossible for us at the time," he says.

Finally, in 2022, he decided to purchase a rotary shear to pre-shred material.

"With this acquisition, we managed to increase our throughput again, but the material didn't achieve the necessary density," Pagán says. "We had to pass it through two or three times, and the level of cleaning and separation was not ideal."

This meant they couldn't access the "premium" of shredded material nor effectively recover the nonferrous material.

"Even with the increased production over the shear baler, we were only reaching 50 percent—sometimes even just a third—of the production levels we'd hoped for," he says. "It was clear that to continue growing, we needed a hammermill shredder."



CHOOSING A THOR 6363 K

Two years after installing the pre-shredder, Pagán invested in a hammermill shredder.

"After consulting with several suppliers, I chose ZB Group's THOR 6363 K mobile hammermill shredder—a solution I had been considering for years," he says. "While I had considered larger models like the 8060 and 8080, the 6363 K stood out as the ideal fit to start this journey and work together with our existing equipment."

Designed as a secondary shredder to work together with twin-shaft shredders or with a rotary shear, the THOR 6363 K was the ideal solution for Talleres de Reciclaje de Metales Inc.

"With a relatively low-power 755-horsepower diesel engine, the shredder processes between 20-25 gross tons per hour of pre-shredded material, which is more than our preshredder can handle," Pagán says. "Normally, we operate the preshredder for three days to get the material ready and then run that material through the mill over two days."

ZB's patented "ZBrain" automation system also has been key to boosting operational efficiency.

"The crane operator can feed the shredder and monitor the entire operation without the need for additional personnel," Pagán says.

MAINTENANCE AND OPERATION

Pagán says maintenance was one of his biggest concerns when tackling this project.

"However, thanks to the design

of the THOR 6363 K, the training process, and ZB's technical support, the transition wasn't as complicated," he says.

Pagán emphasizes the importance of having a skilled welder on the team and conducting daily inspections to detect potential structural damage and monitor wear parts, as being based in Puerto Rico, access to spare parts and technical support isn't always easy.

"The ZB North America warehouse in Atlanta has been essential in keeping us stocked," he says. "Additionally, ZB uses top-tier brands, so we can source many common parts locally."

According to Pagán, the installation process for the shredder was "surprisingly fast."

"We opted for a version with a longer discharge conveyor to adapt to our existing vibrating pan," he says. "Within a few hours we assembled the conveyor, and after placing the THOR in position, we were ready to operate that same afternoon."

IMPACT AND FUTURE

Since the shredder began operating, production has increased significantly, according to Pagán, and the yard has increased its processed material by an additional 50 percent while significantly improving margins.

Additionally, the company now can sell shredded material at premium prices and fully leverage nonferrous material recovery.

"Before, to export in containers, we had to process the material multiple times to achieve the required

density," Pagán says. "Even then, it was considered HMS, and the price couldn't compare to what we achieve now by selling the material as shredded scrap. As for nonferrous recovery, until we started shredding, we couldn't fully utilize our downstream system."

"Looking back, investing in a hammermill shredder was a pivotal decision—one that reshaped our entire operation. By improving efficiency, increasing profitability and opening new market opportunities, what once felt like a major risk has proven to be the smartest move for our long-term success. With the THOR 6363 K in place, we're confident that Talleres de Reciclaje de Metales Inc. is now equipped to scale further, embrace new opportunities and thrive in an ever-evolving industry. For any yard looking to take that next step, I strongly recommend reaching out to ZB Group—their expertise, support and innovative solutions have been invaluable in making this transition a success."



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BY DEANNE TOTO

The problem SOLVER

Nanci Schuld and the team at FE Trading Group specialize in helping suppliers and mills solve their logistical problems.

Nanci Schuld, co-founder, president and chief operating officer of FE Trading Group, thrives on solving problems, embracing the discomfort often associated with the task.

"I've always taken myself out of my comfort zone," she says. "I try to stay true to first principles, which, not to get too scientific, is breaking down problems and making ... them easier to solve."

As a brokerage firm, FE Trading, which she co-founded in 2017 with Robert Kelman, who serves as CEO, specializes in solving its suppliers' and consumers' problems, which often include logistical headaches.

FILLING A VOID

Schuld has a degree in economics and a background in trading soybean options and futures and nonferrous and ferrous metals, the latter with Sims Metal.

"I realized there was a pretty big vacuum for small, medium and large recyclers, too—maybe they didn't have the expertise or the knowledge of all the different markets," she says. "So, after being

at Sims for a while, I decided to start a trading company."

That original firm was FE Exchange, which evolved into FE Trading.

"When we started FE Trading, we had an agency agreement with another large recycler in the Chicago area, but we were also trading other people's scrap," she explains.

Schuld says her mission at FE Trading was and continues to be to deliver real benefits to suppliers and consumers alike, adding value for them.

Since 2017, FE Trading, which has an office in Sandusky, Ohio, has grown its annual revenue to \$300 million and its staff to 17 people who work primarily out of home offices or in the facility the firm operates near Mobile, Alabama. The Mobile yard has a contract with a rolling mill in the area to process coils, slabs and other forms of steel and ferrous scrap, largely via torch cutting, before barging or trucking the material to the rolling mill or other mills in the area.

According to Schuld, in any given month, the 10-acre Mobile site processes

FE TRADING AT A GLANCE

CO-FOUNDERS:

President and Chief Operating Officer Nanci Schuld and CEO Robert Kelman

LOCATIONS:

An office in Sandusky, Ohio, and a 10-acre yard near Mobile, Alabama

NO. OF
EMPLOYEES: 17

SERVICES:

Scrap brokerage and logistics services, including a fleet of more than 400 privately owned and leased railcars, as well as mill scrap processing at its yard in Alabama primarily using torch cutting

“

[I]t's very important for us to stay consistent with our suppliers and the consumers, at least as consistent as we can.”

– Nanci Schuld, co-founder, president and COO, FE Trading Group

Nanci Schuld of FE Trading at her home office

a minimum of 20,000 tons and as many as 35,000 tons.

"We also do agencies with scrap suppliers, meaning for a certain amount of time or a certain amount of tons, we have the agency to sell that scrap," Schuld says.

FE Trading transacts 80,000 to 100,000 tons per month of ferrous scrap and recently started trading nonferrous scrap, she says, though that volume is considerably smaller.

As FE Trading has grown, it has remained consistent with its mission to help clients navigate the logistical challenges of trading scrap throughout North America via rail, barge and truck.

Schuld says many scrap companies, particularly the small and midsize ones, don't invest in logistics, which is a different business than scrap processing and requires dedicated personnel and focus.

"We have a lot of big companies that cover a lot of different regions, but there are more medium and small companies that just don't have the bandwidth [to cover] other regions," she says. "Often-times, especially in our business, the markets get disconnected, and since we are a supplier to just about every single mill in the United States, we're able to pivot to those markets with our suppliers because it's very important for us to stay consistent with our suppliers and the consumers, at least as consistent as we can. So, everybody can focus on their core business, and we'll handle the rest for them."

Regarding ferrous scrap, the company trades shred, plate and structural (P&S) and heavy melting steel (HMS), machine shop turnings as well as a couple of cars here and there of what Schuld refers to as "oddball" grades.

INVESTING IN RAILCARS

To ensure the smooth movement of the ferrous tons it transacts, FE Trading has invested heavily in railcars, purchasing or leasing more than 400. The investment provides many benefits to FE Trading and its suppliers.

While scrap processors order railcars at the beginning of the month based on the orders they've committed to filling, Schuld says they could end up getting only a fraction of that railcar order.

"That is not good for them; it's not good for the consumers because then they're not getting the material they want," she adds.

The majority of FE Trading's private cars, however, are in a constant loop between a given supplier and consumer.

Additionally, the size of the company's railcars, most of which are 4,000-to-4,400-cubic-foot gondolas, ensures that weights are optimized compared with railroad-owned cars.

"When it comes to P&S, HMS, even busheling and, on occasion, turnings, that is one of the big advantages of the bigger cars—people don't have to suffer through dead freight, which a lot of people do on the system cars," Schuld says. Scrap consumers benefit as well, getting more weight in the railcars and consistent deliveries of their purchased materials.

The company's railcars are accompanied by full service from FE Trading, which includes tracking the cars, negotiating rail rates, submitting the waybills and cleaning the cars.

"It takes a big load off of a lot of the suppliers and guarantees that they're going to get the cars and be able to ship what they're planning on shipping," Schuld says.

She notes that some North American regions have a much greater need for private cars than others because they can't get system cars or load the full weight because of the size of the cars available.

"That was one of the reasons early on that we decided to start investing capital in the private cars because it's an important part of the business," she adds.

The railcars also serve as an effective form of advertising for FE Trading.

"Believe it or not, we have a lot of scrap recyclers that call us [and say], 'Hey, I saw your car. Is there a way that we can do some business?' It's our best advertising tool that we have ever had," Schuld says.

Establishing rail service with a new supplier can entail significant expense if FE Trading needs to get cars there. "We try to get them there on the same railroad, but if we can't, it's got to go from one railroad to another, and that's also very costly," she says. "So, if we're going to ship cars somewhere, there's an understanding between the supplier and us that this is going to be going on for months; it's not going to be just one time."



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Schuld, who says she doesn't believe in doing things simply because it's the way things always have been done, enjoys the challenges associated with bringing on new suppliers.

"Figuring out the puzzle pieces—the railroad they're on, the different consumers that [scrap] would go to and finding the best rail rates—and since our business, generally speaking, gets very disconnected, to me, that's motivating," she says. "Once you figure out the puzzle, which does change on occasion ... you're doing business with interesting people [and] interesting businesses," which Schuld also finds mentally stimulating.

MAKING ADDITIONAL INVESTMENTS

FE Trading is making other investments in its business, including software upgrades that will allow it to implement a customer portal, giving its suppliers a way to view their scrap movement, weights, payment details and more.

The company is expanding its software capabilities for its rail fleet and logistics services, giving its logistics team more visibility into its railcars, including the occasional rogue car that ends up at a different location than intended. It also plans to roll out logistics services to the recycling industry more broadly, Schuld



TO LISTEN TO THE SCRAP SHOW featuring Nanci Schuld of FE Trading Group, visit www.RecyclingToday.com/podcasts.



says, assisting processors in improving their efficiency and throughput and adding more value to their operations.

"[M]ost companies don't have a logistics department," she says. "They look at it as a cost of doing business, which it is in a lot of ways, but it's capital intensive to have a whole department focused on that."

FE Trading also wants to grow its nonferrous brokerage business by adding traders who specialize in this area, Schuld says, with the ultimate goal of having nonferrous represent half of the recycled metals the company trades annually.

As it makes these changes, FE Trading will continue staying true to its mission by prioritizing service and leveraging its financial capabilities to support its clients, whether that's by helping to finance demolition jobs or other projects its suppliers might embark on or to tailor payment terms to meet their needs.

"And if [we're] successful in that, which we have been, then the employees are also very fulfilled," Schuld says. "I believe when the three of those things come together, then society is a better off place, too. So as long as we stay true to the core of our business, I think we'll continue to be successful and grow."

ROLLING WITH THE PUNCHES

While ferrous scrap demand and pricing have been improving in early 2025, she says mills could reduce their buying because of inventory buildup, operations issues or several other reasons.

"Hence why we find it's imperative to stay consistent with suppliers and consumers alike," Schuld says. "We have the ability to move tons around because of our extensive network."

Tariffs were top of mind with many metals industry professionals in the first quarter, with President Donald Trump levying 25 percent duties on all steel and aluminum imports to the U.S. as well as tariffs on imports from Canada, Mexico and China, specifically, and then pausing those on Canada and Mexico until April 4 if the goods complied with the United States-Mexico-Canada Agreement. The on-again, off-again nature of the tariffs on Canada and Mexico has made determining their impacts challenging.

"It's very hard to decipher what all of the impacts will be when nobody is certain what will be tariffed and when," Schuld says.

While she says tariffs on new steel imported into the U.S. should increase demand and pricing for domestic steel, which should increase scrap pricing, too, Schuld also notes that any other tariffs, such as reciprocal tariffs on scrap in Mexico and Canada, will have major impacts.

"None of us know what's going to happen," she continues. "So, we've got to roll with the punches. I believe our industry is so resilient [that] no matter what happens, it seems like everybody moves forward, and if we have to change course, we change course."

The same is true of FE Trading. "We do not have a huge bureaucracy or mid-level weight," Schuld says. "Typically, we see the headwinds well in advance, and we adjust very quickly. We don't have meetings and meetings about meetings; we make an informed decision and move forward or pivot if we have to."

For someone who finds motivation in discomfort, Schuld likely will have some inspired days ahead of her.

"I continually take myself out of my comfort zone, which puts pressure on me and prepares me for all of the expected and unexpected pressures that come my way," she says. "That's one thing there's no shortage of in most businesses." **RT**

The author is editorial director of the Recycling Today Media Group and can be reached at dtoto@gje.net.

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Scrayard managers are concerned about the factors that affect their bottom lines, including operational efficiency. Operational efficiency relies on different factors, and equipment is one of them. Having a trailer that fits your needs is increasingly important as it directly affects efficiency, capacity and safety, especially when transporting material over longer distances. Equipment turnover costs that arise from a lack of durability are best avoided.

With this in mind, Demco's gondola trailers provide a lightweight and reliable alternative to the scrap industry and are equipped with unique features:

- Demco gondola trailers are designed to be **lighter in weight**, thanks to the strategic spacing of their wall supports. The Demco design allows the use of thinner materials without compromising the structural integrity or durability of the trailer. This allows you to carry more payload.



- These trailers are built for exceptional durability with tough **Hardox wear plate**, the world's leading abrasion-resistant steel. Demco gondolas are made from 4-millimeter-thick Hardox 500 Tuf floors and 1/8-inch Hardox- or AR450-equivalent steel walls, ensuring Demco trailers can handle whatever the job demands and then some. Their reliability means they can be put into continuous use without fear of breakdown or replacement.
- Demco trailers offer more room all the way to the floor, providing an advantage over some competitors' trailers. The design ensures that the gussets on the floor do not interfere when loading wider materials, addressing a common complaint with other trailers. This feature allows for **more efficient use of space**, making it easier to load and transport larger items.
- Demco trailers are **available in various sizes** to meet your needs, with lengths ranging from 40, 44, 48 to 53 feet and with wall heights of 4, 5, 6, 7 or 8 feet. For your convenience, Demco also offers various axle configurations: tandem, split and tri-axle. Spring ride and air ride also are optional.

From local use to general utility, medium-range and even extended highway needs, Demco scrap trailers give you the ability to take on any job. Because of the irregular size of various scrap metals, a gondola trailer lets you reduce the number of trips, which can make a job more profitable because you're using fewer resources and less time. With a Demco gondola, there's no limit to the amount of material you can transport.

In addition to their durable construction and enhanced capacity, all Demco trailers' exterior surfaces are caulked and phosphate washed prior to painting for superior paint adhesion, meaning your trailer will look good for years to come.

As an established player in the industry, Demco has been manufacturing trailers for more than 30 years, and company experts can help you add efficiency to your scrapyard operations. Demco team members will be at ReMA (Recycled Materials Association) 2025, formally known as Institute of Scrap Recycling Industries (ISRI), Convention & Exhibition in San Diego May 12-15 in Booth A18. Stop by to learn more about how the uniquely built Demco gondola design can cure equipment headaches and add to your bottom line.

Learn more about Demco's gondolas for scrap transport at www.demco-products.com/trailers/gondola-scrap-trailers.

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- Aluminum rims

TARIFFS, IMPORTS AND RECYCLING:

How 2025 could unfold for US aluminum

The country has entered another year with diverse challenges and opportunities for the aluminum industry.

BY DR. SUBODH DAS OF PHINIX LLC

The year started on a chaotic note for aluminum as the metal's price skyrocketed under the combined forces of tariffs, sanctions and tight supply. Demand took a back seat, while supply concerns determined the metal's movement.

President Donald Trump announced a series of protective measures for the U.S. manufacturing and industrial sectors. On March 12, the administration implemented 25 percent blanket tariffs on imported steel and aluminum under Section 232 of the Trade Expansion Act of 1962. While Trump enacted these tariffs during his first term and they were maintained by President Joe Biden when he was in office, Trump removed any exclusions and quotas that had been put in place over the years with this move when he returned to office for his second term.

"Our nation requires steel and aluminum to be made in America, not in foreign lands," Trump said.

The U.S. semifinished and finished product industry fears rising costs and material scarcity, as it imports a major portion of its raw materials. Meanwhile, U.S. trade partners are considering or already have announced retaliatory tariffs on products imported from the U.S.

On March 15, Canada implemented 25 percent tariffs on a list of products imported from the U.S. valued at \$29.8 billion. That list includes unwrought and alloyed aluminum and several semifinished aluminum products. The developments already indicate a trade war, likely impacting the aluminum supply chain.

THE US ALUMINUM VALUE CHAIN

The aluminum industries in the U.S. and Canada are considered highly integrated in operations and logistics. They are part of a single value chain in which one country's focus on production activities is highly dependent on the other. Canada is mainly a producer and supplier of primary aluminum, providing roughly 60 percent of the total primary metal demand in the United States, while the U.S. aluminum industry primarily produces secondary metals and semis and ships many products to Canada in return.

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KEY TAKEAWAYS

- + Tariffs mean the U.S. aluminum semifinished and finished products industry likely will face rising costs and material scarcity as imports are a major part of its raw material inputs.
- + Using aluminum scrap is the most immediate way to decarbonize aluminum production and produce more of this critical material to enhance national interests and security.
- + Technologies have been commercialized or are under development to produce recycle-friendly alloys and refine secondary aluminum to be primary-compatible, and expediting these efforts through state and federal support can help achieve aluminum recycling targets.

As per U.S. Geological Survey (USGS) data, the U.S. imported 5.46 million tons of aluminum (semifinished products and scrap) last year. Canada shipped 56 percent of those aluminum imports, while the United Arab Emirates supplied 8 percent and China supplied only 3 percent.

The Aluminum Association, based in Arlington, Virginia, urged certainty regarding the tariff landscape, considering the decades-long trading relationship with Canada and the need for consistent metal supply. The association urged Trump and his administration to deliver a deal with Canada to ensure a robust metal supply for U.S. manufacturers and consumers.

Tariffs and retaliatory tariffs will impact the aluminum supply chain in the U.S. more than anywhere else.

ALUMINUM RECYCLING

Under the current circumstances, the first question is how the U.S. aluminum

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semifinished and finished product sectors will ensure supply chain balance. How does a country that imports 47 percent of its apparent aluminum consumption maintain productivity and margin under such heavy tariff blockage? Moreover, the U.S. plans to add more than 1 million tons of new aluminum rolling capacity in the next two years, which will likely increase demand for raw materials.

On the brighter side, in 2024, according to USGS statistics, aluminum recovered from scrap in the U.S. totaled nearly 3.6 million tons, of which 56 percent was new, or manufacturing, scrap and 44 percent was end-of-life, or obsolete, scrap. This obsolete scrap equaled about 37 percent of apparent consumption.

If we recover more aluminum for recycling, we can increase secondary aluminum production in this country to combat imports. The bottom line is that secondary aluminum is the new primary aluminum.

It would take more than five years to construct a primary smelter in the U.S. and cost more than \$3 billion. It is uncertain how competitive such a facility would be on the global stage as 40 percent of the variable cost of smelting is electricity. Considering high electricity costs and the role Canada plays in supplying energy to the U.S., this seems questionable. While electricity exchanges between the U.S. and Canada represent less than 1 percent of their respective total generation, according to the U.S. Energy Information Administration (EIA), they are important to grid balancing—constantly matching electricity consumption to electricity production. In 2023, the U.S. bought \$3.2 billion worth of

electricity from Canada and sold the country \$1.2 billion, with U.S. states and regions near the border, including New York, New England, the Midwest and the West Coast, typically buying the most Canadian electricity, according to the EIA.

On the other hand, we already have the infrastructure and raw materials (and we can procure more if we don't export or landfill aluminum scrap) to grow our production of low-cost and low-carbon secondary aluminum. More scrap consumption means fewer imports, less of the material lost to landfills and much fewer tariff concerns.

Since making products from aluminum scrap consumes only 5 percent of

ALUMINUM PRICING*

FEB. 2025

\$2,221.55

JULY 2024

\$2,443.52

FEB. 2024

\$1,810.00

JULY 2023

\$1,812.19

*Average monthly settlement price, cash buyer, U.S. dollars per metric ton. Source: London Metal Exchange, www.lme.com



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the energy required for producing primary aluminum from bauxite, aluminum scrap is the original low-carbon product. Using aluminum scrap is the most immediate way to decarbonize aluminum production and produce more of this critical material to enhance national interests and security.

THE BOON OF UBC RECYCLING

The present situation in the U.S. underlines the importance of raising end-of-life aluminum recycling, particularly for UBCs, or used beverage cans, which would enable growth in secondary aluminum production. Despite the resourcefulness of aluminum recycling, more than 61 billion UBCs—around \$1.18 billion worth of aluminum—were landfilled in 2023 that otherwise could have been recycled and made into new cans.

This loss has a significant negative impact on the environment and the economy. The consumer recycling rate of UBCs

stood at 43 percent in 2023, according to data from the Aluminum Association and the Can Manufacturers Institute (CMI). This figure was far below an average rate of 52 percent since tracking began in 1990.

Notably, in 2021, Washington-based CMI and its collaborators announced ambitious U.S. UBC recycling rate targets of 70 percent by 2030, 80 percent by 2040 and 90 percent by 2050.

However, despite its efforts, the UBC recycling rate has declined.

Reaching these targets could have significant sustainability and economic benchmarks for the industry and the country. If the recycling rate had been 70 percent instead of 43 percent in 2023, roughly 28.9 billion more UBCs could have been recycled, generating \$450 million in revenue for the U.S. recycling system and saving enough energy to power more than 1.3 million U.S. homes, per CMI calculations.

IMPROVED COLLECTION AND SORTING, LESS LANDFILLING

According to research we have conducted at Phinix LLC, based in Clayton, Missouri, the U.S. has landfilled about 90.2 million tons of aluminum to date. The average amount of aluminum landfilled yearly since 2010 is about 2.55 million tons. U.S. Environmental Protection Agency data show that the U.S. saw an eight-fold increase in landfilling in 60 years despite an increasing focus on recycling and conservation over that time. This loss can be prevented with better collection and sorting.

The CMI and aluminum industry stakeholders outlined a detailed, step-by-step action plan to increase the UBC recycling rate in “The Aluminum Beverage Can Recycling Primer & Roadmap,” published in July 2022, identifying four action pillars:

- catalyze the passage and implementation of well-designed deposit systems at the state and federal levels;



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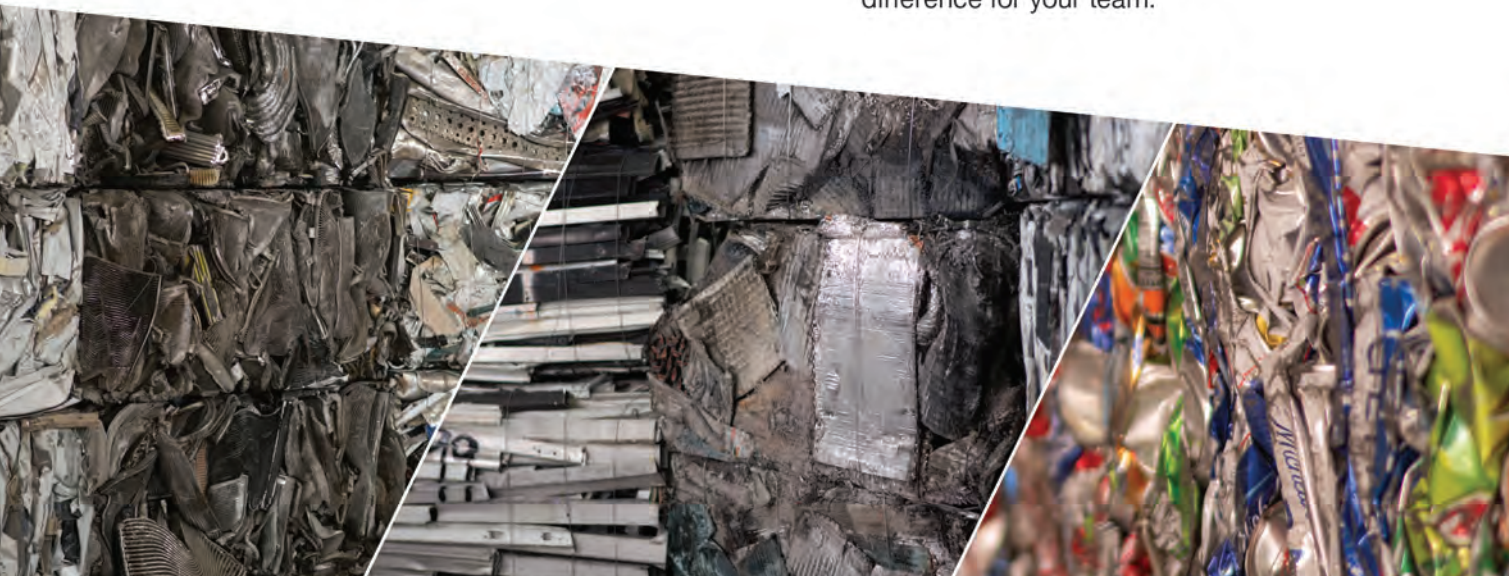
What we process: full and split loads, domestic and import

- Clean and Irony ACR (Talk)
- Clean and Irony All Aluminum Radiators (Tally)
- Old Sheet (Taint/Tabor)
- 6063 with 5% Iron
- MLC, Painted MLC, Painted Siding, UBC, and various other Aluminum grades
- Dross/Tolling Services

What we supply: flexible packaging and chemistries to meet consumer specifications

- Copper Chops (#1 and #2)
- Aluminum RSI in 2,000# Sows (3x, 6x, 11xx, and more)
- X-Ray Aluminum Shreds: 3x, 6x, 2/7, and more
- Deox 70 and Deox 95 Briquettes, Deox 100 bagged Flake

Make the trade that makes the difference for your team.



- increase and improve household and away-from-home recycling;
- ensure that more cans are properly sorted at recycling centers; and
- grow consumer understanding of the importance of UBC recycling and their ability to collect and sell UBCs for cash.

As of the end of last year, the CMI grant program funded equipment in six material recovery facilities (MRFs), enabling the capture of more than 115.5 million UBCs at a value of \$1.8 million annually. Recycling these UBCs will result in energy savings equivalent to powering more than

5,000 U.S. homes for a year.

Furthermore, technologies either have been commercialized or are under development to produce recycle-friendly alloys and refine secondary aluminum to be primary-compatible. Expediting these efforts through state and federal support can help achieve aluminum recycling targets.



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|-------------------------|------------------------|
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INNOVATIONS IN SORTING TECHNOLOGY

Development and commercialization of various technologies are progressing quickly. These technologies, in increasing order of sophistication, effectiveness and capital and operating costs in dollars per ton and decreasing productivity and speed in tons per hour, are:

- sorting by hand based on shape and size boosted by artificial intelligence;
- density-based sorting using heavy media plants and X-ray technology;
- color-based sorting;
- surface-based sensor sorting using laser-induced breakdown spectroscopy and X-ray fluorescence; and
- electrochemical and chemical-based recovery/removal of impurities.

THE DEMAND FACTOR

Demand for 2025 could be lackluster given the risks to the economy and energy prices caused by trade policy, which likely will weaken the economy in the U.S. and China. This could reduce demand for copper and aluminum as the year progresses. This is especially true if industry participants acquire excess supplies early in the year, which they seem to be doing.

Let's make recycling relevant again, starting with UBCs, as the country enters another year with diverse challenges and opportunities for the industry.

Beverage cans are in all our homes and should be in all our recycling bins. We can increase secondary aluminum production in the U.S. and decrease our imports of tariffed primary aluminum; we discard that opportunity when we throw away our UBCs rather than recycling them. **RT**

Subodh Das, Ph.D., is CEO of Phinix LLC, which provides research, development, technical and marketing consulting, expert testimony and due-diligence services for process and product development, and commercialization and recycling for light metals. Email him at skdas@phinix.net.



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RIISING TO THE **OCCASION**

Bano Recycling overcomes challenges to manufacture an automated plant to shred copper cathodes.

Bano Recycling prides itself on developing innovative solutions, and a recent project the company completed for a U.S. customer exemplifies that.

The customer asked Bano Recycling to automate a shredding plant for copper cathodes, with the safety of the operator being a primary consideration.

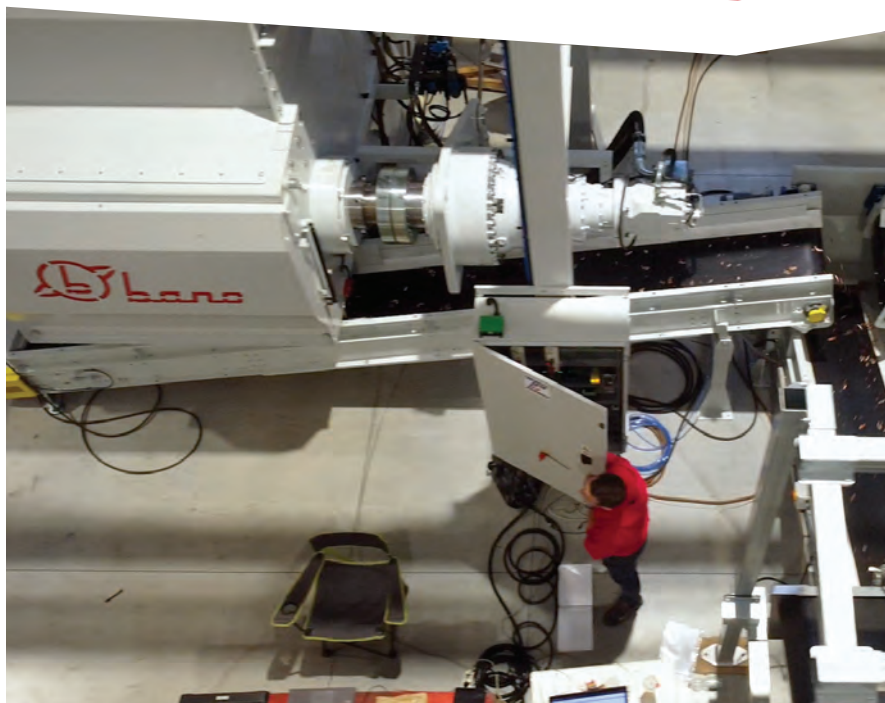
Simone Bano, the company's sales manager, says Bano Recycling needed to combine its electronics, automation and mechanical skills, as well as input from its research and development and engineering departments, to design and

manufacture a fully automated process that also safeguards the operator during the copper cathode shredding process.

The system that Bano manufactured shreds cathodes, high-purity copper plates that are produced using an electrolytic refining process, to 30-millimeter (roughly 1-inch) pieces in a single step.

OVERCOMING CHALLENGES

"One of the challenges of this special project was to integrate the shredding system with the loading system," says Bano



Project Engineer Matteo Schivo.

The textured surfaces of the 15-millimeter (roughly half-inch) thick cathodes required Bano to develop a robot that uses a compressed air restraint system in combination with a suction-cup system to transport the cathode to one of two shredders, he explains.

"In this project, the main challenge was to synchronize the loading of the cathodes in the two main machines," says Alessandro Frau, a programmable logic controller (PLC) programmer for Bano Recycling. "To do this, we synchronized the handling of the robot with the waiting times of the shredders."

This means a new cathode is not loaded until the shredder has processed the previous cathode, avoiding issues with over-pressure or blockages, he adds.

Bano Recycling also needed to take space constraints into consideration when designing the system.

"The two single-shaft shredders were custom-designed and engineered to meet specific space requirements at the customer's site," Bano says.

Additionally, the final product needed to be free of iron contamination. "We had to integrate several magnets into the line to ensure this," he says.

TAKING A TRAIL RUN

After the machines were completed, the entire line was assembled at Bano Recycling's facility in Padua, Italy, Bano says.

The company asked its customer to ship its cathodes to Padua for a trial run and also invited the customer to perform a test run in person at Bano Recycling's plant.

"We checked all the safety requirements that we had originally been asked for," he says. "We also checked the hourly capacity of the plant, which we've not only reached but almost doubled what was originally requested," resulting in a satisfied customer.

"We are very proud to have been able to participate in such an innovative project," Bano says. "This has allowed us to enrich our background, enabling us to potentially take on new challenges in the future."

Bano adds, "This project embodies the true strength and spirit of our company, namely our ability to transform a challenge into a new, innovative, tailor-made product that meets our customer's needs."

SCAN THE QR CODE to watch the first installment of Bano Tech Talk.



NONFERROUS heavyweights

Collectively, North America's largest nonferrous processors handled more pounds in 2024 than in 2022, continuing a growth trend.

BY DEANNE TOTO

EDITOR'S NOTE: In gathering the data for this list, we reached out to the companies we suspected might rank. However, some declined to provide us with a figure we could use as the basis for our ranking, and others did not respond in time to include their information. In those cases, we estimated figures. However, we are aware we may have missed companies that are not on our radar for various reasons. If you see an omission or feel your company or a competitor has been inaccurately listed, I ask that you reach out to me at dtoto@gie.net to let me know.

North America's largest nonferrous scrap processors grew the collective pounds they processed and shipped in 2024 compared with 2022. The 20 recycling companies that made our 2023 list, which was based on pounds handled in 2022, processed and shipped a total of 7.92 billion pounds of nonferrous metals, while the 20 companies on this year's list handled nearly 9.1 billion pounds.

To compile this year's list, we asked recycled materials processors to report the total pounds of nonferrous they processed and shipped last year and whether it included nonferrous auto shredder byproducts. When reported, that by-product figure was subtracted from the overall figure to arrive at the totals we used to create the rankings. In some cases, we had to estimate a byproduct figure as it was not reported, though the person who submitted the form indicated those products were included in the figure provided. In a few other cases, we had to estimate a total figure because the firm did not respond to repeated requests for information.

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to Precision Metal Sorting



NORTH AMERICA'S LARGEST NONFERROUS SCRAP PROCESSORS

Company Name & Headquarters	CEO	No. of Facilities	Operating Regions	Website
1. OmniSource Corp., Fort Wayne, Indiana	Miguel Alvarez (president)	70-plus	Midwest, Southeast, South, Mexico	www.omnisource.com
2. SA Recycling, Orange, California	George Adams	143	Midwest, Southeast, Southwest, West Coast	www.sarecycling.com
3. Radius Recycling, Portland, Oregon	Tamara Lundgren	50	Pacific Northwest, West Coast, New England, Southeast	www.radiusrecycling.com
4. Triple M Metal*, Ontario, Canada	Steven Leddy (president)	41	Ontario, New York, Southeast, Mexico	www.triplemmetal.com
5. David J. Joseph Co.*, Cincinnati, Ohio	Trevor Saunders	73	Midwest, Southeast, Mountain West	www.djj.com
6. Sims Metal*, New South Wales, Australia	Stephen Mikkelsen	60	Canada, West Coast, Midwest, Southeast, Southwest	www.simsmm.com
7. Ferrous Processing & Trading, Detroit, Michigan	Bill Sulak	28	Midwest, Southeast, Ontario, Mexico,	www.fptscrap.com
8. United Scrap Metal*, Cicero, Illinois	Marsha Serlin	8	Midwest, Southeast	www.unitedscrap.com
9. Alter Trading Corp., St. Louis, Missouri	Jack Grundfest	77	Midwest, South, Mountain West	www.altertrading.com
10. EMR USA, Camden, New Jersey	Joseph Balzano	55	Mid-Atlantic, Upper Midwest, Gulf Coast	https://us.emrgroup.com
11. Prime Materials Recovery Inc., East Hartford, Connecticut	Bernard C. Schilberg	8	Northeast, Carolinas	www.pmrinc.com
12. CMC, Irving, Texas	Barbara Smith	43	Southeast, Texas, Midwest	www.cmc.com
13. Recuperaciones Industriales Internacionales SA de CV (RIISA), Nuevo Leon, Mexico	Bernardo Llaguno Garza	4	Mexico	https://riisa.mx
14. MetalX LLC, Fort Wayne, Indiana	Danny Rifkin	3	Indiana	www.metalx.net
15. Universal Scrap Metals Inc., Chicago, Illinois	Jason Zeid	8	Midwest	www.usmrecycles.com
16. Padnos, Holland, Michigan	Jonathan Padnos	31	Midwest	www.padnos.com
17. Cohen Recycling, Middletown, Ohio	Ken Cohen	14	Midwest	www.cohenusa.com
18. GLE Scrap Metal (includes tonnage shipped by Mallin Cos.), Longwood, Florida	Danny Zack	10	Midwest, Southeast	www.glescrapmetal.com
19. Shapiro Metals, St. Louis, Missouri	Bruce Shapiro	10	Midwest, Southeast, South	www.shapirometals.com
20. Ecovery, Loxley, Alabama	Brock E. Norris (president and COO)	1	Alabama	www.ecoveryllc.com

Rankings are based on pounds of nonferrous processed and sold in 2024, excluding nonferrous auto shredder byproduct.

*Estimates used to determine ranking either fully or in part.



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north american nonferrous processors list

Arriving at such estimates is not a perfect science, which is why I want to thank the company representatives who took the time to provide all the data we requested. Your help vastly improves the accuracy of these lists.

CHANGES IN THE LINEUP

As in our 2023 list, OmniSource Corp., headquartered in Fort Wayne, Indiana; SA Recycling, headquartered in Orange, California; Radius Recycling (formerly Schnitzer Steel Industries Inc.), headquartered in Portland, Oregon; Triple M Metal, headquartered in Brampton, Ontario; and David J. Joseph Co., headquartered in Cincinnati, ranked in the first five positions of this year's list.

Sims Metal, the metal recycling business unit of Australia-based Sims Ltd., jumped two spots from 2023 to the No. 6 position on this year's list, while Ferrous Processing & Trading, the Detroit-based metals recycling subsidiary of Cleveland-Cliffs, maintained its No. 7 position, and United Scrap Metal of Cicero, Illinois, fell to the No. 8 spot from No. 6 in 2023.

Sims' increase was helped in part by its purchase of Northeast Metal Traders (NEMT), a nonferrous scrap metal wholesaler and broker operating a single-scale site in Philadelphia with extensive supplier and end-consumer relationships across the eastern United States. The company was founded by Mitchell Goldberg, Elliott Goldberg and Ron Greller in 1993, and its purchase aligned with Sims Ltd.'s growth strategy, which included the expansion of its North American nonferrous business. Sims described NEMT as one of the largest copper recyclers in the U.S., processing and selling about 60,000 tons, or 120,000 pounds, of nonferrous metal per year at the time of its purchase in 2023.

New Jersey-based EMR also moved from the No. 17 spot on our 2023 list to the No. 10 spot this year, having processed considerably more pounds of nonferrous metals than we estimated the company to have handled on our 2023 list.

New to the list in 2025 are Holland, Michigan-headquartered Padnos, debuting in the No. 16 spot; GLE Scrap Metal, headquartered in Longwood, Florida, which ranked in the No. 18 spot; and Shapiro Metals, headquartered in St. Louis, which



debuted in the No. 19 spot.

GLE's figures include the pounds processed by Mallin Cos. of Kansas City, Missouri, which the company acquired an interest in at the end of 2024.

Mallin Cos. operates two aluminum wire recycling lines in Kansas City, while GLE operates six full-service metal recycling facilities across Michigan and Florida, a brokerage and trading division, an insulated copper wire recycling plant and Great Lakes Electronics Corp., its R2- (Responsible Recycling-) certified electronics recycling arm.

The companies say their new partnership will allow Mallin Cos. to stay competitive and continue its leadership in insulated aluminum, aluminum conductor steel reinforced and underground residential distribution cable processing.

Padnos also expanded in 2024 by acquiring three companies: Sam Winer & Co. Inc., Elkhart, Indiana; Howe Auto Sales, Bay City, Michigan; and Grandpa's Garage, Traverse City, Michigan, growing its regional network.

Sam Winer & Co. now operates as Padnos Elkhart, while Howe Auto Sales operates as Padnos Bay City. Grandpa's Garage was consolidated into Padnos' nearby Traverse City location.

Padnos also expanded its footprint in Michigan in 2022, purchasing Saginaw, Michigan-based B. Clinkston & Sons Inc., a third-generation family-owned company that was founded in 1915. That purchase followed its 2019 acquisition of a location in Howell, Michigan, from the former Regal Recycling Inc., where Padnos installed an auto shredder.

Prior to the Regal purchase, the company acquired "a significant interest" in GLR Advanced Recycling of Roseville, Michigan, describing that transaction as a strategic partnership.

No longer ranking on this year's list are Upstate Shredding – Weitsman Recycling, headquartered in Owego, New York, which ranked No. 15 in 2023, and the New Jersey-based recyclers Fortune Metal Recycling and Metalico, which held the No. 19 and No. 20 spots in 2023, respectively.

We suspect additional companies are poised to rank in future editions of this list, and we hope they will report their information to *Recycling Today* so that we can share their success with others in the industry.

AN EMERGING THEME

While companies' nonferrous processing volumes took a hit at the height of the pandemic, when lockdowns were in place that affected generation of manufacturing scrap and yards' retail intake, the subsequent years have seen normalcy return. However, the trade war that President Donald Trump has initiated could affect industrial generation—whether for better or for worse—in the months and potentially years ahead.

Right now, the uncertainty around the status of Trump's tariffs on Canada and Mexico has many processors feeling apprehensive, particularly those with operations along the U.S.-Mexico and U.S.-Canada borders or across the borders, as they await further clarity.

"It's an interesting way to have to run a business," an executive with a scrap processing company that has operations in the U.S. Midwest and South, including in Texas, tells *Recycling Today* in early March. "I'm hoping sanity takes over at some point." **RT**

The author is editorial director of the Recycling Today Media Group and can be reached at dtoto@gie.net.



RECYCLING'S REVOLUTION: **ROVOX** Smart Sorting

Built on a foundation of engineering excellence, automation expertise, and AI-driven innovation **ROVOX** is building smarter recycling.

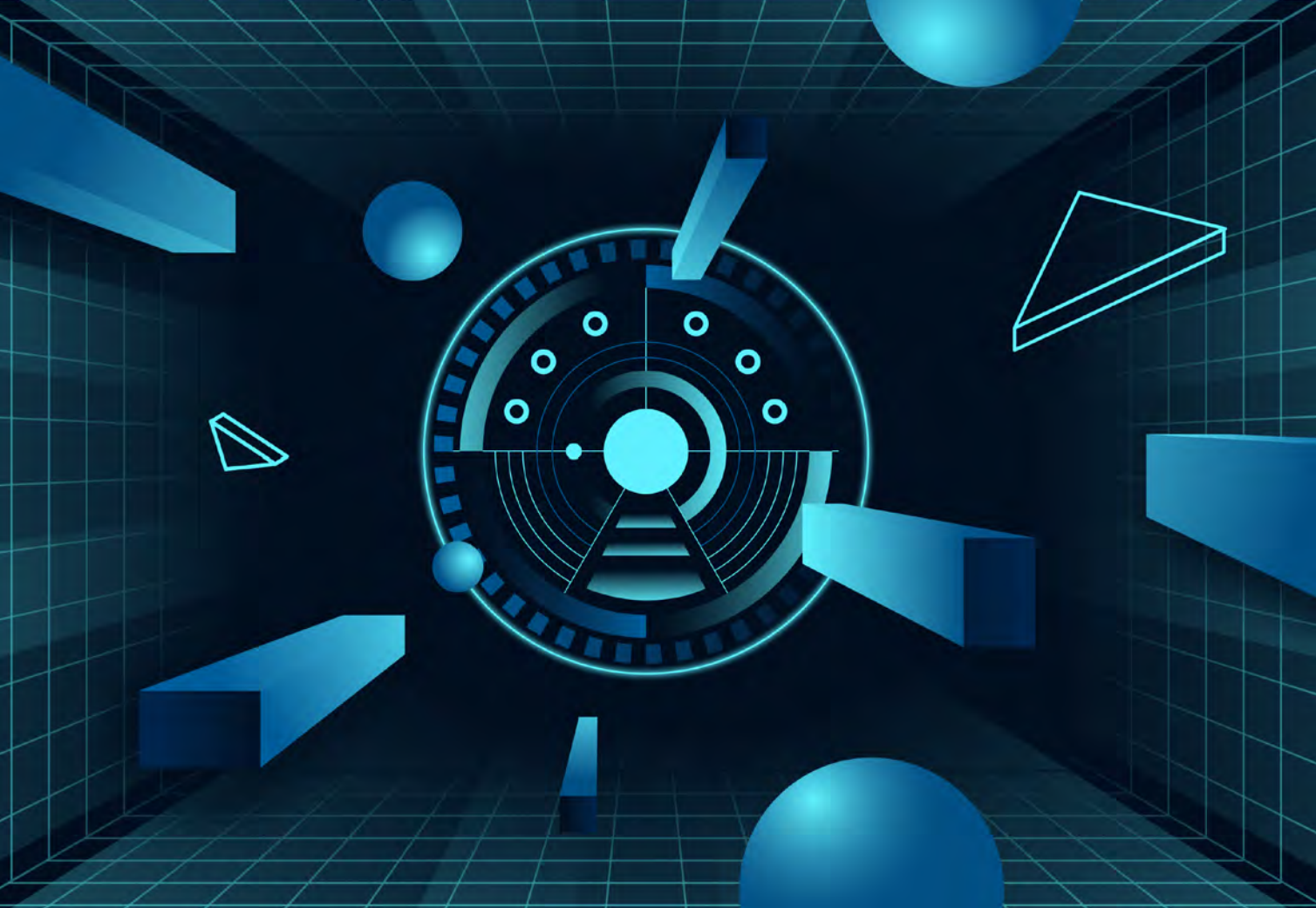
A division of FIH Mobile Limited, ROVOX has a heritage in precision manufacturing.

Our systems deliver advanced sorting solutions ensuring superior material recovery and productivity. Automation, computer vision, and deep learning enable adaptive sorting to handle complex and evolving material streams.

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ROVOX: Pioneering AI and Automation for Smarter Recycling

The Legacy Behind ROVOX: From High-Tech Manufacturing to Smart Recycling

ROVOX is not just a new name in the recycling industry—it is a brand built on a foundation of **engineering excellence, automation expertise and AI-driven innovation**. It originates from **FIH Mobile Ltd. (FIH)**, a global leader in design, development and precision manufacturing for mobile devices, communication technology and consumer electronics.

For more than two decades, FIH has been the silent force behind many of the world's most recognized technology brands, pioneering vertically integrated, end-to-end manufacturing solutions. From its

origins in wireless communication to its expansion into the automotive electronics and equipment industries, FIH has embraced AI and next-generation communication technologies, staying at the forefront of technological innovation and industrial automation.

At the heart of this legacy, ROVOX was born—not as a new venture, but as a natural evolution. **The same AI, robotics and automation that once powered the development of mobile devices now are being harnessed to revolutionize the recycling industry**, bringing unparalleled speed,

accuracy and efficiency to material recovery.

The Secret Inside the Factory

The application of ROVOX's technology to the recycling industry was not accidental—it was a natural progression from the company's origins in high-precision manufacturing.

In smartphone production, automated inspection systems rely on computer vision AI to detect microscopic defects, while robotic arms use precise coordination to position and package components with incredible accuracy.

Over time, engineers realized the

same technology—capable of identifying, grasping and sorting objects with precision—could be adapted beyond the factory floor. **The ability to recognize, classify and manipulate diverse materials in real-time made it an ideal solution for recycling facilities, where efficient sorting is crucial to maximizing recovery rates and optimizing return on investment (ROI).**

This revelation set the stage for ROVOX's entry into the recycling industry, applying its advanced AI and automation expertise to transform material recovery.

The Technology and Vision Driving ROVOX

ROVOX is built upon three fundamental pillars:

1. Engineering Excellence & Precision

— With a heritage in precision manufacturing, ROVOX systems deliver advanced sorting solutions that ensure superior material recovery and productivity.

2. AI for Smarter Operations

— Through automation, computer vision and deep learning, ROVOX enables adaptive sorting systems that handle complex and evolving material streams using minimal manual intervention.

3. Sustainability & Global Responsibility

— Technology should not only optimize operations but also drive positive environmental change. ROVOX empowers recycling operators to increase efficiency, recover more valuable materials and reduce landfill dependency—creating a future where automation and sustainability go hand in hand.

The AI That Never Sleeps: Smarter, More Adaptive and Value-Driven Sorting

In a recent proof-of-concept trial with one of North America's leading recycling companies, **ROVOX's AI-powered sorting system demonstrated its ability to**



transform the efficiency and accuracy of material recovery. Key findings from the trial highlighted three major advantages:

1. Over 90% Sorting Accuracy — By combining AI-driven vision recognition with precise robotic arm control, ROVOX achieved high-precision identification and sorting of various recyclables, ensuring a consistently high recovery rate.

2. Adaptive Multimaterial Sorting — Unlike traditional systems that can struggle with complex material compositions, ROVOX's AI is designed to rapidly adapt to different material streams. In this trial, the system successfully distinguished and sorted multiple types of plastics—including **PET, HDPE and PP**—showcasing its adaptability to diverse recycling environments.

3. Optimized Value-Driven Sorting Strategies — Beyond just sorting, ROVOX provides intelligent data-driven recommendations on how to maximize the value of recovered materials. **By analyzing material compositions and market demand, the system suggests and automates the most profitable sorting**

strategies, helping facilities maximize their revenue potential.

Bridging Manufacturing and Sustainability

ROVOX, backed by FIH, is more than a technology—it's a commitment to smarter, more sustainable recycling. From precision manufacturing to AI-powered sorting, ROVOX is closing the gap between engineering excellence and environmental responsibility.

As we continue to advance AI-driven recycling automation, we welcome industry leaders and innovators to be part of this transformation.

The future of smart recycling starts with ROVOX.

Visit us at Waste Expo, Booth #729, to see ROVOX in action.



Learn more at www.rovox.com.



Establishing an E-SCRAP STANDARD

For 15 years, Ohio-based electronics recycler Boardsort has worked to develop an electronics scrap pricing standard.

BY **TESS KAZDIN**

Since its inception, education has been a core tenet of Alliance, Ohio-based electronics recycling company Boardsort.

For 15 years, the company has worked to shed light on electronic scrap pricing, enhancing the level of transparency and knowledge for buyers and sellers of these materials.

The Boardsort website features a color-coded public pricing tool, informational videos and thousands of message boards that connect e-scrap generators and consumers to provide visibility into the pricing of electronic scrap.



The company's motto—"learn, sell, profit"—applies to Boardsort as well as its customers.

"The more educated my customer is, it's better for us both," Boardsort co-founder Chris Skeeles says.

What started as a two-person operation in 2010 has grown into a company

with 14 employees and two locations.

Boardsort specializes in buying and processing circuit boards and computer chips, as well as other used electronics. Along with its headquarters in Alliance, the company has a warehouse in Wickliffe, Ohio, to store outbound shipments and facilitate public drop-offs.

According to Skeeles, Boardsort has seen consistent growth over the years, largely thanks to the price of gold.

"That's really what our strong point is," he says. "It helps our business as the gold, silver and copper markets increase."

As demand for electronics recycling services grew in the 2010s, Skeeles says he and co-founder Bruce Opdahl saw a market need for pricing standardization.

"There really was not a lot of information out there available to a commercial scrapyard, all the way down to a basic retail customer," Skeeles says. "It was pretty much the Wild West. ... When you were selling your materials, it [depended] on where you were taking them. There was no standardized pricing. You might get 10 cents per pound; you might get \$20 per pound."

The pair created Boardsort.com for individuals and companies to sell, discuss and learn about e-scrap pricing.

TRANSPARENCY IS PARAMOUNT

Electronic scrap prices are listed on the Boardsort website and regularly updated, something Skeeles says was uncommon in the early 2010s.

The pricing index features a five-color tagging system, with each color representing a material's desirability.

Green-tagged items are considered focus materials, those that provide the maximum return for the least amount of effort invested, according to Boardsort. Parts from desktop and laptop computers, for example, are focus items.

Yellow-tagged items could need cleaning or additional processing to improve their value. Examples of additional processing could include removing a bracket from a gold finger card or cleaning a heat sink from a circuit board.

Blue-tagged materials are deemed complex items and include wire wrap pin boards, high-grade telecoms and any cellphone with a battery. The Boardsort website says these items must be examined on a piece-by-piece basis because they present too many variables.

When the value of an item has been irreparably lost from overprocessing, it's given an orange tag.

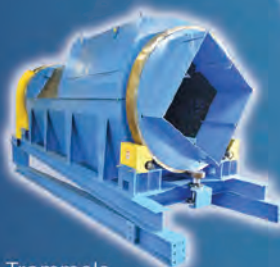
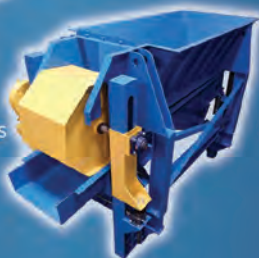
"Had you not cut that finger off that stick of RAM [random access memory], it would have paid more" as a complete

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component, Skeeles offers as an example.

Red-tagged items, the last category in the index, are not accepted and labeled “do not send.” These items could carry a fee to collect and process and include lithium-ion laptop and cellphone batteries.

Boardsort’s pricing index was developed not only to provide guidance for electronics scrappers but also to ensure items maintain their maximum value.

“How can we have our customer do things in a way that works for both of us?” Skeeles asks. “Whether it’s the pricing, whether it’s the grading, whether it’s the transparency and the honesty—the education itself.”

Consumers can take their e-scrap education into their own hands through the Boardsort public message forums.

“Back in the day, we were just a small company... and didn’t have a lot of time to dedicate to answering the plethora of questions that we were being bombarded with on our website,” he explains. “The nice thing about our forums, and where this is really a tool for everyone, is the handful of volunteers we have.”

With more than 34,000 posts across multiple topics ranging from general e-scrap identification to tips and techniques for acquiring, processing and selling e-scrap, the forums have created a community within the Boardsort website.

“There are a lot of folks who really find enjoyment looking at all these circuit boards and just trying to figure out how they fit within the puzzle,” Skeeles says. “You post a picture on our forums, and someone’s reporting back almost immediately with an answer as to what it is they see.”

The company also manages a YouTube channel featuring educational videos and tutorials about different e-scrap types.

In January, Boardsort began uploading videos aimed at new scrappers looking to break into electronics recycling.

“Our educational videos are very popular, and we are adding to them on a regular basis,” he says.

One of the site’s upcoming videos will cover the finer points of shipping, documentation, packaging and transportation.

CONSISTENCY IS KEY

While Boardsort offers walk-in services that are available to the public, Skeeles says the largest and fastest growing segment of its customer base is commercial recyclers. Typically, these businesses are small- to midsized yards big enough to obtain material but without the volume or technology to break it down to the grade necessary to advance it to the next level of recycling.

Boardsort offers a sort-and-settle program for these commercial accounts, allowing customers to send purchased e-scrap to Boardsort for grading and sorting.

“We produce an itemized ticket of what was found in the box and pay our highest sorted material rate, minus a 10 percent sort fee,” Skeeles says.

Once the material is sorted and deemed suitable for processing, its next destination usually is a smelter.

According to Skeeles, most of the company’s traffic comes from Ohio and neighboring states Michigan, Indiana and Pennsylvania, though Boardsort also works with a number of California-based companies.

“We do a lot of business in states that are not friendly to this



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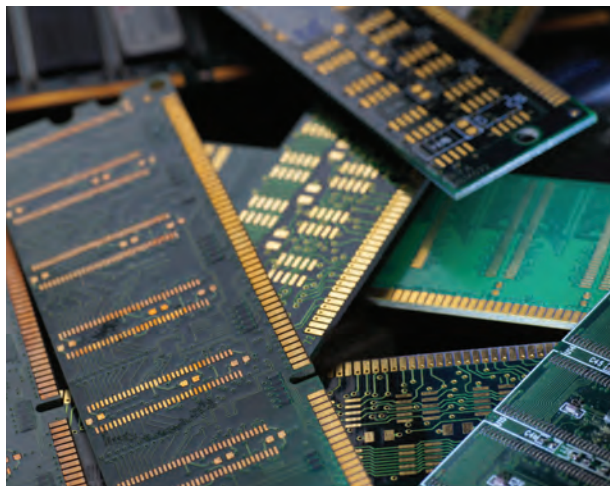
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type of thing,” he says. “We find that regulations allow businesses [in states with e-scrap laws] to collect to a certain point, but then they have to move that material. They don’t have the ability to process further.”

Boardsort sorts and processes material manually, providing additional cleaning to acquired materials on its labor line. The company has three forklifts to move material across the Alliance property, while employees do most of the physical work short of transporting shipments.

Because of the amount of physical labor, Skeeles says safety always is top of mind.

“Right now, our concern is the up-and-coming battery problems that we’re all going to be experiencing as we’re moving to an electrified society,” he explains. “We see a lot of [batteries].”

To mitigate the risk of a thermal event caused by lithium-ion batteries, the company has focused on isolating those it receives through inbound shipments. Forty-foot ventilated shipping containers line the perimeter of the property and are used to house these batteries.

“Should there be a problem, at least the batteries themselves are isolated from our building, our inventory and, of course, our staff,” Skeeles says.

Although the price of gold has played a role in Boardsort’s success, consistency also is key.

“My customers want to know that they can purchase this material at a certain price and trust that I’m going to pay them when it comes time to pay them,” Skeeles says. “You have to be consistent in your pricing and grading.”

Boardsort continues to grow, with an additional warehouse and set of offices in development at its 4.5-acre Alliance property slated for completion in June. It broke ground on the expansion, which has been a learning experience, in February.

“It has been a real education with respect to dealing with the regulations, zoning and all of the other considerations that go into building a facility such as this,” he says. “Once we received our final approval from the powers that be, we wasted no time getting busy.” **RT**

The author is digital editor of the Recycling Today Media Group and can be reached at tkazdin@gie.net.



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IMPROVING OPERATIONS, INSTILLING CONFIDENCE

A ZDS preshredder and automation solution, manufactured by Danieli Centro Recycling, have enhanced safety and efficiency at one Ohio facility.

Danieli Centro Recycling knows a major focus of its customers is continuous operational improvement, and recent installations at a metals recycling business in Dalton, Ohio, have provided just that.

Installed at the same time over a five-month span, a Danieli ZDS preshredder and an inverter drive, paired with a new 6,000-horsepower AC squirrel cage motor, have reliably increased the business's productivity while also enhancing the safety of its operating and maintenance teams.

"Ultimately, it was reliability and safety that were the driving factors in us purchasing this equipment," the business president says.

Based in Italy, with North American headquarters in Cranberry Township, Pennsylvania, Danieli has the largest installation base in North America for preshredders, and its ZDS model has helped the Ohio business increase the throughput of its shredding operation while also helping to keep its other assets in better working condition over the long term.

The business president says the facility has started processing all crushed, logged, and baled material in the preshredder, which has helped with throughput in the facility's automobile shredder.

"The average time we're running is approximately 30 hours per week when we process," he says. "That's really the key [with the preshredder]: the throughput. We're really doing more with less. We're able to shred the number of tons that we normally would have in a 40-hour work week in, basically, 20 [hours] now."

"Long-term, it's a much safer, more efficient operation. It's

really keeping our assets in a much better operating condition, and that drives down operational expenses, and that's the key."

Danieli's preshredders are particularly suitable for processing ferrous scrap found in vehicles, sheet metal, and waste from electrical and electronic equipment (WEEE), as well as more in bulk or baled form. They eliminate catastrophic unshred-

dables, extend rotor and casting life, and create a more homogenized mix of material that can be fed into a shredder to aid in full-box shredding. Additionally, they allow smaller shredders, which are incapable of processing end-of-life vehicles and baled scrap, to purchase and break down those items into a form that a smaller shredder can accept.

Another important feature of the company's preshredders is their ability to reduce energy discharges emanating from the material being processed.

"That [feature] ultimately makes it much safer for our shredding crew operating the machine, working around the machine and feeding the machine," the business president says of the ZDS model at his Ohio facility.

Along with the preshredder, Danieli's inverter, featuring a patented automation cubicle and a new motor, has allowed the Ohio facility to increase the tons it processes per hour by more than 220 percent.

The inverter plays a key role in improving operations by limiting power absorption. It also reduced the Ohio facility's electrical consumption—kilowatt hours per ton—by 15 percent. The automation solution has decreased the facility's downtime by 75 percent and includes features such as a rotor quick stop, which can halt a rotor in less than five minutes.





When integrating the inverter, in particular, the business president says Danieli's training and after-sales support have been "excellent."

"[Danieli's] continuous improvement mindset aligns with ours," he says. "Their commitment to safety aligns with ours. Their customer-centric approach aligns with ours. Their commitment to safety, customer service and creating innovative solutions has been what ultimately stood out for us, and they treat our team with respect and listen to their concerns. There's a trust factor in Danieli's team because they do what they say they're going to do and there's no surprises."

"Our bond states that our customers are our partners, and Danieli's approach with us has been managed the same way—as a partner."

Between his maintenance and operating teams at the Ohio facility, the business president says their confidence in working with Danieli is high. He notes that in the event of a scheduled or unscheduled outage, his teams know they'll be able to catch up when the system restarts, thanks to their collaboration with Danieli's equipment experts.

"Before, with older technology we used, they struggled trying to catch up, and then we had to add additional hours and additional weekend work," he says. "[Danieli's training] has really proved beneficial for our team and their confidence. Let's say, for example, a downstream belt tears. They know they're going to take out a half day. But they can make that up later that afternoon. They feel more confident they're going to be able to catch up. That confidence was really brought forward with the Danieli team working with our maintenance and operating group."

The Danieli installations have helped the Ohio business keep its staff safe and focused on the tasks at hand and deliver the



products its customers require.

"The Danieli team brings real solutions to complex problems and they're presented in a collaborative setting with our team," he says. "Ultimately, it's the relationship we have in working with Danieli's executive team, the engineers, the field representatives. Danieli's a world-class organization that provides these world-class solutions at the very highest level."

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Solving SOLAR

In an ever-evolving industry, SolarPanelRecycling.com is living up to its name as it builds a nationwide network for recovering the many commodities in solar panels.

BY CHRIS VOLOSCHUK

Solar panels contain myriad recyclable commodities, including aluminum, glass, copper, silver, plastics and silicon.

Since 2023, SolarPanelRecycling.com, or SPR, has tried to put itself at the forefront of what it calls “clean commodity separation,” providing consumers of those materials with an increasingly reliable and high-quality stream.

Much like the industry it occupies, SPR, based in Salisbury, North Carolina, has spent the last two years rapidly evolving. The company already operates four facilities and plans to open more throughout the United States in an effort to build out a network of regional recycling locations within proximity to its growing customer base.

Also, in its home state of North Carolina, SPR is the exclusive recycling partner of solar contractor, operations and maintenance company STG Solar and works closely with the Solar Energy Industries Association (SEIA) as an approved solar panel recycling vendor and partner on a project studying the feasibility of a residential panel drop-off program that, if successful, could be launched nationwide.

Though he earned a degree in business marketing and an MBA in management, CEO Brett Henderson has developed a passion for circularity that has served SPR well in its short life.

“I love bringing in a product and not only having the environmental benefits of keeping it from landfill and properly managing it but now, all of a sudden, feeding other industries

and other manufacturers’ products with this recycled material,” he says. “That’s the part that really fascinates me and keeps me going. ... It’s been a fun ride.”

FINDING A NEW LANE

SPR was spun out of Powerhouse Recycling, a certified electronics recycling and secure data destruction company that has been based in Salisbury since its 2008 founding. According to Henderson, who joined Powerhouse right out of graduate school in 2010, the company services a number of industries throughout the United States, including clients in the utility and energy space.

In 2018, Henderson was approached by a client representing a national utility company that was replacing a small solar farm with between 8,000 and 10,000 panels who wondered if Powerhouse could partner in their processing. Recognizing the lack of information or viable recycling options available in the U.S. at the time, Henderson and Powerhouse’s team began a research and development (R&D) phase and even traveled to Europe and Asia to learn about recycling methods and technology.

“It seems that the [European] and Asian markets are typically a little bit more proactive than the United States in terms of recycling,” Henderson says. “So, there’s a little bit more information and technological advances abroad. ... We learned a whole lot and did a lot of R&D.”

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utility company for the next five years on processing end-of-life panels, and in 2023, SPR was established to focus on the solar business.

“We really opened up our sales and procurement team to go out nationally and start partnering with energy and utility companies and EPCs [engineering, procurement and construction companies] around the country to start sourcing these things,” says Henderson, who also serves as vice president of operations at Powerhouse Recycling.

He says despite the ebbs and flows of solar panel availability, SPR recycled about 500,000 panels in 2024 and expects to surpass that this year. The company is able to recover up to 95 percent of the valuable materials found in a panel.

EVOLVING TOGETHER

SPR has managed to grow along with the solar industry, expanding to four locations



and even developing new recycling technology. The company serves all 50 states and aims to lower its clients' carbon footprints by offering transportation for panels to its nearest processing facility.

Combined with Powerhouse's staff, which includes full R&D and compliance teams, technicians, engineers and drivers to transport panels for recycling, the companies employ approximately 205 people,

with many employees in dual roles.

Henderson says SPR plans to separate from its parent company in the near future and hopes to build a team of approximately 150 dedicated employees within the next 18 months.

In addition to its headquarters, SPR operates a separate receiving plant in Salisbury and processing and receiving facilities in Lawrenceville, Georgia, and

Photo courtesy of SPR



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Breckenridge, Texas. In the coming years, Henderson says more processing facilities will open as SPR builds out a network of regional sites.

The company, which primarily works with utility and energy firms, is looking to the U.S. West for its next plant as it is working on a project involving more than 1.5 million panels in that region.

"It would either be a large-scale project that we have a commitment to, such as this one out West, or it would be a certain region where you see regulations finally trending toward encouraging recycling and keeping [panels] from a landfill—or what we call incomplete recyclers that are ultimately going to remove the aluminum frame and the other 90 percent probably goes to a landfill or is shredded with no sort of containment system or air filtration system," Henderson says of potential locations to come.

Bolstered by extensive investments

in R&D and innovation, SPR's three recycling facilities have been equipped for "clean commodity separation," where the multitude of recyclable materials found in a panel can be extracted and sold to different consumers. In particular, SPR performs some mechanical and thermal processes to extract glass, aluminum, copper, silver, plastic and silicon, for example.

Henderson says SPR's approach is much more nuanced than what he calls "incomplete recycling," where the aluminum frame is removed and the glass, silicon and metals are shredded together and commingled, rendering them unusable.

"The layers of the solar panel are all encapsulated together," he says. "So, by just shredding it, you're just making smaller pieces of contaminated items where glass is stuck to the silicon, [for example]. What we're doing, through different mechanical processes, electrostatic processes, different air density type separation systems, is

basically getting these materials down to their core commodities and any other underlying metals that may be in it."

At the start of this year, SPR launched an automated line for recycling bifacial solar panels at its Salisbury location. The technology, which SPR claims is the first dedicated bifacial processing line in the U.S., enables clean glass separation from these bifacial modules at recovery rates of 99 percent or higher.

When it announced the addition in January, the company noted that while the solar market previously had been dominated by monofacial solar panels, the industry is standardizing to bifacial modules at a quick pace because of their higher efficiencies and energy yields to the growing utility sector.

"We were starting to see a pretty high amount of bifacials hit our facility," he says. "We just weren't happy with the recovery rates with the current technology

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that we created or technology that's readily available on the market, so we [developed the new line]. We're pretty proud of it."

PRIORITIZING PARTNERSHIPS

While SPR expands its own operations, it also has worked with the broader industry to ensure more solar panels end up in the recycling stream.

In late 2024, the company was selected as the exclusive recycling partner of Pisgah Forest, North Carolina-based STG Solar, which is regarded as one of the highest-rated installers in the southeastern U.S.

When it announced the partnership, SPR said it was selected because of its ability to meet strict sustainability and compliance standards in rapid material testing, cost-effective recycling and advanced tracking metrics, including the number of panels recycled and pounds of material diverted from landfills.

The partnership establishes STG with

a streamlined recycling process during the panels' lifetime phases, including construction and operation as well as the repowering of future systems and 1.9 gigawatts of existing projects.

SPR also has continued to work with Washington-based SEIA, the industry organization representing 1,100 members. SEIA provides due diligence for its membership so the industry has access to compliant, cost-effective and transparent recycling services. It also features an extensive auditing process for recycling partners.

In September 2024, SEIA approved SPR as a recycling vendor for its National PV (photovoltaic) Recycling Program. This February, SEIA chose SPR to launch a partnership program with Mecklenburg County, North Carolina, to establish convenient drop-off locations for end-of-life residential solar panels.

The pilot program is designed to be a blueprint for expanding nationally to



make solar panel recycling accessible to all residential panel owners. Mecklenburg County, which includes Charlotte, is serving as the flagship county for the six-month pilot, where SEIA and SPR will generate data to create a template for other municipalities across the country. The program, which will provide recycling at no cost to residents, will use five electronic drop-off locations across the county,

Photo courtesy of SPR

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including SPR's headquarters in Salisbury.

"It can be hard [for a resident] to take one panel and put it on a pallet and get it to a recycling facility," Henderson says. "A lot of residents might not even have the ability to get a pallet and get it on a truck. Even with residential panels that are smaller, you're still looking at a 5-foot-tall [panel], and it's not an easy thing to just kind of wrap in a box and send it to FedEx."

"What we did is we partnered with Mecklenburg County, which represents the greater Charlotte area. North Carolina is fourth in the nation in solar installations, so it was a good fit. We already have a lot of our logistics in place to collect in those areas, and we're doing this pilot program where SEIA wants to collect data on how many residents are willing to bring panels to their closest recycling point and what the challenges would be for a solid waste director or convenient recycling center to handle panels that are a little bit larger."

MEETING CHALLENGES

As the solar industry quickly evolves, Henderson acknowledges that challenges must be addressed.

For one, the industry is confronting the realization that solar panel recycling infrastructure is not a down-the-road problem. He says in addition to severe weather events or incidents such as a lawnmower kicking up a rock that can lead to panels breaking well before they reach the end of their expected 25-to-30-year lifespan, increasingly powerful panels are hitting the market, leading to early replacement of older modules.

"The panels are coming out sooner, so I think it's important for everyone to know that the time is now [to develop more recycling infrastructure]," Henderson says. "We could finally be somewhat proactive in the United States from a recycling standpoint versus reactive, which is a wonderful opportunity before there are

bigger issues that could occur."

Another issue is misinformation regarding the clean energy industry and recycling, he says. Some people have the incorrect belief that "there's nothing to do" with panels that have reached the end of their lives.

"That's obviously not the case," Henderson says. "We get these panels into recycling, bring them down to clean commodities and get them back into different manufacturing spaces, which is circularity at its best. That creates jobs, that creates manufacturing jobs one step past the recycler that might be local, and it's kind of a wonderful thing."

He adds, "We need to start acting on it now and make sure people know there are viable recycling options out there." **RT**

The author is associate editor of *Recycling Today* and can be reached at cvoloschuk@gie.net.

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ZATO'S BLUE DEVIL EARNING HIGH MARKS IN CHICAGO

The machine has allowed Cozzi Recycling to process more tonnage over the past year while lowering the operating costs of its hammermill.

One year into its operation, Frank Cozzi Jr. of Cozzi Recycling in Chicago gives the Zato Blue Devil shredder an "A-plus" grade as it has increased tons processed while helping protect the facility's hammermill from heavies and energy releases.

Cozzi Recycling processes a wide variety of materials, including steel busheling, machine shop turnings, cast iron,

stainless steel, aluminum, copper and much more. The company has been a ferrous and nonferrous metals recycling institution in the Chicago area for eight decades with a public metal recycling center in Melrose Park, Illinois, and a full-service scrapyards in Bellwood, Illinois.

In recent years, the company had been on the hunt for a machine that fit its price range and could shred



materials such as white goods and sheet iron material to support its stationary 1,000-horsepower hammermill. After visiting some local installations, the Blue Devil quickly stood out as a shredder that could meet the venerable recycling company's needs.

"It was a pretty quick decision, to be honest," Cozzi Jr. says of the selection of the Blue Devil. "One person we went to see locally is someone we have a relationship with. They had all good things to say about it. It was more of a [standard] preshredder, but was more manageable in cost. ... Most of the other preshredders on the market that aren't portable would far outproduce my shredder, and the math just didn't make sense."

The Blue Devil, manufactured by Italy-based Zato, turned out to be the perfect fit. Cozzi Jr. says that since its installation in Bellwood last April, it has increased the

hammermill's output by at least 25 percent.

"The increased production has more than offset the cost of running our [hammermill] because of the increased throughput per unit," he says.

Constructed from high-strength steel, Zato says the Blue Devil is considered the strongest twin-shaft shredder in its class. Its low shaft speed enables high shredding torques, allowing it to handle particularly challenging materials while also minimizing dust and noise emissions.

Additionally, the Blue Devil is designed to produce limited fines and protect hammermills from energy releases and unshreddable materials, increasing both the reliability and efficiency of hammermills and the safety of operators, while reducing current peaks in the mill.

"It does help to keep the heavies and the [energy releases] out of the shredder," Cozzi Jr. says. "Our mill is very sensitive to the heavies, just because of its design. [The Blue Devil] has kept a lot of them out."

The machine's ease of maintenance also has served Cozzi Recycling well, and Cozzi Jr. gives it an "A-plus" grade.

"Once we figured out what it can and can't do and tested its limits—as we tend to do here—there's been no real issues," he says, adding that maintenance has been relatively minor outside of one scheduled blade change.

Cozzi Recycling also has benefited from the Blue Devil's programmable logic controller, or PLC, which is designed to integrate innovation and automation. It automatically adjusts shaft speed based on the resistance encountered during the shredding process. When the PLC detects critical conditions, such as an overload or the introduction of unshreddable material into the machine, it can slow the shaft rotation instantly to prevent damage to the blades and shaft.

Additionally, the PLC monitors key performance indicators (KPIs) and tracks alarms and shutdowns caused by overloads, ensuring low operating costs and consistent, high performance.

The PLC features a responsive 10-inch high-definition touchscreen, enabling direct data uploads and storage on the manufacturer's service portal. With the help of the PLC, Zato technicians can assist plant operators and fulfill customer service requests promptly, minimizing downtime.

When it comes to Zato's customer service, whether from its Prevalle, Italy, headquarters or its North American base in Hebron, Kentucky, Cozzi Jr. gives it another high mark.

"The customer service, they're right on it," Cozzi Jr. says. "They've hired some people locally [to help with service]. But even from Italy, they're right on it. If there's any PLC or connection issues, they'll jump right on. We can contact them via text and they can log right on from a computer. It's been an A-plus for that."

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CHAMPIONS OF TIRE CIRCULARITY

In an effort to secure funding and address what it calls “critical knowledge and research gaps” within the U.S. tire recycling supply chain, the U.S. Tire Manufacturers Association (USTMA), Washington, and the Tire Industry Association, Bowie, Maryland, partnered in May 2024 to launch the Tire Recycling Foundation.

The primary goal of the foundation, which is based in Washington, is to recycle 100 percent of end-of-life tires into what it calls “circular, sustainable markets” while securing funding and allocating grants for research, education, intervention and demonstration projects.

“For the past 30 years, USTMA has advocated for sustainable, end-of-life tire management, but more work remains with only 71 percent currently recycled,” USTMA President and CEO Anne Forristall Luke said last year when introducing the foundation. “Through the foundation and collaboration with our newly appointed board of directors, comprised of manufacturers, dealers, recyclers and transportation experts, we’re confident we can advance our goal of 100 percent circularity.”

According to the foundation, it is preparing for “an ambitious new era” to accelerate the creation of sustainable,

circular tire recycling markets.

“We are uniquely positioned to be a convener of a broad group of stakeholders to achieve critical milestones in tire recycling progress,” the Tire Recycling Foundation says on its website.

PUSHING FOR TRUTH & PROGRESS

Tires are one of the most recycled and reclaimed products in the United States, according to the foundation.

In its “2023 End-of-Life Tires Management Report,” it says of the 5 million tons of end-of-life tires generated that year, 79 percent were “beneficially

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**GRANUTECH
SATURN**



The Tire Recycling Foundation aims to address knowledge and research gaps within the U.S. tire recycling supply chain while also prioritizing recycling as part of a circular, sustainable market.

BY MARISSA MCNEES

effects, the Centers for Disease Control and Prevention, the Agency for Toxic Substances and Disease Registry and the U.S. Environmental Protection Agency worked with the Consumer Product Safety Commission in February 2016 to launch a multiagency research effort called the “Federal Research Action Plan on the Use of Tire Crumbs in Playing Fields and Playgrounds,” or FRAP.

Part 1 of the FRAP report was released in 2019 and summarizes the research effort to characterize tire crumb rubber, including the components of and emissions from recycled tire crumb rubber, while Part 2 was released in April of last year in an effort to characterize the chemicals associated with crumb rubber and to identify ways in which people could be exposed to these chemicals.

In general, the findings from the entire playing fields portion of the FRAP (Tire Crumb Characterization Part 1 and Tire Crumb Exposure Characterization Part 2) support the conclusion that while chemicals are present, as expected, in tire crumb rubber and exposures can occur, they likely are limited.

However, that fight against public misconceptions over the perceived dangers of recycled rubber required industry support, too.

“When you’re going up against the public media markets and you’re just a small company, it was a pretty heavy lift to convince the world that we were right and they were wrong, but that got me started by putting a coalition together of rubber recycling companies,” Art Dodge, the president and CEO of Lancaster, Pennsylvania-based rubber recycler Ecore International, tells *Recycling Today*. Dodge also is an inaugural member of the Tire Recycling Foundation board of directors.

In 2021, Dodge helped establish the Recycled Rubber Coalition, based in Washington, to advocate for new and innovative ways to recycle rubber and prevent tire waste and scrap tire dumping.

“We started the Recycled Rubber Coalition to really band together to tell the story about the fact that rubber was safe and especially that recycled rubber was safe,” Dodge says, noting he spent a lot of time in Washington over the years to “tell the story, do the research and to provide the data to convince people that [recycled rubber] is safe.”

“Everybody spent years going back and reevaluating rubber safety and, guess what? They found nothing,” he says. “Rubber is very safe and effective, but that [experience] made me a real advocate for the fact that the industry has to continue to tell its story to people that simply don’t know, and that’s not anyone’s fault.”

“It’s our responsibility to make sure we continue to push that agenda. ... It wasn’t the job of the rubber recyclers to tell the story that rubber is safe, it was an industry responsibility to tell that story.”

Dodge says, essentially, the various rubber manufacturing and recycling organizations then banded together to ensure they were not only telling that story and telling it effectively, but that they were continuing to advance research and technology on beneficial rubber reuse.

“The recycling industry is going up against the virgin industry, right? So, recycled rubber polymer and asphalt is going up against virgin polymer and asphalt,” he says. “We have to compete with the virgin manufacturers to win market share and to win eyeballs and to win commitments to allow us to grow the beneficial reuse of some of these materials in other applications.”

“The [Tire Recycling Foundation] has really been brought together as an industry group to advance all those agendas.”

ACCELERATING ADOPTION OF RUBBER-MODIFIED ASPHALT

Upon its launch, the Tire Recycling Foundation said its primary focus was accelerating the adoption of rubber-modified asphalt, or RMA—an “emerging” market



used,” marking a 10.5 percent increase.

However, there was a time when public perception of recycled tire and rubber, particularly the use of crumb rubber as synthetic turf and playground infill material, was that it was not as good as virgin material and also dangerous.

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tire recycling



that, according to the group, offers performance, economic and environmental advantages.

RMA is a mixture of ground tire rubber with asphalt that, according to the USTMA, provides proven economic, environmental and performance benefits in building longer-lasting roads and highways while also providing a market for the millions of scrap tires generated annually in the U.S.

"[RMA] delivers a trifecta of benefits—superior performance, economic efficiency and environmental sustainability," USTMA Director of End-of-Life Tire Programs John Sheerin said last year, highlighting RMA's ability to extend pavement lifespan, enhance skid resistance and ride quality and reduce traffic noise.

"Perhaps, most critically, its use reduces greenhouse gas emissions from improved fuel economy while also curtailing tire wear particle pollution. RMA represents a truly circular, sustainable solution that the Tire Recycling Foundation, along with our new board of directors, is committed to advancing industrywide."

Ideally, scaling up the use of RMA across the U.S. would involve including RMA in the material specifications published by each of the 50 state highway agencies (SHAs), according to USTMA in its "Summary of State Specifications for Rubber Modified Asphalt" report.

"Without such published specifications, RMA usage would be limited to smaller, isolated demonstration projects involving special provisions and/or value engineering applications," the report says. "Furthermore, the majority of asphalt tonnage comes from cities, counties and municipal work. Since these agencies generally base their specifications on or directly allow the use of asphalt produced according to SHA specifications, the expansion of SHA specifications to include RMA is critical in order to more fully reap the aforementioned benefits of RMA."

Accelerating RMA adoption was a key focus of the Tire Recycling Foundation's 2024 conference and continues to be a priority as the organization pushes toward its fundraising targets.

The foundation's board has set what it calls "ambitious research initiatives" to be supported with fundraising targets of \$300,000 in 2025 and \$2-3 million in 2026.

"By spearheading cutting-edge research and pilot projects into promising end markets, such as RMA and micronized rubber powder, we are charting a course toward a more sustainable future for end-of-life tires," Forristall Luke said last May. "Through cross-sector collaboration that brings together regulators, environmental stewards and stakeholders throughout the tire recycling value chain, the foundation can catalyze impactful solutions benefiting both industry and the environment." **RT**

The author is managing editor of *Recycling Today* and can be reached at mmcnees@gie.net.



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A history of **INVENTION** and **INNOVATION**

In 1994 when naming the Newell Shredder a National Historic Mechanical Engineering Landmark, the American Society of Mechanical Engineers (ASME) stated:

“

With the realization of one brilliant idea, Alton Scott Newell Sr. revolutionized the scrap metal industry and significantly contributed to the ongoing effort to recycle used metals and conserve the Earth's precious resources.”

Mr. Newell's original metal shredders were designed to shred steel cans for a leach precipitation process used to refine copper. Demand for the material grew, and as it did the Newell family developed larger shredders to process heavier material.

In the early 1960s, Sammy Proler identified that steel mills using electric arc furnaces could benefit from using shredded, or fragmented, steel scrap. The Prolers had also been shredding steel cans for the copper industry. While the Prolers may never have invented a shredder, they were pioneers in shredding scrap steel with other equipment.

Realizing the market potential for supplying fragmented scrap to steel mills, Alton Newell and Scott Newell Jr. set out to build still larger shredders, which eventually led to being able to shred an entire automobile.

DRIVING CONTINUOUS INNOVATION

While today the industry refers to shredded scrap, it is technically fragmented steel for recycling. That aside, the Newell family, realizing the market potential, began engineering and manufacturing ever more advanced machines for its operations.

During the 1960s the Newell's had metal recycling facilities in San Antonio, Austin and El Paso, Texas, as well as in Tucson and Phoenix, Arizona. They were not manufacturing shredders for others, only for their own use. That changed when a manufacturer from Iowa came to visit Alton Newell to learn more about the shredders they were building with the intention of licensing the technology. Instead, that group set about making its own version of the equipment.

When Alton Newell learned of what he considered a betrayal, he asked his son, Scott Newell Jr., to establish a manufacturing operation in San Antonio and go into business selling shredders. As production at the works grew, the Newell shredder became famous worldwide for its efficiency and productivity. This led to Newell licensing Lindemann of Germany to build Lindemann Newell shredder plants and Fuji



NATIONAL HISTORIC MECHANICAL ENGINEERING LANDMARK NEWELL SHREDDER 1969

THIS MACHINE, DESIGNED BY ALTON S. NEWELL, EFFICIENTLY REDUCED AUTOMOBILE BODIES INTO SCRAP METAL FOR RECYCLING. A BODY WAS FED INTO THE SHREDDER AT A CONTROLLED RATE, AND ROTATING HAMMERS, DRIVEN BY A 500 HP MOTOR, SHREDDED IT INTO SMALL PIECES THAT WERE EASILY SHIPPED. THE PROCESS TOOK ABOUT TEN MINUTES PER CAR AND USED MUCH LESS ENERGY THAN OTHER SHREDDING AND CRUSHING MACHINES. MODERN, FASTER VERSIONS OF THE NEWELL SHREDDER REMAIN IN SERVICE.



THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS - 1994

NL 111

Car Mfg of Japan to build Fuji Newell shredders. Eventually both of these licensees were sold the right to continue to use the Newell designs but on a non-exclusive basis. This led to Newell selling shredding plants directly to users all around the world.

Alton Newell had grown up in the salvage business dismantling cars by hand. He, his family and employees used axes, chisels, hammers and more in the process. That experience informed the design of Newell shredders. While Alton Newell never graduated high school he was self-taught and eventually was given two separate Honorary Doctorate Degrees. With this self-taught knowledge and experience, he continued to improve the



design of shredding plants.

While the original Newell shredder was a side feed and top discharge, the continuing evolution of the equipment resulted in a side feed, top and bottom discharge shredder. Conventional shredders of the time were top-feed, bottom-discharge. The Newell design allowed the machine to operate with far less horsepower and a smaller rotor. The smaller motor and rotor made the machine more economical. That lowered the initial capital requirements, which allowed shredding steel scrap to become more widely adopted.

AN ENDLESS QUEST FOR EFFICIENCY

As Newell produced more shredders, the company learned even more along the way. A unique advantage Newell had was the family members were not just manufacturers, they were operators. At its peak, Newell family processing operations produced 1 million tons of shredded steel annually. That gave them a huge incentive to learn how to lower the cost per ton to shred.

Among the most important enhancements Newell made to the shredder were:

- The double feed roller
- The gathering box at the top discharge grate

- Top and bottom discharge grates
- A discharge reject door for unshreddables
- Understanding the capacity of electric motors
- Providing operating software

While many companies copied the Newell shredder, they did not understand the “why” that underpinned the design. Companies hired ex-Newell employees and copied the Newell design by making imitations of existing plants. The Newell family insists, however, that these machines were never as productive as a Newell.

Newell used this productive and efficient shredding equipment to become the, by far, leading manufacturer and supplier of shredding plants around the world.

The reason is simple: The Newell machines are more productive and deliver a lower cost per ton processed. Today it is fair to say that more than 50 percent of the shredders worldwide were either built by Newell or licensed by Newell. The vast majority of the remainder are based upon Newell designs.

TODAY, MORE THAN EVER

Scott Newell and his son, Scott Newell III, have continued to drive innovation in the metals

shredding business. Most recently Newell has introduced a new grate design that enhances tons-per-hour production while significantly increasing material density and preventing pokers from entering the downstream system.

The advanced software platform controlling the shredding plants seamlessly integrates feed-roller speed to maximize the thermal capacity of the shredder motor, maximizing production. The systems also monitor and log all downtime occurrences so these can be managed and avoided.

If you are seeking the most productive shredder for ferrous scrap and materials liberation for downstream materials recovery, don't compromise. Go with a Newell. The family will not only supply a shredding plant but also welcome you into a community of operators dedicated to maximizing production, recovery and value.



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An alternative ROUTE



The SHiFT Vehicle Retirement Initiative offers auto recyclers an alternative to auction sites while helping consumers and companies recycle vehicles responsibly.

BY DEANNE TOTO

The SHiFT Vehicle Retirement Initiative, which is powered by Advanced Remarketing Services (ARS), launched in late 2023 to help consumers and companies responsibly recycle their end-of-life vehicles. It also offers automotive recyclers an alternative to online auctions, which have become the primary venue for selling salvaged vehicles.

“In a nutshell, our mission at SHiFT is to recycle as many vehicles as we can in the most sustainable way we can,” Director of Vehicle Retirement Services Chapin Griffith says, adding that one of the core tenets of SHiFT is that when consumers or fleet partners donate through the program, their vehicles’ internal combustion engines will not be resold, enabling SHiFT to calculate the carbon avoidance of retiring these vehicles.

Prior to joining SHiFT in the fall of 2024, Griffith designed cars for Ford as an engineer and product manager and then managed used vehicle value forecasting for fleet appraisals before co-developing Amazon’s national fleet remarketing business.

Although SHiFT specifies that engines from donated vehicles cannot be sold, Griffith says auto recyclers participating in the program still can make money off them.

“Even though the program requires a motor to be decommissioned in the sense that it can’t be sold in the whole working unit, recyclers are not prevented from profiting off of the good used components,” he says. “It’s basically a way to encourage participation without them feeling like they’re being penalized for agreeing to recycle the vehicle at a high level.”

Griffith says the older the vehicle, the more the SHiFT program makes sense from an emissions-reduction standpoint.



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SHiFT also works exclusively with companies committed to environmentally sustainable, whole-car recycling, prioritizing Certified Automotive Recyclers (CARs). CAR is the professional standard established by the Automotive Recyclers Association (ARA), Manassas, Virginia, designed to help recyclers excel in general business, waste and hazardous material handling, safety and customer service.

"We bias towards partners that are CAR-certified because of the meticulous compliance to environmental standards and best practices, but at a minimum we only work with licensed auto recyclers who meet all state and federal environmental requirements and who commit to retiring the engines of these vehicles," Griffith says.

Automotive recycling companies that work with SHiFT must sign an affidavit that they will comply with these standards and are audited through the SHiFT program to ensure compliance.

"We're creating a network of recyclers who are agreeing to process vehicles at a high level of efficiency and environmental impact," he adds.

In exchange for that pledge, recyclers are part of a closed-loop network where they can purchase vehicles without going through the auction process.

"We wanted to provide a solution that takes a lot of the good environmental work that has been happening in places across the auto recycling industry and roll it up into a singular brand promise and at a national level," Griffith says of SHiFT.

POWERED BY ARS

ARS, a Middletown, Rhode Island-based technology company that focuses on the automobile remarketing and recycling sector, powers SHiFT.

ARS runs vehicle donation programs for several nonprofits, returning 80 percent of the proceeds from the sale of these

vehicles back to these organizations. According to the company, it has raised more than \$350 million for charities since its founding in late 2006.

ARS focuses on older, high-mileage and end-of-life vehicles (ELVs), providing solutions for consumers, charities, auto lenders, fleets, insurers and dealers.

Prior to launching SHiFT, ARS directed more than 35,000 vehicles to recyclers on behalf of its charity, government, manufacturer and insurance partners. It describes SHiFT as "a natural evolution of the important environmental work the ARS team has performed over the years."

SHiFT provides fleet partners with what it calls a hassle-free and efficient cost structure for ELV retirement while also giving them credit for their environmentally responsible decisions.

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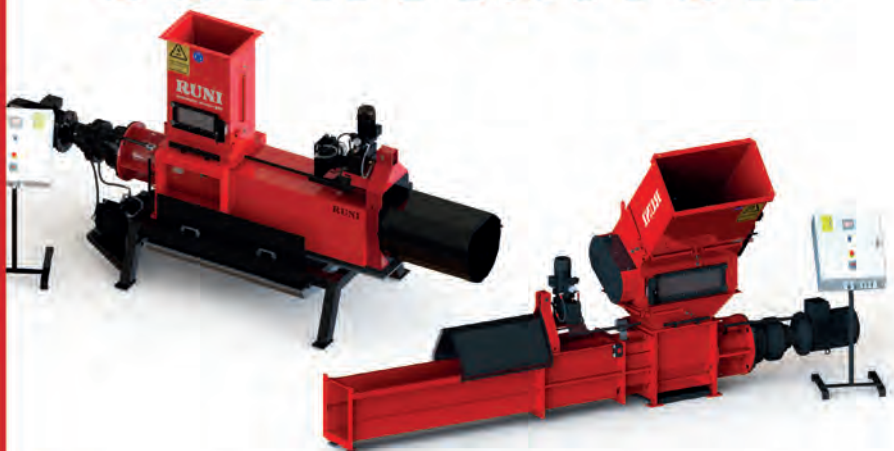


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for salvaged vehicles, with Griffith saying an estimated 30 percent of end-of-life vehicles in the U.S. are sold to export markets through these sites.

As a result, U.S. automotive recyclers purchasing through these sites must pay more to add vehicles to their inventories.

The environmental impacts associated with export sales made on these sites might not be ideal, either.

For example, the vehicles sold through auction sites could be lacking working emissions control systems, Griffith says, which would prevent them from operating in the U.S. However, international buyers often are in countries that don't have the same emissions regulations as the U.S.

"What SHiFT does is it's guaranteeing that these vehicles are going to be recycled by domestic and licensed auto recyclers and that that engine is going to be retired," Griffith adds. "We think that a significant portion of those vehicles being recycled

with licensed domestic auto recyclers is a better outcome for the environment and good for our economy."

Auto recyclers that work with SHiFT benefit by avoiding the fees related to auctions and creating customer-facing programs to attract vehicles that are brought directly to them.

Vehicles donated through SHiFT are sold directly to auto recyclers at discounted prices because engine resale is not permitted. However, parts reuse is maximized, which he says is better for the circular economy and environment.

SHiFT accepts any vehicle, regardless of condition, date of last inspection or registration status.

"For our fleet customers, there's a point where their margin becomes so small on vehicles that are going through the whole-sale auctions" that donating that vehicle to get a tax write-off and the environmental offset is more attractive, Griffith says.

To date, SHiFT partner salvage yards and recycling centers have recycled nearly 90 percent of every vehicle received through the program.

SHiFT bases its vehicle prices on national scrap rates by weight.

"The curb weight is the biggest impact to that, and that supports the model well," Griffith says, adding that recyclers likely will receive a donated vehicle that is in decent shape, allowing them to maximize parts value. "But, at a minimum, they're going to get the scrap value.

"We actually discount vehicle sales even more heavily to CAR-certified yards to incentivize participation. We want to bias toward using those yards."

RECYCLERS' PERSPECTIVES

Jonathan Morrow, president of M&M Auto Parts Inc., a CAR-certified recycler with locations throughout Virginia, joined SHiFT at its inception. He was familiar

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98 x 104 Reconditioned Rotor

with ARS, which he describes as a “great partner with the auto recycling industry,” having purchased cars from the company.

A former ARA president, Morrow had the opportunity to be brought into the loop on what ARS and ARA were planning with SHiFT prior to its launch.

“SHiFT is another avenue to secure parts and introduce them to your inventory at a good price,” Morrow says.

He notes SHiFT vehicles are offered through the ARS platform first to CAR recyclers. Pictures of the vehicle are included, and recyclers must pick up or arrange transportation for the vehicle.

Purchasing cars through SHiFT benefits the association, the environment and recyclers, he continues, noting that individuals and companies using the program do so for environmental reasons and to ensure cars are safely depolluted and recycled. Unlike Cash for Clunkers, or the Car Allowance Rebate System (CARS) in

2009 that was designed to stimulate auto sales and get older, less fuel-efficient vehicles off the road and required engines to be rendered permanently inoperable by pouring silicate into them, SHiFT allows engine components to be resold.

M&M has bought roughly two dozen vehicles through SHiFT since it launched.

“Most of ours have come through extraction exercises from the fire department,” Morrow says, adding that M&M recently opened its own self-service yard, and the vehicles the company can purchase through SHiFT would be ideal stock.

He says his company’s goal in participating in SHiFT is to raise people’s awareness that this is an option for their unwanted vehicles that ensures environmentally friendly disposal.

Brian Bachand, CEO of CAR-certified Westover Auto Salvage of Belchertown, Massachusetts, has worked with ARS for about a decade and has been satisfied with

its services and opportunities.

“However, with the arrival of the [electric vehicle] mandate not so long ago, our business started to look into how to stay current, relevant and ahead of the curve,” Bachand says.

The two biggest factors that drew him to SHiFT are its partnership with ARA’s training institute, ARTI, and SHiFT’s mission to reduce carbon emissions by removing these vehicles from the road in an environmentally friendly fashion.

Bachand expects Westover Auto Salvage to benefit from the program by increasing parts sales, its core program and number of vehicles processed, inventoried and crushed.

“However, it is the intangible benefits of this program that remain intrinsic to what we do as auto recyclers,” he says, mentioning strengthening participants’ reputations as thought leaders, funneling resources into ARA to increase the impact



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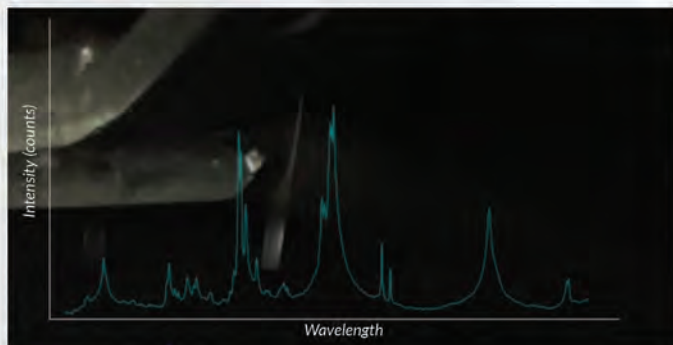


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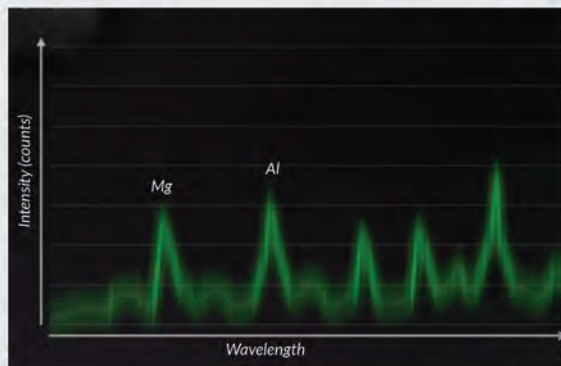
A quantitative analysis requires an accurate **breakdown of the chemical composition** of every single piece.



High definition spectra

A qualitative analysis is similar to what is achieved with an X-Ray transmission analysis where the lower quality of the spectra does not provide a chemical breakdown of every single piece.

With a qualitative analysis you set a few criteria (max. Si, max. Mg,...) and decide for the sorting based on whether or not every single piece fulfills those criteria.



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Unlike with qualitative analysis, with quantitative analysis the sorting criteria no longer applies to the individual piece but to the average analysis of the eject fraction thanks to a proprietary **dynamic data computing** process.

A superior ablation cleaning process leads to accurate spectra and breakdown of the chemical composition of each piece, enabling a true quantitative analysis and a dynamic data computing of the material. This results in an increase in the recovery of higher-value material by up to 1.5-2 times.

Additionally, the quantitative information received on the other stream enables it to be valorized at its best market value as it is, or to make an informed decision on further processing.

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of ARTI and addressing the burden that unwanted vehicles would represent without auto recyclers.

Bachard expects to buy at least one vehicle through SHiFT monthly, though that number could be as high as four. The challenge for him is collecting the vehicles.

“Not owning my own tow truck and my demographic play into the logistics of distance to travel and budget [for] this endeavor,” he says.

By way of comparison, Westover Auto Salvage purchases 10-15 vehicles per week via auction sites and another 10-15 per week through private parties.

However, Bachard sees considerable market opportunity for SHiFT and its potential to educate consumers not only about the program but also on the auto salvage industry in the U.S.

CONSUMER EDUCATION

SHiFT will create a platform to educate

consumers about vehicle recycling in partnership with its automotive recyclers, Griffith says, with the goal to make it as common as cardboard or aluminum can recycling by appealing to environmentally conscious consumers.

“One of the campaigns we’re working on is digital marketing to expand the exposure of the SHiFT program,” he says, which involves a vehicle donation link on recycling partners’ websites.

“Similarly, we are rolling out links and affiliate pages on our domain to auto recycling partners that have signed up.”

PROGRAM IMPACTS

Since SHiFT was founded, the initiative has received donations from more than 30 states and has about 350 participating recycling yards, according to Griffith.

“Including fleet business that we’ll



do, we’re on track to do over 10,000 vehicles in this calendar year,” he adds.

The program is expanding internationally, too, having signed up

Parts Plus of Australia.

“This has been a year of incredible progress for SHiFT, and we are grateful for the partners that have helped us make these inroads into retirement of ELVs nationwide,” Griffith says. “Looking ahead, we are eager to bring the impact of SHiFT to a global audience and continue to help consumers and fleet operators find sustainable and economical solutions for vehicle retirement.” **RT**

The author is editorial director of Recycling Today Media Group and can be reached at dtoto@gje.net.

Photo courtesy of Daurio Auto Truck



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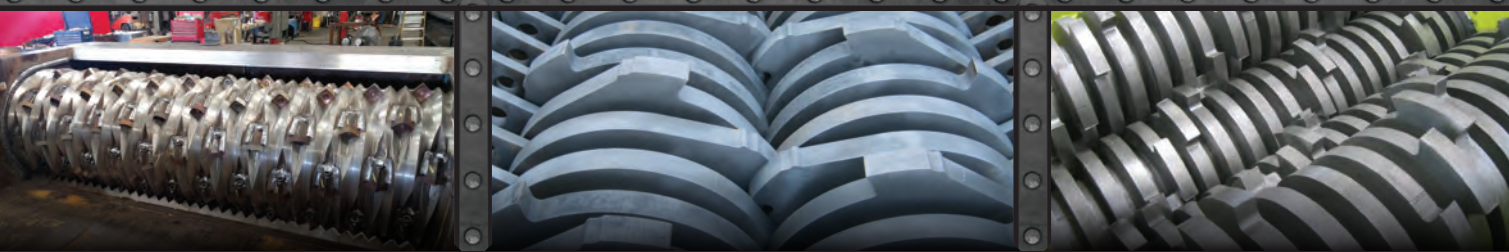
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THE MEGA BATCH FEEDER

When Medford, New York, based Gershow Recycling set out to build its new eddy current plant, one of the issues the company needed to overcome was consistently feeding the system.

"We did a lot of work to understand the production rate we needed to ensure our eddy current plant no longer held us hostage," says Kevin Gershowitz, president of Gershow Recycling. "We identified that none of the available feeding systems could do it."

Gershow needed a batch feeder that could maintain the material flow. The company created an initial idea for a massive feeder it believed would work.

"We shared this idea with several industry suppliers. They told us it would not work and were unwilling to build it," Gershowitz says.

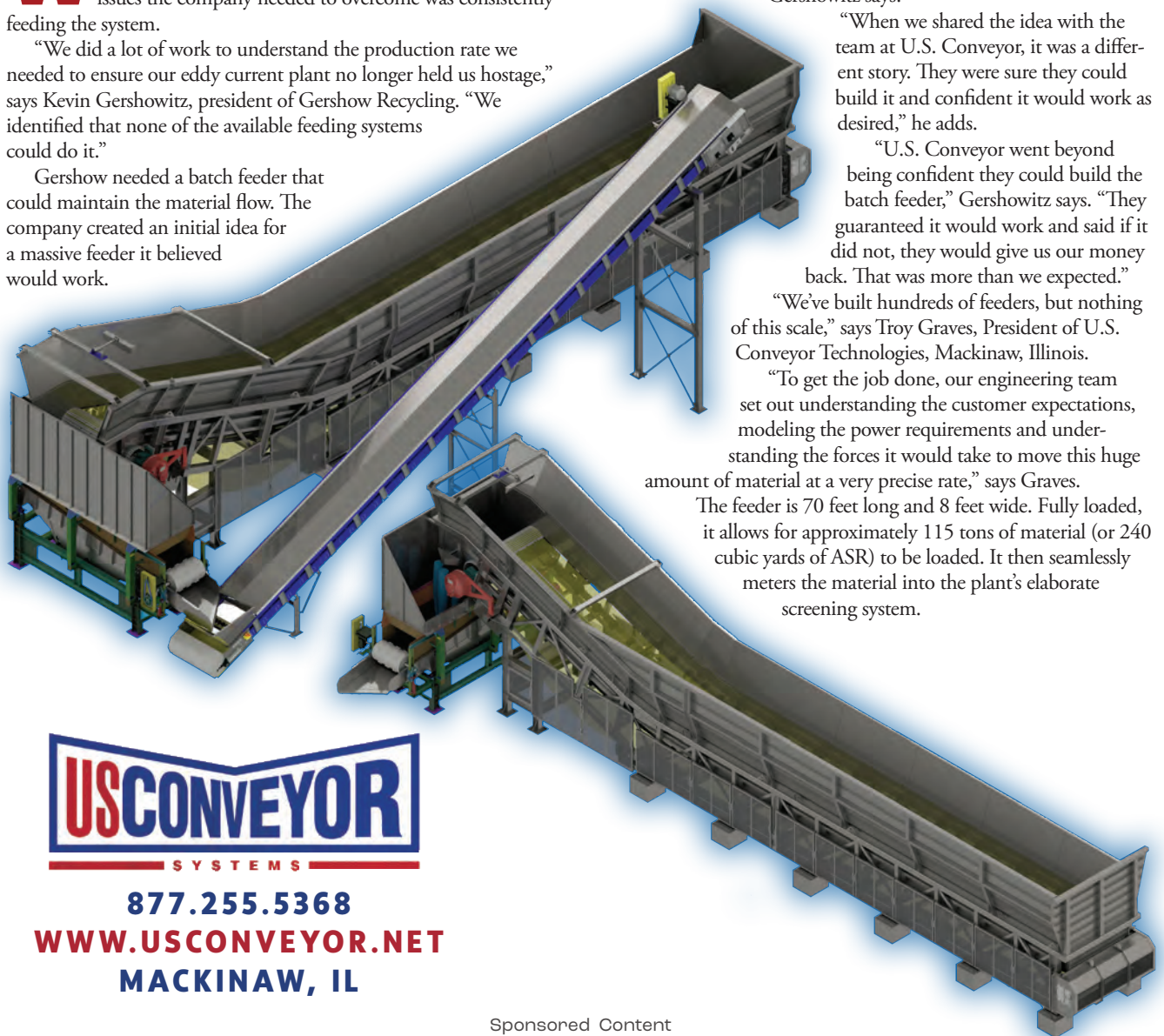
"When we shared the idea with the team at U.S. Conveyor, it was a different story. They were sure they could build it and confident it would work as desired," he adds.

"U.S. Conveyor went beyond being confident they could build the batch feeder," Gershowitz says. "They guaranteed it would work and said if it did not, they would give us our money back. That was more than we expected."

"We've built hundreds of feeders, but nothing of this scale," says Troy Graves, President of U.S. Conveyor Technologies, Mackinaw, Illinois.

"To get the job done, our engineering team set out understanding the customer expectations, modeling the power requirements and understanding the forces it would take to move this huge amount of material at a very precise rate," says Graves.

The feeder is 70 feet long and 8 feet wide. Fully loaded, it allows for approximately 115 tons of material (or 240 cubic yards of ASR) to be loaded. It then seamlessly meters the material into the plant's elaborate screening system.



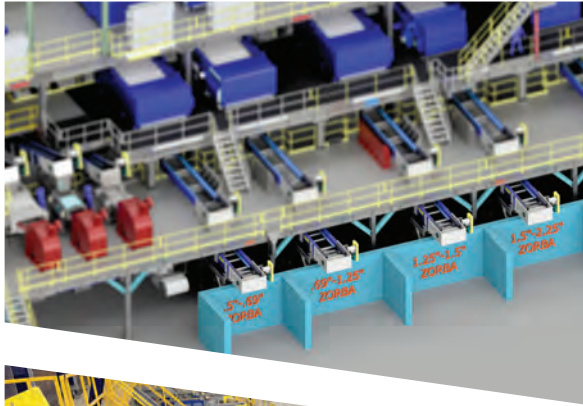
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Counting zorba

The zorba produced by the Gershow plant enters a sophisticated counting regimen. Each of the eight lines drops onto a designated scale conveyor. That scale conveyor incrementally moves until it reaches a predetermined weight, then it clears itself and begins counting again.

This highly controlled process allows the plant's control system to continually record precise production levels for each zorba fraction as well as the plant's overall production.

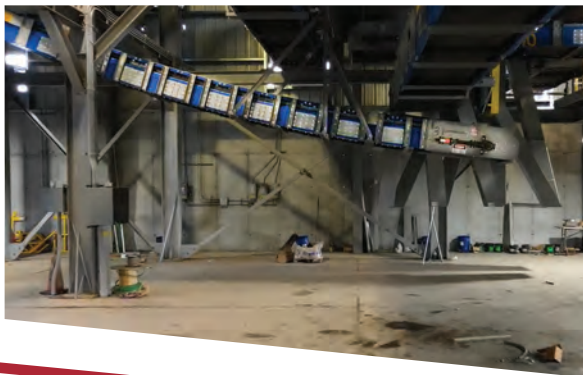
Traditional belt scales do not work when weighing low volume products like zorba, especially when the total flow is sliced into eight fraction sizes. The system has proven to be very accurate and this approach holds great potential for a wide variety of applications in the industry.



Value from the ferrous

Many operators let the ferrous recovered from their DSRPs drop into their residual lines. U.S.C. offers a way to recover that material.

By running the residuals through a Spalck Cassette screen and U.S. Conveyor Polisher, the ferrous fraction is both reclaimed and cleaned up. This allows that fraction to be added back into outbound ferrous material, turning it into revenue while avoiding landfill fees. It's a great use of the cassette screen and polisher.



Going bananas

Keeping nonferrous plants open and airy while maintaining lines of sight and working around obstacles is challenging. U.S. Conveyor's proprietary banana conveyors can help to get the job done. The banana conveyors allow for slopes not possible with traditional conveyors.

The unique banana conveyors can be integrated into plant designs in numerous ways. They provide perfect material flow from one processing phase to the next but also help to deliver the open access.

RAPID RESPONSE TIMES

Based in Mackinaw, Illinois, U.S. Conveyor does all its design, engineering and fabrication at its corporate headquarters. All service personnel and parts inventory, as well as the company's testing facility, are based on the same corporate campus.

Being based in the middle of the country allows rapid response times when customers need service.

The company also helps to minimize delivery and installation time and expense by shipping the largest assemblies possible and pre-testing every component prior to shipping.



Uncertainty in the DRIVER'S SEAT

The outlook for the automotive industry remains uncertain as tariff threats continue.

BY DEANNE TOTO

The on-again-off-again nature of the Trump administration's tariffs has injected considerable uncertainty into the automotive market at a time when the industry was beginning to return to normal following the pandemic and amid constrained supply.

TARIFF WHIPLASH

The White House announced Jan. 31 that the U.S. would begin imposing 25 percent tariffs on goods, including automobiles, imported from Canada and Mexico and a 10 percent tariff on imports from China starting Feb. 1. While the tariff on Chinese

goods went into effect as planned, the tariffs on goods from Mexico and Canada were delayed until March 4.

The tariff on Chinese goods increased to 20 percent March 4, and President Donald Trump announced the next day that tariffs on auto imports from Canada and Mexico would be delayed until April 2, provided automakers complied with standards in the USMCA, or the U.S.-Mexico-Canada Agreement, which the countries signed during Trump's first term in office. According to the USMCA, goods can move among the three countries tariff-free if they are made entirely



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in North America or are transformed substantially in North America if made with components from other countries. For autos, 75 percent of the content must be from North America.

Trump followed that announcement by saying other goods from Canada and Mexico that complied with the USMCA, including scrap metal, would be exempted from the tariffs until April 2.

Additionally, the Trump administration removed exemptions previously granted under the Section 232 tariffs on aluminum and steel entering the U.S., effective March 12, with Trump saying he would raise the tariff on imports from Canada to 50 percent before dialing it back down to 25 percent after Ontario temporarily suspended its plan to charge a 25 percent tariff on electricity that it sends to states in the northern U.S.

In response to the Section 232 tariffs, Canada announced retaliatory tariffs on

nearly \$21 billion in U.S.-manufactured goods that went into effect March 13, while the European Union retaliated with new duties on U.S. industrial and farm products, which included steel and aluminum, beginning in April.

According to estimates calculated by Anderson Economic Group (AEG), which has offices in East Lansing, Michigan, and Chicago, the tariffs on Canada and Mexico could increase the cost of cars made in North America by \$4,000 to \$10,000 and potentially as much as \$12,200 for some models with Chinese components.

Those numbers also don't take the Section 232 tariffs of 25 percent on steel and aluminum imports into the U.S. into account, according to Aidan Bergsman of AEG. The cumulative effect of the tariffs could lower consumer demand for automobiles and lead to manufacturers offering fewer options, he tells *Recycling Today*.

Once retaliatory tariffs are applied,

they could further disrupt the global auto market and manufacturing more broadly.

"For economists like myself, the unthinkable is coming true, with tariffs being applied to our free trade partners across North America," says Jonathan Smoke, chief economist at Cox Automotive, based in Atlanta. "We have no history to study for this, but there will be implications. It is not even clear if the U.S. government has a way to efficiently track the movement of goods and impose duties, but set that aside: Production will be disrupted, supply will be restricted and prices will go up.

"This is happening at a moment when supply is tight already, and just as tax refund season approaches critical mass in dollars being distributed to consumers. Consumers with potential buying plans are very likely to act swiftly, so the short term is likely positive for sale volume. But once prices shift higher, demand will decline. Depending on how long this

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tariff stance lasts, it will also jeopardize the trajectory of the overall economy, further weakening growth potential later in the year,” Smoke adds.

“New tariffs hitting the U.S. borders are certainly troubling for the North American automotive market as we know it will add substantial input costs to automakers, which inevitably have to be passed along in some capacity to the consumer,” Cox Executive Analyst Erin Keating adds. “Now comes the ultimate test: The industry’s ability to contain the tariff-driven price increases, with the uncertainty of how long these tariffs stay intact and to what degree they are able to be assessed at the border, given the complexity. Ultimately, it is the volatility in policy that is most damaging to the automakers’ ability to strategize for the future; the uncertainty is far worse than knowing what hand they’ve been dealt.”

Charlie Chesbrough, Cox Automotive

EPA TO RECONSIDER BIDEN-HARRIS EV MANDATE

U.S. Environmental Protection Agency (EPA) Administrator Lee Zeldin announced March 12 that the agency will reconsider the “Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles” and the “Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles – Phase 3” established during the Biden-Harris administration.

“In addition to imposing over \$700 billion in regulatory and compliance costs, these rules provided the foundation for the Biden-Harris electric vehicle mandate that takes away Americans’ ability to choose a safe and affordable car for their family and increases the cost of living on all products that trucks deliver,” the EPA says in a news release.

Additionally, EPA is reevaluating other parts of the Biden EPA’s “Clean Trucks Plan,” which includes the 2022 heavy-duty nitrous oxide (NOx) rule that limits nitrogen oxide emissions from new semis and other heavy trucks to 35 milligrams per horsepower hour from 200 milligrams.

senior economist, says, “Through much of 2024, many of the key metrics for the auto industry were returning to long-established norms. New vehicle inventory had mostly recovered from the pandemic shortages; sales volumes and incentives were both increasing, as expected. While

new vehicle prices are elevated compared to 2019, new vehicle price inflation was relatively tame in 2024, with transaction prices in January 2025 below levels measured in January 2023.

“Just as the industry seemed to be finding stable ground, new obstacles are

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thrown in place. How long higher tariffs are held in place is the industry's big question right now. Higher prices and border disruptions could result in lower volume. Our forecast of 16.3 million new vehicle sales in 2025, at least at this moment, is now in question."

Speaking during the S&P Global Aluminum Symposium in late January in Fort Lauderdale, Florida, James Martin, the Detroit-based director of consulting services at S&P Global Mobility, expressed his doubts that Trump would go through with the threatened tariffs on Canada and



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Mexico as planned, and his prediction proved accurate, at least initially.

However, if instituted as planned April 2, Martin predicted the tariffs would trigger adverse effects for the U.S. auto industry and the overall U.S. economy.

VEHICLE PRODUCTION AND THE EV TRANSITION

According to S&P Global Mobility, the tariffs on imports from Canada and Mexico, once enacted, have the potential for an immediate North American production impact of 20,000 units per day.

Without that impact factored in, Martin said North American production has been steady at roughly 15 million vehicles per year, with S&P Global Mobility forecasting that 15.3 million vehicles would be produced in North America in 2025.

"There is a lot of demand in the system," he said, noting that inventories have bounced back from supply chain disruptions related to the pandemic. However, much of the supply consists of "heavily contented, highest-price vehicles."

That approach pushed the average price of a new vehicle in the U.S. to \$48,000 in 2023. It has since declined to \$46,000 through vehicle decontenting.

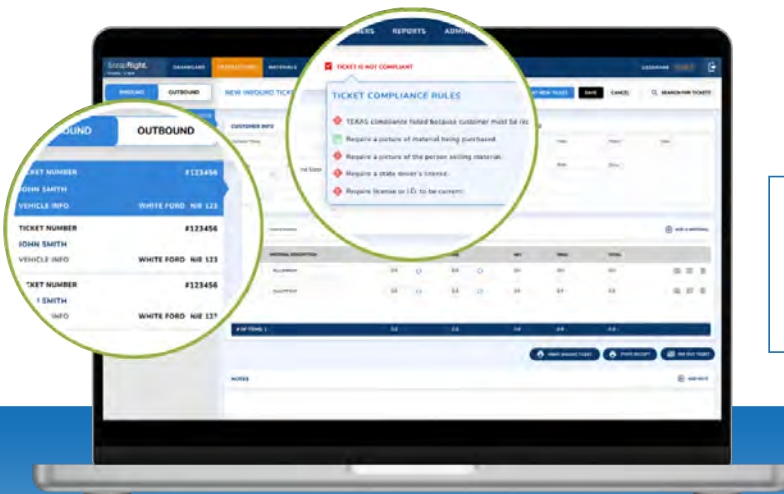
However, vehicle affordability remains a headwind as the decline in interest rates has not been as swift as the industry would like, Martin indicated in his presentation. The impact of potential tariffs doesn't help the affordability issue, either.

"The life of a new production vehicle in the U.S. goes something like this: Engine parts produced in Canada are shipped to an engine plant in Michigan to be produced into an engine that goes into multiple vehicle assembly plants, including plants in Canada and plants in Mexico, and then those trucks built in Canada or Mexico come back to the United States," he said. "How much of that is tariffed? Are the components tariffed? Are the engines tariffed? The vehicles are definitely tariffed. But you start to overlay

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tariff on top of tariff, and you're back to that \$48,000 a vehicle, [which] doesn't seem too bad anymore."

While the growth rate for electric vehicle (EV) adoption has slowed, according to Martin, year-over-year record sales remained in 2024. While from 2022 to

2023 the number of EVs sold increased by 46 percent, that increase fell to a single-digit figure in 2023 to 2024.

With the global geopolitical environment, Martin said more pushback on EVs was likely, leading to slower growth again, but still some growth. He added that it's

likely more battery EV programs will be delayed but not canceled going forward.

He also said an overcapacity situation is likely as manufacturers try to satisfy all types of customers, from those who still want internal combustion engine (ICE) vehicles to those who want hybrids or battery EVs.

"The thing is, while you're ramping up volume in the battery electric and even the multienergy platforms, your money makers—your ICE vehicles—you hope they don't go down too fast, so you wind up in an intentional overcapacity situation," he said, noting automakers are building inventory or putting incentives on products to avoid doing so.

AUTO SALES

Martin said while the pace of auto sales in the U.S. has remained steady in the \$16 billion range, it lacks momentum given the unstable environment.

"It seems to be pretty static for now, but our concern is that some of the geopolitical issues that are in front of us could bend that line even further down," he said of the potential year-over-year change in vehicle sales.

The Trump administration's softening of CAFE, or Corporate Average Fuel Economy, standards that mandate fuel efficiency for vehicles sold in the U.S. and auto emissions standards could mean some of the more mature and possibly lower-priced ICE vehicles will remain in the market longer than automakers originally thought, which Martin said would have the potential to increase total industry production volume.

"[However,] in most cases, ... the automotive companies started engineering content two, three or four years ago," to meet existing CAFE standards, he said. "They've tooled up suppliers to build the content to meet the standards that are in place today. So as those standards are either stalled or pulled back, they've got a tough decision to make: Do I continue to put the content in the vehicle, or do I reduce the content and save a little bit of cost on the vehicle?"

If the Trump administration removes the tax credits available for EV purchases under the Inflation Reduction Act, Martin

CONTINUED ON PAGE 166

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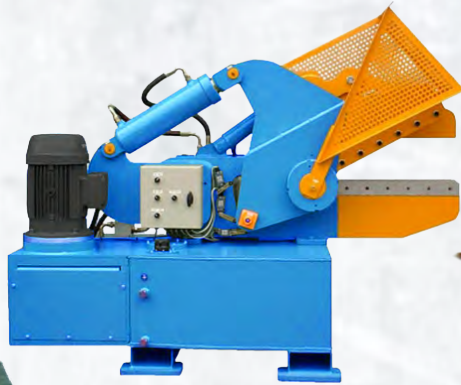


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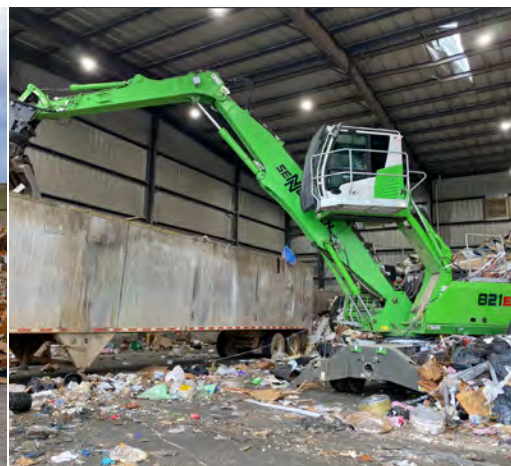
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Maritime on the mend

From policy changes to newly imposed tariffs, all eyes are on the future of freight.

BY HALEY RISCHAR

With the Trump administration's newly imposed tariffs, implementation of the Ocean Shipping Reform Act of 2022 (OSRA 22) and a new partnership between two of the world's largest container shipping lines, transportation and logistics has been front and center for recyclers.



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Warrick County, Indiana, upgraded to a fully automated Green Machine® Single-Stream Recycling System, enhancing sorting accuracy, increasing processing capacity, reducing landfill waste, and cutting labor costs while eliminating the need for outside recycling services.

Warrick County's old manual system processed 6–8 truckloads per week with 52.5 hours of labor, but the new Green Machine system now handles the same volume in 6.5 hours, boosting capacity to 48–60 truckloads per week and offering neighboring communities a more cost-efficient recycling option.

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“Partnering with Green Machine for our single-stream recycling system was one of our best decisions,” says Freddie Rowland, superintendent, Warrick County Solid Waste and Recycling Center. “Their team designed a solution that met our needs and positioned us for growth. Since implementation, we’ve increased capacity,



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reduced labor costs and improved material recovery. The system's efficiency and reliability exceeded expectations, and Green Machine's expertise has truly transformed our operation.”

The impact extends beyond Warrick County's facility. By implementing automated sorting technology, it has set a new standard for efficiency and sustainability in the region. The ability to process more recyclables with fewer resources has not only strengthened its operations but also fostered new partnerships with local communities and haulers.

“Warrick County's success with our automated Green Machine Single-Stream Recycling System proves how technology can revolutionize recovery,” Green Machine President John Green says. “We're proud to help drive sustainable solutions that benefit both the environment and the community.”

With this innovative system, Warrick County is leading the way in modern recycling solutions, proving automation and sustainability go hand in hand.

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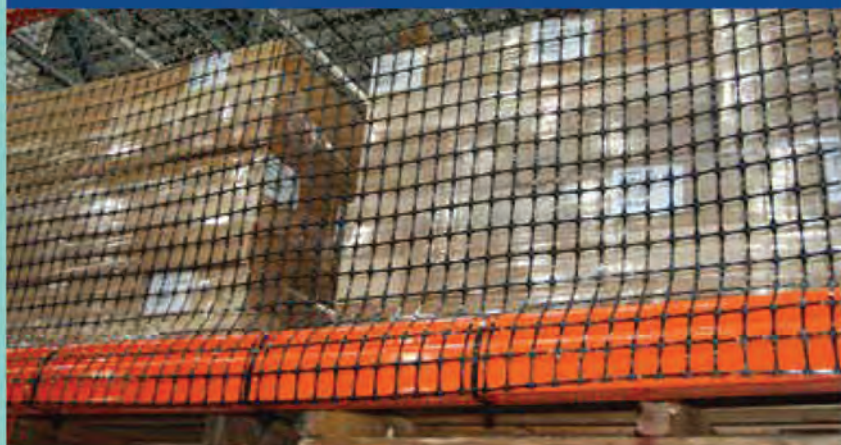


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To help recyclers and other stakeholders navigate this new landscape, *Recycling Today* hosted a Paper & Plastics Recycling Conference webinar in late January titled Transportation and Logistics. Joining moderator Nini Krever of Wilmington Paper Corp. of Pine Brook, New Jersey,

was Carl Bentzel, formerly of the Federal Maritime Commission (FMC); Robyn Lyons of Maersk, which is headquartered in Denmark; and Karyn Booth, who is based in the Washington office of law firm Thompson Hine LLP, headquartered in Cleveland.

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The panelists largely focused their discussion on the challenges related to ocean freight, highlighting port congestion, high delivery lead times, fluctuating rates and the potential impact of tariffs on the recovered paper market.

"Shipping a load of OCC [old corrugated containers] from North Carolina to Georgia is fairly straightforward; shipping multiple containers from New Jersey to Nhava Sheva, India, isn't," said Krever, who handles domestic and export paper transactions for Wilmington Paper. "Freight rates fluctuate, vessels don't call the port as expected, the union threatens to go on strike, a snowstorm closes the ports. ... These issues and more are what keep us up at night."

POLICY CHANGES

Booth, who has been at the forefront of major policy proceedings before federal transportation agencies, including the FMC, and Congress, began her presentation by providing a bird's-eye view of transportation markets and what policy changes could mean for the shipping industry.

With the new administration and majority Republican Senate, Booth said there's "a big opportunity for meaningful change," which likely could lead to some shifts in policy. With a strong agenda for deregulation across the government, she expected a reduced focus on climate and environmental justice.

Also, as outlined by Department of Transportation Secretary Sean Duffy during his Senate confirmation hearing, "red tape" that slows critical infrastructure projects will be reduced.



Further, OSRA 22—which grants the FMC authority to regulate ocean carrier practices, including investigating complaints about detention and demurrage charges—is scheduled to take effect this year. As of March 1, ocean common carriers are required to file documented export strategies with the FMC annually.

A major component of the legislation is unreasonable refusals, Booth said, which were important during the pandemic when fluctuating cargo volumes and port congestion created disruptions in shipping.

“Congress instructed the FMC to address this issue, and Congress itself adopted some prohibitions against unreasonable refusals for exporters and importers to get access to vessel space,” she said. “This rule applies only to the steamship lines, not middlemen such as NVOCCs [nonvessel operating common carriers]. It only applies to containerized cargo, not bulk cargo.”

Other updates in the ocean transportation space include the aversion of a second International Longshoremen’s Association (ILA) strike (The first strike was in October 2024 and lasted four days.) that had the potential to cause supply chain disruptions, demurrage charges for shippers and more, according to Booth.

On Jan. 8, the ILA and the U.S. Maritime Alliance reached a tentative agreement on a new master contract, including a 62 percent wage increase over six years. ILA members voted to ratify the agreement Feb. 25.

The agreement also allows for the implementation of new technologies, largely focusing on safety and efficiency.

INCREASED RELIABILITY

The operational collaboration between Maersk and Hapag-Lloyd of Germany, Gemini Cooperation, also focuses on reliability in ocean freight by creating a fleet pool of approximately 340 vessels with the combined capacity of 3.7 million 20-foot-equivalent-unit containers.

Booth described the collaboration as “more creative” and a means to change operations through a hub-and-spoke system.

“I think something that all importers and exporters want to see ... is a promise of greater service reliability,” she said. “[Gemini Cooperation is] wanting, once they get up and running, to be up over 90 percent, which I think would be terrific for the industry.”

Lyons, who joined Maersk in 2016 and serves as head of



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strategic commodities, said the cooperation aims to reduce port calls on main liners by enhancing shuttle services and leveraging state-of-the-art hubs.

With seven east-west trade lanes and 57 services, 29 of which are mainline and 28 are shuttle, Lyons said recovered paper exporters and customers should begin seeing fewer pain points over the next six months to a year.

“We will have a leaner mainland rotation, with two to three ports per region, including strategic hubs,” Lyons said. “The intention behind that is that with less port calls and with having a little bit more intention on the ports that we’re calling, it will aid in our service reliability improvements and transit time improvements.”

Overall, this could result in shorter round-trip voyage times and fewer sources of disruption, she said.

Lyons also noted the possibility for legislation that could affect ocean freight,

such as the European Commission’s new rules that are intended to decarbonize the maritime industry.

The FuelEU Maritime Regulation sets a requirement to lower the greenhouse gas (GHG) intensity of the energy used on board by all ships above 5,000 gross metric tons calling at European Union ports, regardless of the point of origin. The regulation gradually will increase the annual average reduction in GHG intensity over time, starting from -2 percent in 2025 to -80 percent in 2050 compared with the average in 2020.

“This regulation incentivizes the use of renewable, lower-emissions fuels, which is something Maersk has been ... very engaged in,” Lyons said. “As the limits for the yearly average GHG intensity of the energy used by ships decrease, the cost of compliance will increase gradually.

“This is something we’ve worked together with our customers to implement

and roll out, and it has been in place since the start of this year through several published surcharges that are either made available via our tariffs and also through our contract products that we negotiate and enter into with our customers.”

CHALLENGES AHEAD

Bentzel—formerly FMC commissioner and current president of the Washington-based National Association of Waterfront Employers—said ocean freight still is mending from impacts of the pandemic.

“I knew we were in trouble when the meeting shifted from logistics managers to CEOs of companies,” he said of his time heading the FMC in 2020. “We essentially saw during the early part of the pandemic a reduction of about 20 percent of our containerized cargo coming into U.S. ports.”

With CARES Act assistance along with economic changes, cargo coming into the

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U.S. increased by 30 percent, an influx that created port congestion and, ultimately, contributed to rising inflation in the U.S., according to Bentzel.

“It was a market that swung indescribably, and it was a challenged, constrained environment that was faced with responding to those market pressures,” he said. “The result is trillions of dollars of added cost to most consumers and users of the system, but it really shifted the focus on how important the industry is.”

Legislation such as OSRA 22 has embolden the FMC to be more proactive, Bentzel said, adding that the Trump administration shouldn’t affect its agenda.

The Office of the U.S. Trade Representative has continued the Section 301 trade investigation the FMC prompted under the Biden administration, which is evaluating Chinese manipulation and market control of shipbuilding. China

manufactures about 98 percent of shipping containers, 80 percent of shipping intermodal chassis and almost all ship-to-shore cranes handling cargo, he said.

Another topic of conversation was earliest receiving dates delays, which have been exacerbated by the Red Sea shipping crisis. Bentzel said solutions require real-time data shippers need for scheduling services, transit reliability and harmonizing cargo systems at marine terminals.

“We need a system of better communication, and there’s a role for shippers ... in this, as well, in terms of telling carriers when they’re going to need services [and] better forecasting materials,” he said. “We have to do better on this across the board—that is carriers, terminals, railroads, trucking companies, shippers.” **RT**

The author is associate editor of *Waste Today*, a sister publication to *Recycling Today*. Contact her at hirschar@gie.net.

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HANDLING THE *Truth*

As California tightens its standards for products and packaging deemed recyclable, companies must prepare for compliance.

**BY SEDINA L. BANKS, SHERRY E. JACKMAN
AND BRYCE LOURIÉ OF GREENBERG GLUSKER**

California has long been at the forefront of regulating “green marketing” claims.

The term “green marketing” refers to the practice of touting environmental benefits of company products and practices, and green marketing that overstates environmental benefits often is referred to as “greenwashing.”

There are federal and state guidelines for making permissible green marketing claims and avoiding greenwashing. States can, and do, adopt more stringent green marketing claim requirements than the federal government. Recyclability is a green marketing claim that is the focus of California regulation.



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Recently, the state's recyclability claims law, Senate Bill 343 (S.B. 343), has been updated, and companies doing business in California must know the requirements to ensure compliance.

BREAKING DOWN THE BILL

Adopted in 2021, S.B. 343, also known as the Truth in Recycling law, creates stricter requirements for the use of the familiar "chasing arrows" symbol or any other indicator of recyclability included on products and packaging.

The law seeks to give consumers accurate and useful information on how to properly handle a product or packaging at end of life and prohibits labeling a product or package in a way that indicates it is recyclable unless it meets certain criteria.

To be recyclable under the Truth in Recycling law, a product or package must be made from a material type and

form that is collected for recycling by programs in state jurisdictions that collectively encompass at least 60 percent of the state's population. They also must be able to be sorted into defined streams for recycling by large-volume transfer or processing facilities that serve at least 60 percent of these programs statewide.

Essentially, for manufacturers and others selling products or packaging labeled as recyclable, the product or packaging must be collected by curbside recycling programs that serve 60 percent of the state population and be accepted by recycling facilities that serve 60 percent of the state population. If the material is not recyclable at this dual 60 percent threshold, then no claim or indication of recyclability can be made, including using the chasing arrows symbol.

The law directs the Department of Resources, Recycling and Recovery (CalRecycle), the agency that oversees

recycling programs, to conduct and publish data on materials collected, sorted, sold or transferred for recycling in California. Manufacturers and other interested parties can use the data to determine whether recyclability claims can be made in compliance with the Truth in Recycling law.

In December 2023, CalRecycle published its initial preliminary report, which went through a public comment period. Previously, very little public data on the recyclability of materials was available in the state.

A year later in December 2024, CalRecycle released a revised material characterization preliminary report, for which another public comment period ran until Feb. 18 of this year. The final report was expected to be published by April 4 and, once published, businesses will have 18 months to comply with the standards in the law.

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LEGISLATION'S EXPANSION

S.B. 343 is just one law of many dealing with recyclability and claims.

On a national level, the Federal Trade Commission's Green Guides provide detailed guidance for marketers on making accurate and nondeceptive environmental benefit claims. According to the Green Guides, marketers can only make unqualified recyclability claims if recycling facilities for the product or packaging are available to a "substantial majority of consumers or communities where the item is sold," which is defined as at least 60 percent.

If recycling is less accessible, claims must be qualified to clearly state the limitations. For example, packaging labeled with the word "recyclable" or the chasing arrows symbol by itself would constitute an unqualified claim of recyclability. If the item is not recyclable to at least 60 percent of consumers or

communities where it is sold, these unqualified claims would be in violation of the Green Guides.

However, if the material is recyclable to fewer than 60 percent of consumers or communities where it is sold, but the recyclability claim is qualified with a statement such as, "This product may not be recyclable in your area," it would be compliant with the Green Guides.

Like many states, California adopted the standards in the Green Guides and, under current California law, these standards apply until S.B. 343 compliance is required. Notably, the 60 percent standard is more specific under S.B. 343 (dual 60 percent thresholds), and unless the standards of recyclability are met, no claim of recyclability can be made under S.B. 343, while a qualified claim can be made under the Green Guides.

Another law enacted in California in 2022, S.B. 54, or the Plastic Pollution



Prevention and Packaging Producer Responsibility Act, requires that all single-use packaging and plastic food service ware are recyclable by S.B. 343 standards or eligible to be labeled compostable by 2032. Even if a product or packaging currently is not recyclable in the state at the requisite level to be labeled as recyclable under S.B. 343, it soon could need to be under S.B. 54.

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However, simply eliminating indicators of recyclability to comply with S.B. 343 might not be the best solution in the long run.

PREPARING FOR COMPLIANCE

To ensure compliance with S.B. 343, brands should consider these points:

- **Understand the type of material claimed to be recyclable.** Companies should identify whether specific materials are referenced in the final CalRecycle report once it is released. Materials in the revised preliminary report are broken down by type, such as paper or plastic, then are broken down further, such as by the resin type for plastic. Finally, materials are broken down by the form they appear in. It will be important to accurately classify products and packaging to determine if recyclability standards are met.
- **Be mindful of the 60 percent thresholds for recyclability.** Companies need to ensure both 60 percent standards are met when making recyclability claims. The product or packaging must be collected by curbside recycling programs that serve 60 percent of the state's population as well as be accepted by recycling facilities that serve 60 percent of the state population.
- **Develop a compliance plan.** Companies should plan to ensure continued compliance with the law. For example, if the standards are not met, companies might need to remove any claims of recyclability from the product or packaging or redesign the product or packaging using materials that meet the standard for recyclability. Companies periodically should audit their recyclability claims to ensure continued compliance.

- **Prepare for consumer claims.** Companies failing to comply with S.B. 343 could face legal action brought by regulatory agencies or private litigants. Additionally, failure to comply with S.B. 343 could expose companies to reputational damage if the public perceives they are making misleading marketing claims.

Companies making recyclability claims should monitor updates from CalRecycle carefully to ensure their continued compliance and seek legal and expert assistance as necessary. **RT**

Sedina L. Banks, Sherry E. Jackman and Bryce Lourié are Environmental Group attorneys at Los Angeles-based firm Greenberg Glusker and specialize in advising clients on complex regulatory compliance matters and litigation. Visit www.greenbergglusker.com/environment for more information.



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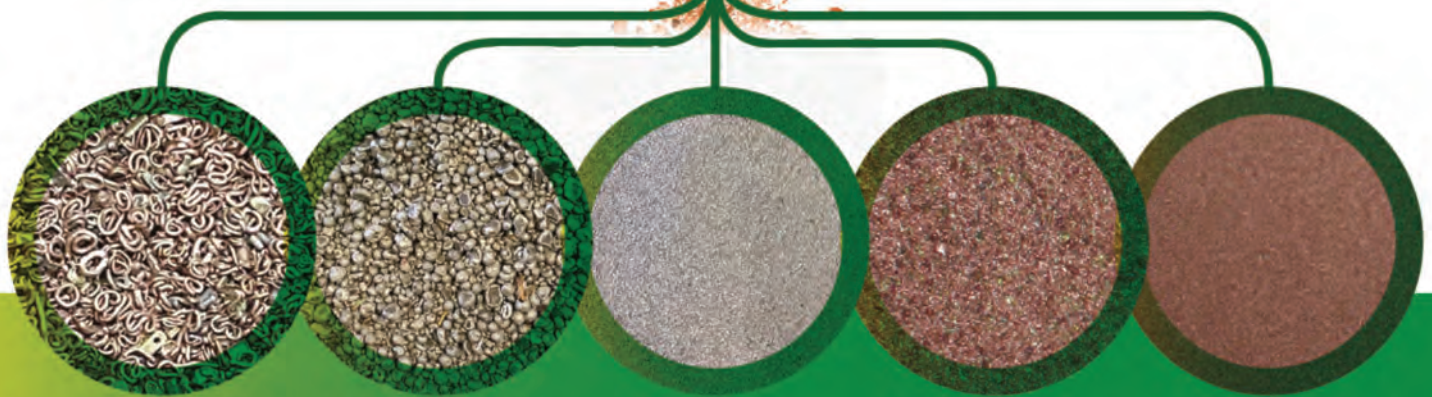
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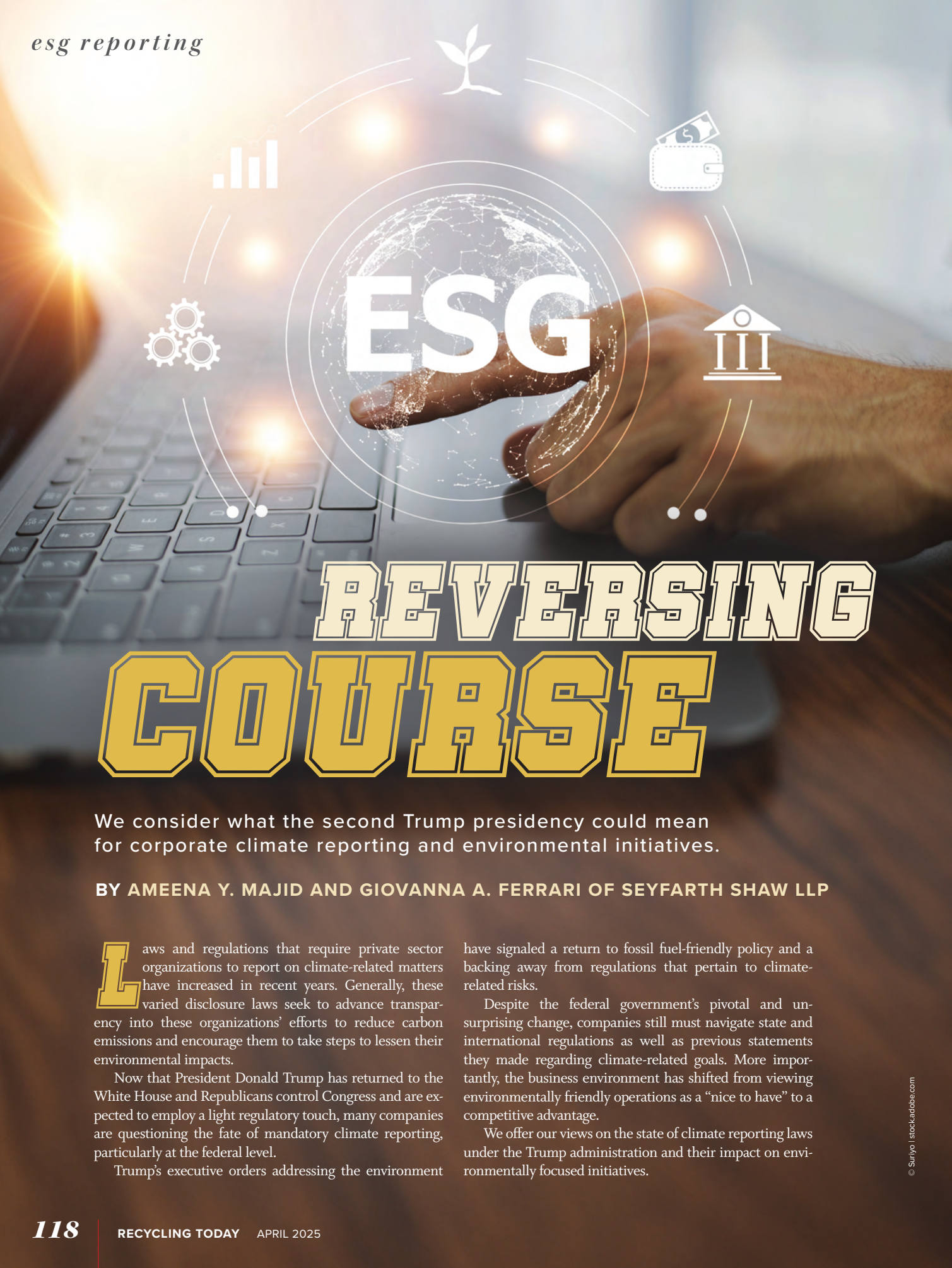


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REVERSING COURSE

We consider what the second Trump presidency could mean for corporate climate reporting and environmental initiatives.

BY AMEENA Y. MAJID AND GIOVANNA A. FERRARI OF SEYFARTH SHAW LLP

Laws and regulations that require private sector organizations to report on climate-related matters have increased in recent years. Generally, these varied disclosure laws seek to advance transparency into these organizations' efforts to reduce carbon emissions and encourage them to take steps to lessen their environmental impacts.

Now that President Donald Trump has returned to the White House and Republicans control Congress and are expected to employ a light regulatory touch, many companies are questioning the fate of mandatory climate reporting, particularly at the federal level.

Trump's executive orders addressing the environment

have signaled a return to fossil fuel-friendly policy and a backing away from regulations that pertain to climate-related risks.

Despite the federal government's pivotal and unsurprising change, companies still must navigate state and international regulations as well as previous statements they made regarding climate-related goals. More importantly, the business environment has shifted from viewing environmentally friendly operations as a "nice to have" to a competitive advantage.

We offer our views on the state of climate reporting laws under the Trump administration and their impact on environmentally focused initiatives.

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A 180-DEGREE TURN

The Trump and Biden administrations stand in stark contrast to one another in terms of the government's role in addressing the climate crisis.

According to the *New York Times*, throughout Trump's first term, more than 100 environmental regulations were rolled back. Given the anti-environmental, social and governance (ESG) stance advanced by Republicans during President Joe Biden's term along with Trump's actions through executive orders so far, Trump is taking a similar but more aggressive approach in his second term.

Biden sought to reverse course after the first Trump administration, rejoining the Paris Agreement his first day in office. He then instituted a governmentwide approach to addressing climate, including his Jan. 27, 2021, executive order, "Tackling the Climate Crisis at Home and Abroad," and his May 20, 2021, Executive

Order 14030, "Climate Related Financial Risk," which set forth a policy "to advance consistent, clear, intelligible, comparable and accurate disclosure of climate-related financial risk."

In contrast, on Trump's first day in office of his second term, he pulled out of the Paris Agreement as expected and abolished each climate-related executive order Biden issued. Also, through a handful of executive orders, Trump set forth a traditional fossil fuel-focused agenda that reduces the focus on renewable energy sources and devalues environmental sustainability efforts.

CLIMATE DISCLOSURE LAWS

Trump's executive orders also signal the likely fate of the Securities and Exchange Commission's (SEC's) mandatory climate-related financial risk disclosures (climate disclosure) rules for public companies and in public offerings, finalized and adopted March 6, 2024. These orders are unlikely

to survive the new administration.

Despite having been carved back significantly from the otherwise prescriptive proposed rules, the adopted climate disclosure rules continued to advance Biden's climate policies. Specifically, while public companies would need to make a number of judgments as to materiality of information under the climate disclosure rules, they also broadly require companies to disclose climate-related matters of governance, strategy, risk management, targets and goals, including, for the largest public company filers, disclosures of Scopes 1 and 2 emissions. In general, Scope 1 includes emissions from owned or directly controlled sources, and Scope 2 includes indirect emissions from purchased sources, such as consumed electricity, steam or heating.

From March 6-13 of last year, a number of lawsuits were filed challenging the climate disclosure rules.

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Pending litigation, the SEC stayed the climate disclosure rules. Most of the lawsuits challenged the SEC's authority to adopt the climate disclosure rules, and others brought by the Sierra Club and Natural Resources Defense Council argued that the rules did not go far enough. The matters were consolidated before the 8th Circuit Court, and the Sierra Club and the Natural Resources Defense Council voluntarily withdrew their claims in the summer of last year.

The appellate briefing was completed in October 2024, with the parties and more than 20 *amici* (more than 10 supporting each side) submitting arguments, however, the arguments have not been heard. Rather, Acting SEC Chair Mark T. Uyeda, who voted against the climate disclosure rules, issued a statement Feb. 11 directing the SEC to request the 8th Circuit Court not to schedule arguments so the agency can determine its position in the litigation.

If the climate disclosure rules survive litigation, we expect the SEC will rescind them by taking an approach similar to the one the Biden administration took through Executive Order 14030 regarding the Department of Labor's (DOL's) regulations, generally referred to as the DOL's ESG regulations. Particularly, in Executive Order 14030, Biden directed the DOL to consider suspending, revising or rescinding the DOL's ESG regulations issued under the first Trump administration. The regulations generally addressed the role of ESG in retirement plan investing by fiduciaries of Employee Retirement Income Security Act-governed plans.

Under Biden, the DOL ultimately pulled the ESG regulations and issued new ones. Any rescission of the climate disclosure rules in the new administration would be consistent with Trump's executive order, "Unleashing American Energy," issued Jan. 20, which abolished Biden's Executive Order 14030, among several other environmentally focused executive orders.

It is important to note the SEC's principles-based 2010 interpretative guidance on climate-related disclosure rules remains in effect but is permissive. SEC Commissioner Hester M. Peirce, who Trump appointed in his first term, said this guidance was sufficient for the disclosure of climate-related material risks in her remarks that preceded her vote against the climate disclosure rules. Peirce openly expressed her opposition to the climate disclosure rules in the past, labeling them harmful to "investors, the economy and [the SEC]."

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We can predict safely that the confirmed SEC chair will take a hands-off approach to mandating climate-related financial risk disclosures.

CLIMATE LEADERSHIP AT THE STATE, GLOBAL LEVELS

Despite these predicted changes at the federal level, we expect climate-related disclosure laws to continue at the state and international levels.

In 2023, California adopted the Climate Corporate Data Accountability Act, covering a trifecta of climate-related laws addressing participation in carbon markets, climate-related financial risk disclosures in line with the Task Force on Climate-Related Financial Disclosures (TCFD) as well as publicly available reports of Scopes 1, 2 and 3 emissions data. In general, Scope 3 emissions include indirect emissions from an organization's value chain—emissions a company does

not own or directly control.

The state's basic criteria require companies, whether private or public, doing business in California and with certain revenue thresholds to report certain metrics: revenue of \$500 million or more triggers TCFD reporting, and revenue of \$1 billion or more triggers emissions reporting. While the constitutionality of California's climate laws is subject to ongoing litigation, they have not been stayed pending the litigation. Thus far, California laws have survived various challenges even though the litigation has not been completed. As a result, companies subject to them have been preparing for compliance.

Other states also passed measures during the 2024 election addressing various positive climate measures, while at the same time, traditionally conservative states have not changed their anti-ESG stance, resulting in a number of measures

that are split along party lines.

While California has led with climate disclosure legislation at the state level, other states are introducing similar emissions disclosure laws.

One notable international regulation is the European Union's Corporate Sustainability Reporting Directive, or CSRD, a rule requiring certain companies operating in or conducting business in the EU to report on sustainability matters, including environmental disclosures in line with the TCFD. This rule is far-reaching and encompasses non-EU companies. Many U.S. multinational companies have been dedicating significant resources to preparing for public disclosures that also relate to governance, strategy, emissions and other environmental data across the value chain in line with the CSRD.

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course on environmental sustainability and is not expected to require detailed climate disclosures, other forces remain at play that are in support of the private sector's continued focus on environmentally sustainable actions.

Private sector companies have made investments and shifts in their business models or operations to address the impact of climate-related events on their business resiliency. Aside from state and international regulatory requirements, many organizations consider their employees, customers, business partners and communities in determining the environmentally sustainable actions or operations they engage in. In this regard, environmental sustainability often has been viewed as a competitive advantage that also can attract investments, customers and talent to companies.

As a result, we expect voluntary disclosures will continue as supported by a

recent survey by Workiva, a business data and reporting solutions provider, but they will be tempered in certain respects.

For example, we expect organizations will disclose emissions but step back from previously stated reduction targets. Similarly, this is a time when environmental sustainability should be viewed as integral to business strategy rather than being a "nice to have." Despite geopolitical concerns, a recent survey of chief financial officers by climate action media platform We Don't Have Time and global management consulting firm Kearney supports a dominant view for a business case in investing in environmental sustainability.

Moving beyond the term of ESG and watching the trend lines, addressing climate-related impacts on business has become table stakes as companies navigate broader stakeholder and business partner expectations.

While the Trump administration has

introduced a level of uncertainty in climate reporting, and its approach could deter certain renewable investments, we do not necessarily see the private sector reversing course on their actions.

If anything, the considerations might have shifted. Specifically, organizations could take a more cautious approach to how they share their climate-related actions with their stakeholders to mitigate litigation risk on climate-related statements and promises but maintain a greater focus on the business case for environmentally sustainable actions. **RT**

Ameena Y. Majid is an impact and sustainability partner and Giovanna Ferrari is a securities and financial litigation partner with Chicago-based Seyfarth Shaw LLP, which has additional offices throughout the U.S. and internationally. They can be contacted by emailing amajid@seyfarth.com and gferrari@seyfarth.com, respectively.



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From left: Rob Taylor of Republic Services, Rebecca Hu of Glacier, Gaspard Duthilleul of Greyparrot and Apurba Pradhan of EverestLabs

Actionable insights with AI

BY DEANNE TOTO

Panelists at the 2024 MRF Operations Forum discussed the evolution of artificial intelligence and robotics in MRFs and their potential to connect the value chain.

Artificial intelligence (AI) promises to improve the efficiency of material recovery facilities (MRFs), enable sorting at a more granular level and deliver a variety of performance data points.

To prevent drowning in data, panelists at the MRF Operations Forum session Emerging Technology and Approaches in October 2024 spoke of the need to focus on the information that is most pertinent to a MRF's key priorities. They also addressed the evolution of the technology and the lessons they have learned through its deployment at MRFs.

The session, moderated by Rob Taylor, senior manager of recycling operations at Republic Services, headquartered in Phoenix, featured Rebecca Hu, CEO and founder of San Francisco-based Glacier; Gaspard Duthilleul, CEO of London-based Greyparrot; Apurba Pradhan, head of product at Fremont, California-based EverestLabs; Raghav Mecheri, CEO of New York-based Visia (formerly Binit Inc.); and Steve Hastings, an adviser to Fort Worth, Texas-based Rovox.

Glacier makes purpose-built AI-enabled automation to help recyclers and the entire value chain trace and recover material, EverestLabs is an AI and robotics company serving sorting and recycling enterprises and Rovox, the newest entrant

to the space, is a technology automation and robotics company owned by Taiwan-based Foxconn. Visia builds AI-powered X-ray and camera equipment to analyze material coming into recycling facilities to identify nonconforming items, such as lithium-ion batteries, while Greyparrot provides data solutions powered by AI to the waste, recycling and packaging value chain.

PARSING DATA AND BUILDING TRUST

Given the overwhelming array of data AI can supply, Hu said through its early deployments, Glacier realized the need to clearly understand what a facility is trying to achieve with the data collected.

"What information do you need? What's nonnegotiable? Then, what are the decisions or the actions that you would take as a result of what you're learning?" she asked.

Using this approach helps to put "guardrails on what would otherwise

be essentially like an infinite ocean of information” on the materials flowing through a MRF, she added, including the different types of items, the burden depth and the volume.

Hu offered three or four types of recyclables being lost to the residue stream as an example of data to target.

“I’d really encourage everyone in the room to stay focused on what are the key priorities of what you’re trying to learn and what you’re trying to act on,” she continued.

Duthilleul agreed, saying, “At the end of the day, I think no one in this room wants to have a lot of data to play with.”

For that reason, he said, Greyparrot spent the last two years developing the tools to make the data its technology delivers actionable.

EverestLabs decided early on to focus on the modularity and precision of its technology offering.

“You take one robot and make it extremely successful at that task,” Pradhan said. “So, that means ... from AI all the way to picking up an object and dropping it in the right place. Once you’ve focused on success, then you focus on modularity. Now these are small, human-form factor [robots], ... something that fits in the size of the sorting position. Now you can have multiple of those robots doing the tasks that you need.”

He also raised the issue of trust, noting that because recyclers have done manual sorting and auditing for so long, providers of AI and robotics technology have to “build an infrastructure that provides trust.”

To that end, EverestLabs’ robotics operations center has a team monitoring all its deployed robots using data they are capturing to ensure they’re running above a certain threshold.

“That allows us to guarantee performance,” Pradhan said. “That allows us to have a much better interaction with the operations team in the ... facilities.”

Visia, which aims to prevent dangerous materials from entering recycling facilities, learned two lessons early on.

“The first ... [is that] intelligence has to be actionable,” Mecheri said. “Things on graphs are typically very difficult to parse, even though our high school and college education system

has made us believe that graphs are the answer to everything today.”

The second lesson was the need to proactively audit deployed equipment.

“We show up on-site once a month with a duffel bag full of prohibitives and put them on one end of the system [and] validate that they actually got caught,” he continued. “You need to have that element of transparency with your customers. I need to be able to go to someone and say, ‘I missed this type of drill battery. It will be gone by tomorrow, but between today and tomorrow, please keep an eye out for this kind of drill battery.’”

“I think getting ahead of problems in that proactive manner, at least in our experience, has led to building that trust, which I think is so important, especially as you look to scale technology.”

Regarding some early entrants in the robotics space, Hastings said it’s possible the industry did not recognize the complexity of MRFs.

“This is a tough business,” he continued. “The challenges to sorting the materials into sellable commodities are not to be taken lightly.”

Hastings mentioned the appeal of replacing labor with equipment such as robots that could be depreciated over time, saying it’s a “great formula, but it has to work, and originally it didn’t.”

“
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— Steve Hastings,
adviser, Rovox

EVOLVING TECHNOLOGY

Earlier forays into deploying robotics and AI in MRFs have helped shape the panelists’ approaches.

According to Pradhan, EverestLabs won’t take on a project it doesn’t think will be successful.

“I like having the up-front alignment in terms of what operators are trying to accomplish with what you can deliver,” he said.

“We’re kind of in this situation where AI and robotics are sort of an afterthought. If we had some sort of systems-level thinking, where we designed the system to accommodate some of the AI technologies, we’d get twice, three times more performance than what we’re getting today.”

Mecheri learned he had to build technology that adapts to the operator instead of asking the operator to adapt to the technology.

“We have equipment that goes into a variety of settings,” he said. “The way we actually approach the problem technologically means that two customers might actually look very different. One might have cameras on their tip floor, the other one might have an X-ray on their scale. A third one might have an X-ray on their presort. But, effectively, all three are doing the same thing, which is ... they’re understanding composition. They’re alerting on the bad stuff, and we’re helping them get rid of the bad stuff.”

An approach that has served his company well, Mecheri added, is building a process around what the customer believes makes the most sense rather than dictating a process Visia believes to be sensible.

“We built our products with MRF operators for MRF operators,” Duthilleul said, noting the company’s AI waste analytics platform, Greyparrot Analyzer, includes small and light hardware that is easily installed at different locations throughout a MRF.

“The second thing is, we don’t want to spend months building an AI model for each application,” he continued. “We want to spend this time during the deployment talking to the operators to calibrate the tools for their needs.”

Greyparrot uses its master model



that was built from the 5.7 million waste items it's processed to do 95 percent of that work.

"But we know each MRF stream is still different, and so we do this final calibration for the operators based on the use case, based on the value we need to provide," Duthilleul said. "It's this really consultative approach we're taking, and then we can obviously guarantee the metrics and the results you get from it because we've been doing this work with you all along the deployment."

Glacier also has seen success by taking a consultative approach and being

honest about its technology's limitations.

"If you come to us and tell us, 'I need you to identify these 200 different types of materials, and I need you to do it with 99.9 percent accuracy and I need you to be able to translate all of that into a perfect weight estimate,' ... we'll be pretty up front," Hu said. "I think most folks up here would be, too, and say, ... 'Why are you asking for these things? Maybe there's another way to get that for you.'"

She added, "We'll be very thoughtful about setting up success metrics guarantees based on what you've told us that you really care about, and with that in mind, we have undertaken dozens of successful deployments to date."

Additionally, Glacier has focused on the ease of deploying its technology, providing modular solutions for its hardware and software.

"I talk a lot about what I call the Ikea-fication of hardware. ... You can

order something, we send you a flat-pack box, and then you can actually set it up yourselves," Hu said. "We're always there to help if we need to, but we have customers that have actually elected to do that themselves, and very successfully. You all have crews at your MRFs that are very talented mechanically and can do things like that."

She added that AI is evolving rapidly, saying that where the technology was a year ago is "nowhere close" to where it is today.

"I'm betting we can cover again that same distance in the next couple months," she continued. "We are really intent on building our tooling to take advantage of all of the innovations that are happening with AI on a regular basis, so that you're getting all of the latest and greatest updates without even maybe realizing it on the front end when you're interacting with our technology."



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ALIGNING THE VALUE CHAIN

Hu said technological innovation is combining with macro tailwinds for the recycling industry, including extended producer responsibility and the desire for more recycled feedstock.

"There's a lot of demand being generated for the very stuff that's flowing through all our plants today in a way that really hasn't existed before," she said. "As we're building Glacier, we're really thinking about not just how we make MRFs run better, make more quantitative decisions or get access to the advantages of this new technology, but how do we position MRFs as a crucial step in this new kind of circular supply chain that's being developed."

Glacier is building AI to improve MRF operations as well as working with companies like Amazon and Coca-Cola.

"Our AI is really shedding light on what has previously been kind of a black box," Hu said. "Someone like Amazon

is putting so many packages, so much cardboard out there, and they don't really have a great handle on where all of it ends up; but now we're able to give them that real-time feedback in working with our MRF partners so they can make sure the changes they're making are actually improving the overall end-of-life outcomes for all of that material."

Pradhan said AI has the potential to be deployed widely at both old and new MRFs to optimize existing equipment and improve recovery, with effects that are far-reaching when combined with brands' recycled-content goals.

Greyparrot has partnered with Norwalk, Connecticut-based systems integrator Van Dyk Recycling Solutions and Dutch recycling equipment manufacturer Bollegraaf to build the digital layer for waste infrastructure.

"We don't want to build MRFs and other equipment, and we don't have to because there's already great players

doing that today," Duthilleul said. "We believe the MRF of the future will be smarter, more automated."

"If you want the economy to be circular, you need information to circulate as well, and you need people to align on what needs to be done. ... We developed this concept we call waste intelligence, which is around using the data we generate from across the world ... to actually inform different stakeholders."

While Duthilleul said it's not necessarily data sharing, the information allows the parties to discuss whether any improvements are needed.

"I think the biggest opportunity isn't one technology or one thing," Pradhan said. "I think it's really just for everybody in this room and everybody on this panel aligning this recycling value chain." **RT**

The author is editorial director of Recycling Today Media Group and can be reached at dtoto@gje.net.



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Empowering communities through EDUCATION

New learning centers aim to transform the way people understand and think about recycling.

BY MALLORY SZCZEPANSKI

Recycling education centers are opening their doors to residents and visitors across the country to offer a behind-the-scenes look at the recycling process. Through interactive exhibits, guided tours and hands-on activities, these education centers allow visitors to see firsthand how materials are sorted, processed and eventually transformed into new products.

Each center is different, but they all share common goals, including promoting behavior changes, building trust in recycling and encouraging people to reduce waste, reuse materials and improve their recycling efforts.

Photo courtesy of Balcones Recycling

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HANDS-ON LEARNING AND COMMUNITY ENGAGEMENT

Whether it's sorting recyclables in a game, creating crafts from upcycled materials or seeing recycling technology and equipment in action, these education centers provide visitors with ample knowledge to enhance recycling skills and improve everyday habits.

At Rumpke Recycling & Resource Center in Columbus, Ohio, visitors ages 10 and up can test their recycling knowledge through a series of interactive exhibits in a 3,000-square-foot education center, designed in collaboration with Columbus-based science museum COSI, also known as the Center of Science and Industry. These exhibits portray real-life scenarios that prompt visitors to consider the choices they make daily, such as selecting items at a grocery store based on packaging recyclability and determining which items

belong in a recycling bin.

The first exhibit is a supermarket simulation where visitors shop for items and learn about packaging recyclability. The second exhibit is a video game that allows visitors to test their knowledge of recyclable materials by sorting items into waste or recycling bins. The third exhibit features a large, 3D model of Rumpke's material recovery facility (MRF), which uses audio and video to highlight the MRF's different components. Visitors also can learn how specific equipment like a trommel or eddy current works as well as see bales of paper, aluminum and plastics.

Finally, a career exhibit highlights the wide range of careers in the waste and recycling industry, and an end-user exhibit displays various commodities as well as the products created from those materials.

"At Rumpke, more than 80 percent of the materials we process go back to end users in the state of Ohio or the Midwest, fueling our local economy," says Amanda Pratt, senior vice president of communications at Cincinnati-based Rumpke Waste & Recycling.

Following the exhibits, visitors continue on to a more than 100-foot-long platform for an audio-guided walking tour of the MRF.

"On this tour, visitors can see recycling is real and that their efforts are making a difference," Pratt says. "Our hope is that after seeing behind the curtain, they can better trust the recycling process and that we as an industry are constantly innovating to successfully manage society's waste and recyclables in a beneficial way."

The MRF, which opened in June 2024, is outfitted with a processing system custom-designed by Canadian equipment manufacturer Machinex. The system includes four ballistic separators, 19 optical sorters, 10 artificial intelligence (AI) technology units, a hydraulic lift tipper, two ceiling-mounted cranes and nine vacuums to remove plastic bags from the sorting line. The MRF can process up to 250,000 tons annually from more than 50 Ohio counties and currently has a recovery rate of approximately 98 percent to 99 percent.

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recycling education



Recycling also is lifting the veil on the recycling process by hosting in-person tours at its Recycling Education Center located within its Sunset Park MRF, which sits on an 11-acre pier.

The tours, designed for third-graders and older, consist of three parts: an introduction to the MRF, information on what belongs in recycling bins based on New York's recycling guidelines and a tour of the Recycling Education Center.

The center features five interactive exhibit stations:

- **Material origins.** This station educates visitors on the natural resources used to make products.
- **Collection truck.** This interactive exhibit explains how recyclables are collected and transported for processing.
- **Sorting.** Through a demonstration, visitors can learn the process of sorting materials by weight, type and size.
- **A recycling jobs wheel.** Visitors spin the wheel to learn about different roles within the industry.
- **What recycled materials become.** This station explains how recyclables are turned into new products.

After exploring the exhibits, visitors head upstairs to the observation deck to see the MRF in action.

The facility processes about 1,000 tons of recyclable materials daily, including metal, plastic and glass, which are transported along 2.5 miles of conveyor belts.

"Our MRF is equipped with 16 optical sorters, a large drum magnet, eddy currents, glass breakers, a ballistic separator

and other technologies and equipment that help us manage the large amount of material we receive," Balcones Recycling Director of Education Kara Napolitano says. "My hope is that by seeing recycling in action, visitors will better understand recycling is real and recycling right is good and helpful.

"The goal is to not only get them to recycle right but to waste less so we can ultimately create a circular economy."

In 2024, the center welcomed approximately 5,000 in-person visitors and 3,000 virtual tour participants.

In Grand Rapids, Michigan, the Kent County Recycling and Education Center also is looking to improve recycling rates through tours and field trips, presentations and hands-on activities such as its classroom Eco-Kits.

Within the center's 5,000-square-foot education space, visitors can explore a range of exhibits, including a waste and recycling evolution timeline; the history of recycling in Grand Rapids; informational kiosks featuring recycling facts, statistics and trivia questions; a classroom with live footage of the MRF's pre-sort area, tipping floor, optical sorter and baler; a product life cycle display; an up-cycled craftmaking area; and more.

The MRF, which hosted approximately 4,800 visitors for tours last year, processes about 30,000 tons annually with a 90 percent recovery rate. It sends processed materials to five states, as well as throughout Michigan and Canada, and is equipped with a cardboard separator, two



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Recycling education centers play a crucial role in building the public's trust and improving recycling, reuse and waste reduction efforts. By offering hands-on experiences and behind-the-scenes tours, they can help visitors better understand the impact proper recycling can have on communities and the environment.

ADDRESSING CONTAMINATION AND PROBLEMATIC MATERIALS

Contamination is a significant challenge in recycling facilities, and one item continues to pose a growing threat: batteries.

For example, last year, the Kent County Recycling and Education Center experienced a fire caused by a lithium-ion battery. While the MRF was able to contain the fire without injury to employees or damage to equipment, it took additional precautions and installed a unit from Farmington Hills, Michigan-based Fire Rover to enhance fire safety measures.

"Finding the cause of the fire was like finding a needle in a haystack, and we're lucky it didn't cause a catastrophic event," says Micah Herrboldt, waste reduction educator at the Kent County Department of Public Works. "During all our tours, we include information about the dangers of throwing batteries and other hazards into bins and provide information about



our SafeChem locations, which accept a wide range of household hazardous waste items for free."

At Balcones' Sunset Park MRF, staff also educate visitors about the dangerous implications of improperly disposing of lithium-ion batteries.

"Our MRF experiences one to three fires daily because residents are incorrectly placing lithium-ion batteries in their recycling bins," Napolitano says. "I mention this to nearly every visitor and stress that no batteries of any kind should be placed in recycling bins."

To prepare for potential fires, employees receive training on how to extinguish them, and many of the MRF's conveyers are equipped with sprinkler systems.

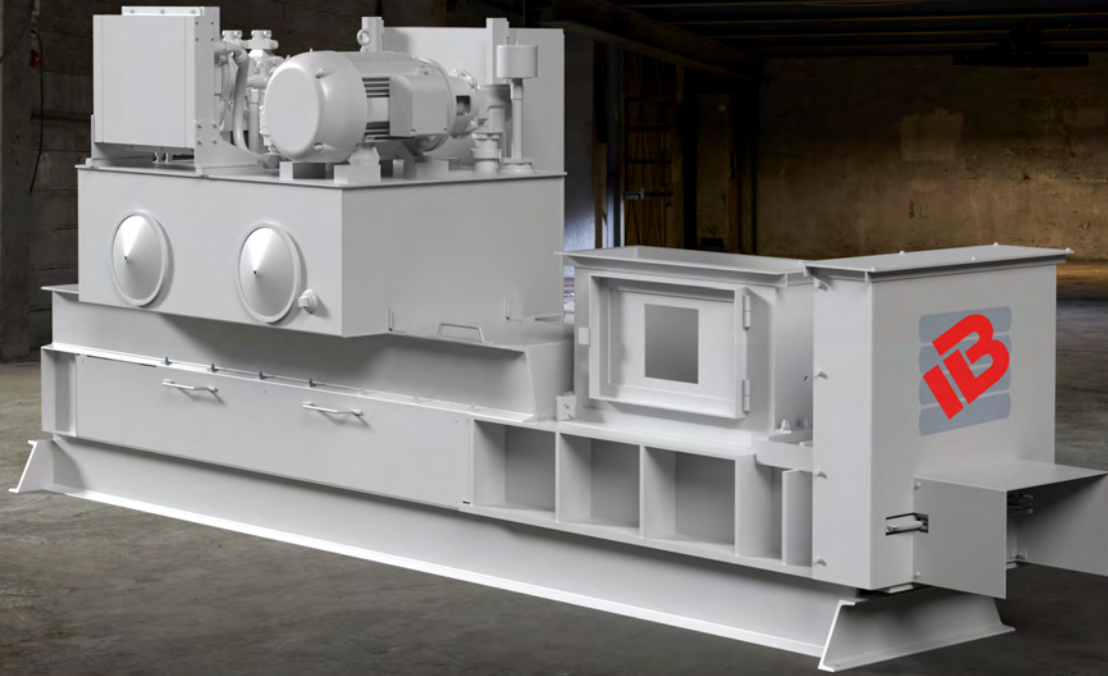
THE FUTURE OF RECYCLING EDUCATION

Recycling education centers continue to evolve, with many exploring ways to enhance their interactive exhibits, expand outreach and welcome more visitors to learn about recycling processes and the impact of their daily efforts.

As communities work to improve recycling rates, reduce contamination and achieve waste reduction goals, these centers will remain at the forefront of those efforts. Through ongoing hands-on learning opportunities and community engagement, they can empower individuals to take meaningful action to make a difference in their communities. **RT**

The author is the event and content producer for the Recycling Today Media Group and can be reached via email at mszczepanski@gje.net.

Photos courtesy of Balcones Recycling



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BY MARISSA MCNEES

DS Smith breaks down language barriers, CREATES NEW OPPORTUNITIES

The company's award-winning Spanish-language interpreters program has helped address labor gaps while prioritizing inclusivity and innovation.



Photos courtesy of DS Smith

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SSI Shredding Systems

DS Smith has been a leader in sustainable and circular packaging solutions for many years, and the London-based paper and packaging company, acquired by Memphis, Tennessee-based International Paper earlier this year, recently was recognized for its hiring practices, proving its innovation goes beyond products.

The company first entered the North American market in 2017 with its acquisition of Interstate Resources Group, then based in Arlington, Virginia, and subsequent acquisitions of Corrugated Container Corp. and The Display Connection.

In 2019, DS Smith opened its packaging manufacturing facility in Lebanon, Indiana—its first greenfield facility in the U.S. The site is approximately 550,000 square feet and includes a rolled paper warehouse, a two-story corporate office as well as a client product design center and “advanced, fully automated equipment and machinery.” When it opened, DS Smith reported that the facility could produce 30,000 boxes per hour.

The site also features a DS Smith PackRight Center, which the company describes as a “collaborative packaging innovation hub.” Customers can attend workshops at the PackRight Center and work with DS Smith design engineers to maximize the sustainability of their packaging and “seize new opportunities for growth and innovation.”

Those opportunities for growth and innovation, however,

are not just limited to sustainable packaging.

With workforce challenges being felt across the U.S., DS Smith developed a Spanish-language interpreters program at its Lebanon facility to find potential employees it otherwise might not have reached.

In November 2024, the program was recognized with a Better Practices, Better Planet 2030 Sustainability Award from the Washington-based American Forest & Paper Association (AF&PA), an award that honors outstanding sustainability programs and initiatives within the paper and wood products manufacturing industry.

The AF&PA chose DS Smith’s Spanish-language interpreters program for its “innovative approach” to diversity, equity and inclusion, or DE&I, specifically addressing language barriers and expanding employment opportunities for Spanish-speaking workers.

“We’re trying to do everything bilingual so that inclusivity is felt in the organization,” DS Smith Chief Human Resources Officer Monica Anderton tells *Recycling Today*.

“We have a saying that we aspire to be an equity-minded employer. We’ve put a lot of effort into inclusion training and DE&I culture toolkits. ... We recognize that not everybody starts from the same place, and we try to meet people where they’re at.”

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A NEW APPROACH TO RECRUITMENT

According to the most recent census data, Lebanon residents of Hispanic or Latino origin make up nearly 8 percent of the population, the second-largest demographic behind white residents.

"Post-COVID, the hiring market has been a real challenge," Anderton says, noting that when fully staffed, the Lebanon facility has about 260 employees. "In Lebanon ... we're in a very tight, dense manufacturing park—there's a lot of competition. We had issues trying to get staffed up. We couldn't get our second or our third shift staffed, and we were really struggling."

She says the company tried "all kinds of crazy things" to attract employees—job fairs with a DJ, leaving flyers at churches and restaurants, competitions, referral bonuses and billboards.

That's when Becky Gordon, HR manager at the Lebanon facility, decided to try a different approach.

"How were we going to come at this recruiting in a different way?" Anderton asks. "We had tried a lot of different things, but we weren't having any luck. ... Becky saw this opportunity to build a relationship with a Spanish-speaking temp agency."

The agency informed Gordon it could provide candidates for employment, but most of them did not speak English.

Anderton and Gordon agreed to give it a try but first had to



consider how to keep the environment safe for everyone, no matter their native languages.

They started with just a few candidates as a test run. At the time, Anderton says several bilingual employees already were working at the facility, and the test run seemed to run smoothly. The next task, however, was to bring in a larger pool of candidates to see if the program was feasible on a larger scale.

"We really saw this as a pivot point," Anderton says. "How do we migrate these couple people into a bigger population, and can we get enough people so we can have a second and third shift?"

Gordon then asked about hiring three interpreters—one for each shift—and decided to hire more non-English-speaking job candidates and build a program around taking care of them.

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“That was the genesis of the program that really helped us shift our diversity numbers at the plant and diversify our candidate pool, and it’s had a huge impact on both,” Anderton says.

Because DS Smith’s Lebanon facility is a greenfield site, Anderton says the hardest positions to fill were the entry-level, hourly positions because they “were basically pulling people in.”

The site’s Spanish-language interpreters primarily function as such. According to Anderton, the interpreters assist Gordon with all the interviews as well as help develop and train employees on policies and procedures. She says they also have a good understanding of how the equipment works in different areas of the plant to ensure proper training.

“We have every bit of collateral in our plant now in English and Spanish, so every lockout tag and most policies and procedures,” Anderton says. “If you go to a piece of equipment, you’ll see a stand and it’ll be in English and Spanish. That is where we use the interpreters, from the onboarding to make sure it’s a good culture fit, to training on Day 1 or if they’ve been there a while and have benefits issues or other questions.”



Each monthly team meeting also now is done in English and Spanish, with two visual decks displayed at the same time, and all internal communications are offered in each language, too.

By implementing this program, Anderton says the site has been able to attract and hire skilled workers who previously might never have applied because of the language barrier. In two years, the Lebanon facility has increased its Hispanic employee demographic from 6 percent in 2022 to 42 percent in 2024.

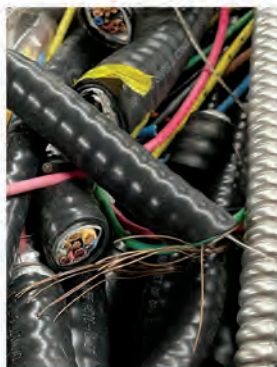
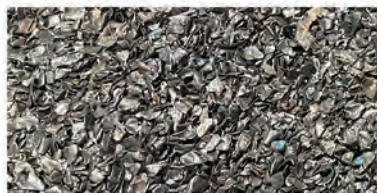
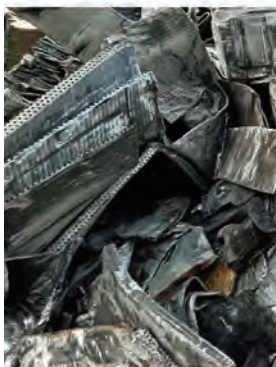
“That’s been a really nice outcome,” she says. “We’ve seen some [employees] move into team-lead roles; we’ve seen promotion and progression absolutely happen.

“[We’ve found employees] that may have experience in

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maintenance or electrical that we wouldn't have known had we not got them in the door."

Anderton says safety is of critical importance, and the biggest risk lies in the fact that employees all "have to be able to safely come in, conduct their job and talk to people if they need help."

"It's manufacturing; there are a million moving pieces," she says. "You can't engineer all that. ... That's why the criticalness of the interpreters makes it work for us because we have that ability to speak freely and impart data and training and whatever we need to do with our employees."

"The core foundation of our culture, of how we do business, of how we treat people, that foundation is there and it's very strong, but we've just expanded it now."

THE WAY FORWARD

According to Anderton, it's estimated approximately 3.8 million manufacturing jobs will be needed in the United States in the next decade, but 1.9 million are expected to remain unfilled.

"We have a huge gap in open jobs versus available candidates," she says.

Language interpretation programs "absolutely can be an avenue" to addressing these employment gaps, but the trick,

according to Anderton, is examining the demographics on a location-by-location basis.

"We have a candidate pool in Indiana that we're able to tap, but I can't say I have that same candidate pool near every plant I have," she says. "So, it's working in Lebanon because there's this pool of candidates out there, and I think we just have to tailor our approach to what the demographic and what the available market is."

The upfront cost of hiring interpreters could seem like a risk at first, but Anderton says a full house of well-taken care of employees is worth the price.

"I think it's a perfect case study of investing a little money and seeing the results," she says. "To me, it's a cost-benefits analysis. The cost was three [interpreters and] the benefit is the plant is fully staffed. We're meeting the cost, we're meeting customer demand and we're being responsive to what our customers are asking from us."

"It's about fostering in a culture where you can value innovative ideas, give it a try and you'll either fail fast or be off and running." **RT**

The author is managing editor of *Recycling Today* and can be reached at mmcneese@gie.net.



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NOT TO BE *taken lightly*

When procuring waste and recycling services from a third party, it is important to understand that every project has unique considerations.

**BY BECKY CALDWELL
OF GERSHMAN, BRICKNER
& BRATTON INC.**

At some point, waste and recycling services could need to be procured from a third-party vendor. Contracting services is a local decision based on budgetary and managerial options, available resources, current services and new services to be provided. The contract defines the rules, policies and procedures, including responsibilities for each party, and addresses how they will engage the other when problems arise.

Most commonly, jurisdictions and local governments use contracts to provide services through third-party agreements for curbside collection, transfer station operation, transportation from a transfer station or processing facility and landfill services. Private companies can perform any or all services typically provided by a local government entity.

The contracting process should be concise, complete and transparent, with the understanding that every project has unique considerations.

A well-developed procurement should ensure innovative and serious proposals in response and needs to include significant background about the issuing agency and its history regarding solid waste management. The procurement needs to put forth a realistic schedule and detailed scope of services, risk allocations, size, future expansion and cost expectations. Assumptions regarding project parameters from material quantity and composition, site data and facility plans, funding mechanisms and applicable regulations need to be clearly defined. The document also should include clear submission requirements, evaluation parameters and contact information. Lastly, strong procurement is best when it includes a well-developed draft service agreement with insurance and bonding requirements.

Competitive procurement processes often include two stages—a request for qualifications (RFQ) and/or a request for proposals (RFP), including background information, minimum qualifications, operational details, evaluation criteria for the responses, references and other project-specific details. The RFQ is valuable in identifying qualified proposers before the release of the RFP, allowing local officials to concentrate on companies with proven abilities to successfully and safely complete a project.

CONTRACT VS. FRANCHISE

In a contracted collection system, a jurisdiction typically designates one or more



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contract service areas, develops a scope of services, conducts a procurement process or negotiates with haulers to provide designated services. The jurisdiction then enters a contractual arrangement with the selected hauler to be the exclusive provider in a service area for a specified period. The municipality pays the hauler directly for services rendered, and funds to pay the contract costs can be collected in several ways, such as general fund contributions, service fees or assessments or variable rate fees charged to generators.

Under a franchised collection system, one or more franchise service areas could be defined, and designated haulers—selected through procurement, negotiation or an application process—are awarded the right to provide collection services within the franchise area. Agreements can be exclusive, where only one hauler is allowed to operate within a defined area, or nonexclusive. The number of haulers per service area is generally limited by the franchise agreement.

Typically, under the terms of the franchise agreement, collection services fees are defined. Unless collection is mandatory, generators can then choose to sign up with a franchise hauler or self-haul material. Generally, under franchise systems, generators pay franchise haulers directly, and the cost of billing, collections and marketing is borne by the franchise haulers. The sponsoring

government also could receive a franchise fee from the hauler.

Government contracts cover basic services but also tackle issues that can affect services, the community and budgets. For instance, in a contract for residential curbside collection, requiring several reserve trucks for use during maintenance and repairs on the daily fleet is imperative for uninterrupted service. Dirty collection trucks or equipment in disrepair are a direct reflection on the local government.

Active, regularly completed audits are critical to the ongoing success of contracts with private entities. Annual or biannual hard-house counts could be necessary from the contractor or the jurisdiction to ensure billing is done accurately and fairly.

A number of questions should be asked when deciding to provide services using in-house resources or contracting with a partner:

1. Where are improvements or changes in the services provided that need to be implemented?
2. Can those improvements or changes be made with one third-party contractor or will it take more than one? (If both are options, then be prepared to consider all choices.)
3. Is there an opportunity to save taxpayer dollars by contracting out a function that is used less often, for example, heavy brush, bulky items and/or white goods?



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4. If a new service is being added, what is the most economically responsible method to provide that service based on the community's expectations?

KEY ELEMENTS OF SUCCESSFUL AGREEMENTS

The appropriate contract terms are essential to ensuring satisfaction with privately provided services.

When developing the scope of services for the contract, a number of elements should be considered:

- **Frequency of collection.** How often will collection services be offered? Will the schedule vary seasonally?
- **Type of collection.** What types of services will be covered—residential only or commercial accounts as well? Will material be bagged or will different sized containers be used?
- **Materials to be collected.** Does the agreement cover recycling collection? What materials will be targeted and what setout requirements will be used? Will bulky waste collection services be included? What about yard waste?
- **Number of customers.** Make sure the agreement allows for periodic adjustment of house counts to ensure the proper count of those receiving service is monitored and the local government is paying only for those stops being serviced.
- **Service levels.** Will setouts be curbside, alleyway or backyard? What special provisions will be included for serving senior citizens or physically challenged residents?
- **Start and end times.** If there are neighborhood noise or traffic concerns, specifying earliest start times and latest end times is important.
- **Holiday collection.** Will material be collected on holidays or will those collections be rescheduled? This consideration is particularly important in communities with once-per-week collection and Monday as a service day.
- **Missed pickups and response times.** By establishing a time-frame for responding to missed pickups, local governments can maintain customer satisfaction and implement specified penalties if performance terms are not met.
- **Equipment age/type.** Specifics about maximum vehicle age can ensure equipment is in reasonable condition. It also is important not to limit contractor ingenuity with overly stringent requirements. If new equipment becomes available, local governments should avoid getting locked into outdated contract language that precludes the use of other equipment.
- **Crew requirements.** Contracts should address appropriate training, licensure and substance abuse policies, at minimum. Other language can address interactions between haulers and customers. For example, language could be included to ensure crews are polite and courteous, return carts to the point of set-out, avoid damaging lawns and more.



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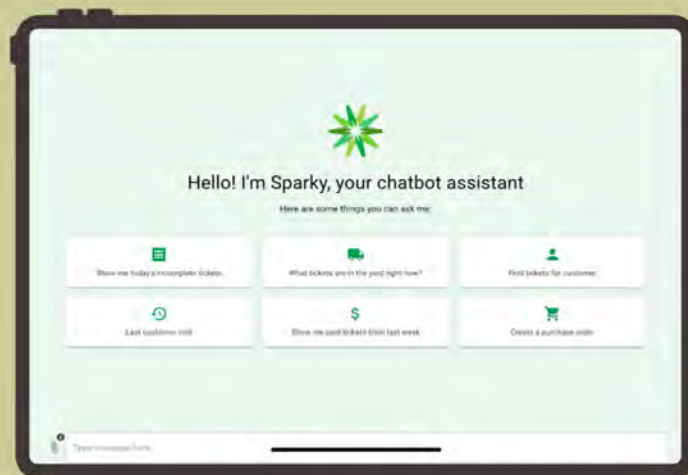
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ATLAS 400 MH	98,000 lbs	57'	22' 8"	34' 9"	1-1.25 yard	245
ATLAS 520 MH	125,000 lbs	62'	30' 4"	32' 2"	1.5-2 yards	295

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- **Complaint handling.** Usually, communities that want to get out of the collection business also want out of the complaint business, but complaint handling is an important aspect of a contract. Will all complaints be addressed to local officials and brought to the hauler through designated communication mechanisms? Will complaints be directed to the hauler, which will provide regular reports to local officials? Tracking complaints can provide information about service quality and public information needs.
- **Public information.** Who will be responsible for communicating set-out requirements, collection day and holiday information to the public? Who will be responsible for notifying residents of improper set-outs? If haulers are required to handle public information, minimum standards should be set, and the community should review materials for accuracy.
- **Containers.** If roll-carts, recycling bins or special bags are to be used, who will provide them? Who is responsible for delivery? How will containers be maintained or replaced?
- **Additional services.** Special services should be specified in the agreement, including backup capacity, special community cleanups, emergency support and other local services.
- **Performance guarantees and insurance requirements.** Bonding requirements and penalties should clearly be specified in the contract agreement along with requirements for

insurance coverage and indemnification.

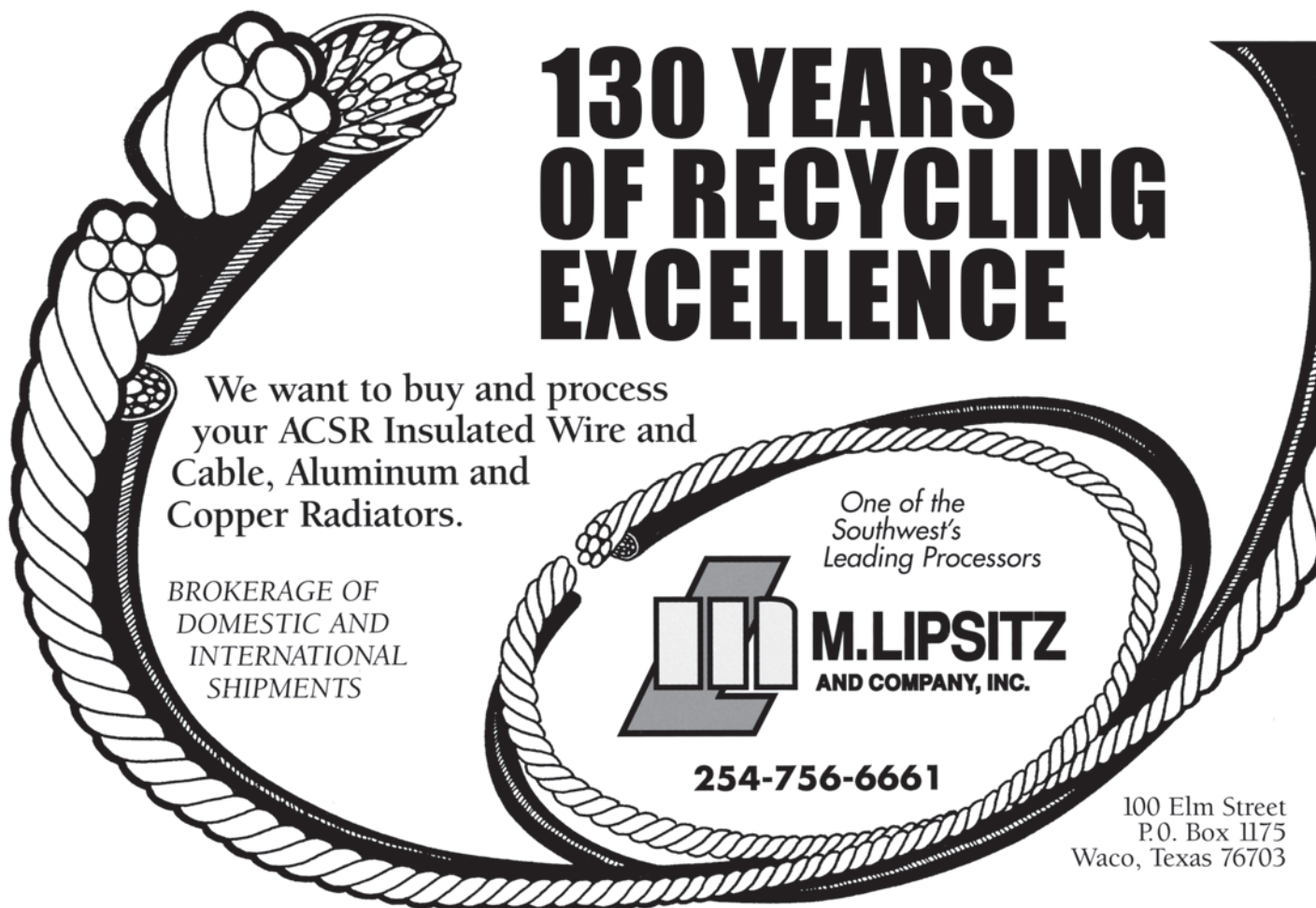
- **Pricing and escalation considerations.** Pricing should be fixed for each service, even for infrequently provided services such as emergency response. Unit pricing (e.g., cost per household per month) is common. Charges often are bundled, which can result in higher charges than if kept unbundled. Escalation of unit prices can be unbundled to apply different escalation factors to various cost components, such as labor, fuel/tires, debt service (no escalation) and market indices.

CONTRACT COMPONENTS

Municipal contracts should include detailed items:

- **Scope of work.** What does the local government need from a third-party contractor?
- **Contract terms.** Contracts often are made with a long-term goal of locking in pricing and other needs for an extended time. Initial terms often are five to 10 years, with options to extend.
- **Definitions.** The language of industry is common, but sometimes terms mean different things in different areas. A list of definitions ensures clarity.

CONTINUED ON PAGE 164



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EU seeks a measure that matters

The European metals sector is expressing concern that the EU carbon border adjustment mechanism will do some harm and little good.

BY BRIAN TAYLOR

President Donald Trump has demonstrated each time he has been in office that he does not see carbon emissions-related policies as noted in the Paris Agreement under the United Nations Framework Convention on Climate Change as a suitable priority for the United States.

That contrasts sharply with the European Union's policies, which include a series of directives and regulations that have focused on reducing Europe's carbon footprint.

In Europe, producers and consumers of steel and aluminum are at the leading edge of the Carbon Border Adjustment Mechanism (CBAM) regulation. Those two basic materials will have emissions-related penalties or protections applied starting next year, depending on their calculated CO₂ emissions per ton.

In most cases, recycled-content steel

and aluminum compare favorably with their mining-intensive counterparts in terms of having lower carbon footprints. While that could cause some metals producers to view CBAM favorably, the overall industrial sector in Europe has found several sources of concern regarding the looming CBAM regimen.

LACKING ENERGY TO COMPLY

With public opinion in Europe largely favoring emissions reduction, European trade groups predominantly have avoided criticizing the goals of CBAM and instead focused on the region's existing carbon emissions trading system as well as Europe's energy costs in the wake of its broken link to Russian natural gas.

In a position paper published in November of last year, Brussels-based European Aluminium says: "CBAM was developed to ensure that decarbonization goals are met by preventing carbon leakage and promoting a level playing field for industries operating within Europe. As European Aluminium, we support these climate objectives."

The authors say that following Russia's invasion of Ukraine in early 2022 and Europe's subsequent withdrawal from Russian energy, European metals producers face a costly hurdle to quickly lowering their carbon footprints.

"The aluminum industry has already invested heavily in decarbonization, but we continue to face pressures from the unique indirect carbon costs only European producers face in their power price due to the EU's emissions trading system (ETS)," the association writes, citing rising energy costs as hampering its sustainability efforts.

Among the seven recommendations European Aluminium made, the first says, "Due to the challenges in accurately reflecting the indirect carbon costs faced by European producers under the EU ETS, we call for the exclusion of indirect emissions from CBAM for aluminum goods until the EU electricity grid is fully and permanently decarbonized, which is unlikely before 2035."

Brussels-based Eurofer, an organization representing European steelmakers, also says the EU ETS system means its

metals-producing members are being exposed to "a unilateral carbon price" compared with the rest of the world.

The organizations also express concerns about whether European users of high-emissions metals products, which often are more affordable, will find workarounds to continue using these forms of steel and aluminum.

PLUGGING THE LEAKS

Industry trade groups in Europe regularly use the word "leakage" to refer to the fear there will be an inevitable set of tactics for buyers and sellers of high-carbon-footprint steel and aluminum to continue with business as usual.

In summarizing a meeting of some of its members last May, Eurometal, a Luxembourg-based association of steel and metals distributors, said considerable doubt was expressed about the effectiveness of the looming CBAM system.

Eurometal's SSC Arbeitskreis (Steel Service Center Working Group) gathered members from Germany, Austria, the Netherlands and Belgium, saying the "somber mood" reflected concerns over the impact of the CBAM on the future of European steel processing.

In particular, attendees said their customers could choose to seek workarounds to CBAM, thereby threatening service centers in the EU that process domestically made metal.

The organization said efforts by Asian steelmakers and suppliers involving those "workaround solutions" are threatening the European metal forming industry, service centers and, ultimately, European steel mills.

In Southeast Asia, the idea of high-emissions metal flooding the market is not notional but instead has hampered the recycled-content electric arc furnace (EAF) steelmaking sector in Malaysia and other nearby nations.

At about the same time the Eurometal working group was meeting last May, the secretary general of the Malaysia-based South East Asia Iron and Steel Institute (SEAISI) issued an essay describing the "degreening" of the steel industry in that part of the world.

While Yeoh Wee Jin of SEAISI did not

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specifically mention any nations in his essay, much of the newer and planned capacity in Malaysia and neighboring countries has been made by Chinese steelmakers using virgin raw materials and emissions-intensive blast furnace/basic oxygen furnace (BF/BOF) technology.

Also within in the region, India is a high-volume producer of coal- and iron ore-based steel.

The result has been an EAF presence in Southeast Asia that could be on its way down from a high of approximately 95 percent market share in 2011 to as low as 38 percent in 2028.

With India and China, the world's largest steel producer, relying heavily on BF/BOF technology, steelmakers in those countries seem to be showing a preference for "business as usual" rather than



A WAIT-AND-SEE ATTITUDE

Producers and buyers of steel and aluminum will be the first in Europe to discover the pros and cons of the European Union Carbon Border Adjustment Mechanism (CBAM) regulation, poised to begin next year.

At a news briefing earlier this year, two staff members of the Brussels-based Confederation of European Paper Industries (CEPI) indicated they were not eager to see the paper and packaging board sector added to the CBAM roster, at least as currently configured.

When asked about CBAM, the CEPI staff members said metals producers are pointing to "loopholes and fraud" in the CBAM system.

CEPI Trade & Industrial Policy Director Bernard Lombard called CBAM "a tool that is not perfect—far from it," and said CEPI would not prefer to see its use expanded to pulp and paper if all this can't be solved.

"There is still a lot to be done, and we hope the European Commission can listen to us a bit more," he added.

It is a position CEPI has maintained at least since July 2022, when it issued a statement declaring in part, "CEPI welcomes the fact that CBAM will not include pulp and paper in the immediate future and believes any extension of the scope of the mechanism to new products and sectors should be considered only after in-depth impact assessment and consultations."

According to CEPI, the paper industry in Europe already enjoys a relatively low carbon footprint and some global trade advantages, noting that exclusion from the CBAM regulation was "particularly important for industries with a long and complex value chain and a positive trade balance, with the potential to replace carbon-intensive products on global markets, as is the case for pulp and paper."

Recycling Today file photo

“

There can be no decarbonization and competitiveness without circularity, and no sustainable future without a strong recycling industry.”

– EuRIC Secretary General Julia Ettinger

investing in emissions reduction. Thus, Eurometal members see trouble ahead.

Last year, Eurometal members indicated some of their largest metals consuming customers were looking for alternatives outside European borders and opting to import ready-to-use steel products to circumvent the regulation.

The notion of bringing in metal components from outside the EU to avoid ETS and CBAM costs is on the minds of trade groups beyond Eurometal.

HORIZONTAL & VERTICAL CONCERNS

Echoing Eurometal's concerns, European Aluminium recommends expanding CBAM's scope to include downstream products containing aluminum or made entirely from aluminum.

“Without this [expansion], limiting the CBAM coverage to upstream aluminum products will increase costs for downstream products, leading to industry relocation or increased imports of finished goods, undermining the CBAM's effectiveness.”

In a January statement, Eurofer also recommends that EU policymakers extend CBAM's scope to include “steel-intensive downstream sectors.”

Eurofer's caution to legislators and regulators is that without the downstream addition and other adjustments, the combination of CBAM and the scheduled phase-out of free allocations will not provide adequate protection against carbon leakage and even further incentivize the relocation of production to third countries, affecting steel and downstream sectors.

A January essay by staff members of the Brussels-based Centre for Economic Policy Research (CEPR) claims the 10-year history of the EU ETS system shows that such leakage workarounds almost certainly will be considered following the implementation of CBAM.

“Following the introduction of the [ETS] scheme, the share of dirty inputs sourced from nonparticipating countries has increased significantly, consistent

with carbon leakage,” the CEPR's Pierre Coster, Julian Di Giovanni and Isabelle Mejean write.

“A policy [that] eliminates the carbon leakage incentives, such as a carbon border adjustment mechanism, could reduce emissions by more but would likely lead to higher prices as well.”

The CEPR staff members also say their research found evidence of carbon leakage in firm-level import data during the 2010s, when the EU ETS system was becoming increasingly binding.

They add, however, that contrivances to avoid CBAM costs could be tougher for companies to enact.

“The combined EU ETS [and] CBAM tax is far more powerful than the EU ETS alone, as the CBAM eliminates carbon leakage incentives,” they say.

A report published this February by a working group of the Paris-based Organization of Economic Cooperation and Development (OECD) predicts that CBAM could lead to relatively modest price increases up to 0.6 percent.

The OECD presents CBAM more as a



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disincentive to leakage rather than expanding the problem.

“Without the CBAM, European firms import more of their emissions-intensive intermediary products from countries with higher emissions intensities,” the OECD report says. “This shift can result in increased ‘dirty’ production and, consequently, higher carbon emissions in those countries.”

Among recycling groups in Europe, CBAM and other decarbonization policies are criticized for not paying greater attention to the emissions savings role recycling plays.

A late February statement put out by the Brussels-based European Recycling Industries’ Confederation (EuRIC) says policies, including the Clean Industrial Deal, fail to link decarbonization with circularity or recognize “the key role EU recyclers play in cutting carbon emissions and generating resources.”



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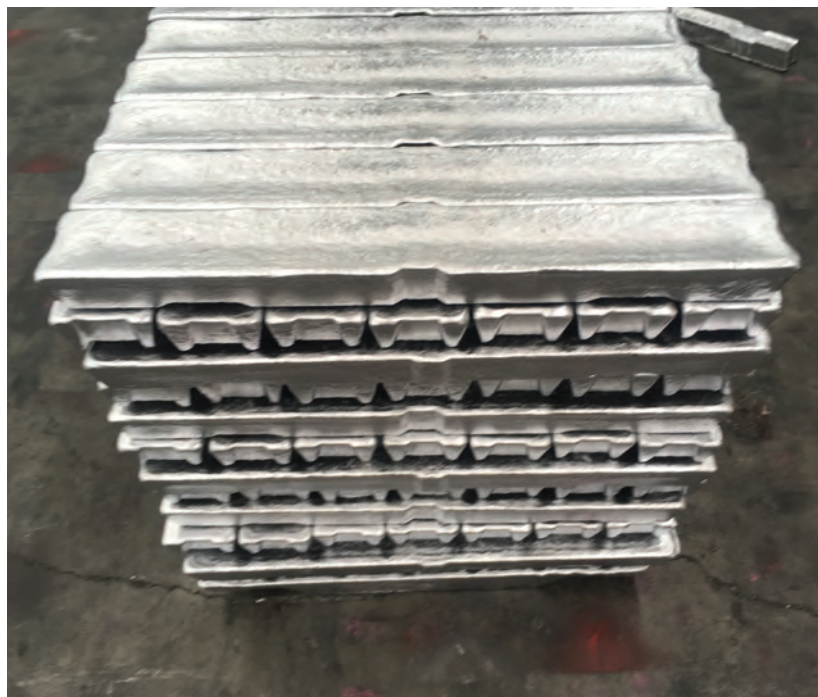
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“The Clean Industrial Deal must drive action, not just ambition,” EuRIC Secretary General Julia Ettinger says. “Recyclers urgently need support as they battle skyrocketing energy prices, weak demand and excessive red tape. There can be no decarbonization and competitiveness without circularity, and no sustainable future without a strong recycling industry.”

The organization has urged EU policymakers to link decarbonization with circularity and competitiveness by including mechanical recycling among “key net-zero technologies,” saying the practice significantly reduces carbon emissions, decreases reliance on virgin raw materials and ensures a resilient and circular European economy. **RT**

The author is senior editor with the Recycling Today Media Group and can be reached at btaylor@gie.net.

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contracting

CONTINUED FROM PAGE 154

- **Duties, responsibilities and obligations.** Include a section clearly outlining the responsibilities of the local government and the contractor. Each portion of the contract should be clear as to which party is responsible for which tasks and the consequences associated with not meeting those requirements.

Municipalities also should consider many factors when detailing a contractor's responsibilities:

- **Compensation.** Identify which party is responsible for each piece of the operation. Charges often are performance-based, for instance, based on the number of households serviced or weight of materials collected. The Consumer Price Index often is used for increasing compensation for contractors.
- **Performance specifications and standards.** Set service expectations and include a schedule of charges for deficiencies.
- **Audit.** Documentation should be audited regularly at a frequency defined in the contract. Auditing services provided, timeliness of such and the number of complaints gives a concise picture of the contractor's performance.
- **Representations and warranties.** Identify how to move risks associated with the project by defining the efforts of the local government to comply with and support the contractor.
- **Insurance.** Contractors must procure and maintain insurance coverage for a defined amount of liability for the duration of the contract. Worker's compensation, comprehensive or commercial general liability and pollution and environmental liability are the categories used most.
- **Health and safety.** Contractors should be required to meet the standards of the Occupational, Safety and Health Administration, or OSHA, and any regulations under federal and state Department of Transportation rules. Contracts should include the ability for local jurisdictions to review a contractor's audited safety training records and require notification of any negative regulatory notices. The contract also should extend to any partner or subcontractor of the service provider.
- **Prohibitions.** This section often is required to confirm no obstructive behavior gives a contractor added benefits, gratuities or kickbacks in addition to daily duties associated with fulfilling the contract.
- **Performance bond.** The amount of a performance bond is determined by the contracted work and agreed-upon performance expectations. Typically, the bond remains in effect for a period after the expiration date of the contract.
- **Default.** This occurs when a contractor fails to obtain and maintain the required performance bond, if applicable, or files for bankruptcy or insolvency. Default also can occur if the contractor is unable to fulfill the terms of the service contract.

Successful procurement of third-party services is a process not to be taken lightly. Following the steps provided will generate innovative proposals to ensure win-win partnerships. **RT**

Becky Caldwell, MBA, S.C., is a project manager at Gershman, Brickner & Bratton Inc., a solid waste management consulting company based in Vienna, Virginia, and can be reached at bcaldwell@gbbinc.com.

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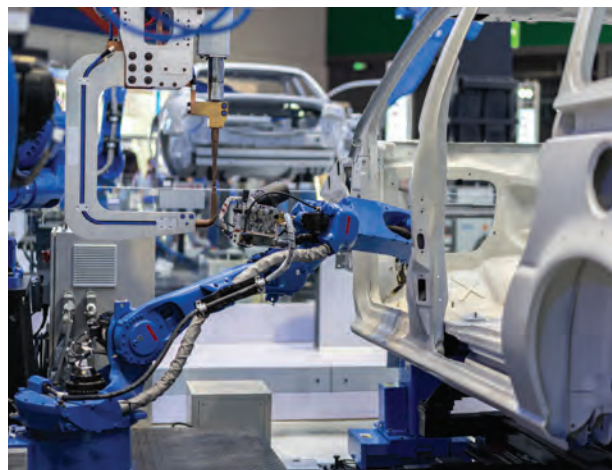
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doesn't believe the bottom will fall out of that market, citing the increase in sales last year of EVs that didn't qualify for the tax credit.

"I've taken a look at which electric vehicles are being sold compared to the vehicles that qualify for the IRA, and there are ... more vehicles being sold that don't qualify for the IRA than do now. There's another caveat. There's a leasing loophole," he said, which extends the credit to leasing companies for all EVs. "[T]he lease company gets the credit and gets to decide whether or not to pass that credit on to the customer, and most do. ... Lease rates on vehicles that don't qualify for IRA increased by about 10 percentage points, ... but people were still buying those vehicles instead of leasing them. ... What I'm suggesting here is that there's already a solid core of shoppers who are willing to buy an electric vehicle without incentives because they're doing it already."

Regarding the pending tariffs on Canadian and Mexican automobiles and components, Martin said, the earnings before interest, taxes, depreciation and amortization for GM and Stellantis potentially could take a hit in excess of 20 percent. Ford would realize less of an impact because it has started moving much of its vehicle assembly processes back to the United States from Mexico.

"The issue with GM and Stellantis is, again, they've got a lot of component plants—remember my scenario of parts coming in, then going back out, then coming back as a car or a truck," he said. "General Motors and Stellantis live by that model, plus the most profitable vehicles in both of those companies are their large, full-size trucks. One of GM's biggest truck plants is in Oshawa, Ontario. One of their biggest is in Toluca, Mexico, so their profit gets hit hard if there's tariffs on those products coming from those plants into the U.S."

The potential tariffs on automobiles and automotive components from Canada and Mexico could have negative results for U.S. automakers and consumers alike.

As of press time, whether Trump extends the auto exception past April 2 or otherwise modifies the tariffs on Canada and Mexico or the Section 232 tariffs on aluminum and steel remains to be seen. In the meantime, the uncertainty lingers, potentially negatively affecting U.S. economic growth and raising the price of automobiles. **RT**

The author is editorial director of Recycling Today Media Group and can be reached at dtoto@gie.net.

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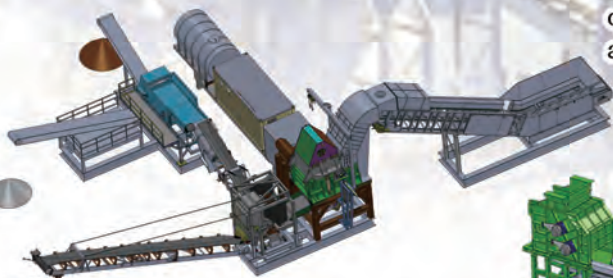
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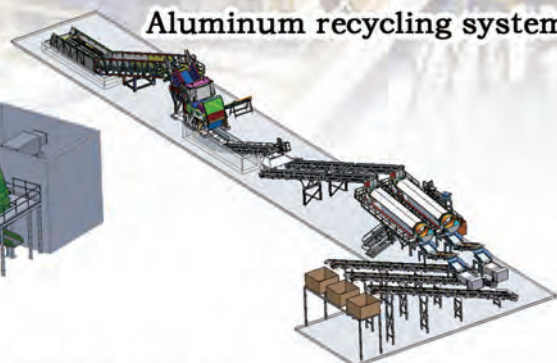
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DJJ implements Scrap Dragon software across all scrapyards

Atlanta-based Scrap Dragon has integrated its scrap management software across all David J. Joseph Co. (DJJ) scrapyards.

"This project has been transformative," Scrap Dragon CEO Adam Blick says. "Not only did we modernize a mission-critical platform for DJJ, but we also showcased Scrap Dragon's ability to meet the needs of enterprise-level operations, setting a new benchmark for the recycling sector."

According to Scrap Dragon, DJJ, a Cincinnati-based wholly owned subsidiary of Nucor Corp., based in Charlotte, North Carolina, already has seen improvements in daily business activities since implementing the software.

"We not only implemented Scrap Dragon, but we integrated a handful of internal applications as well," says Mike Lipp, information technology portfolio and project services manager at Nucor. "Scrap Dragon was able to work hand-in-hand with us to ensure those are flawless and seamless to the end customer and help improve us moving forward from a business and technological perspective."

Through a partnership with St. Petersburg, Florida-based Tranact, Scrap Dragon delivers technology solutions to the scrap metal industry designed to streamline operations,



enhance productivity and support growth through customer-driven development.

"We listen to our customers and build solutions that address their real-world needs," says Ken Gruber, owner of TranAct. "The partnership with DJJ shows how our software evolves based on customer input."

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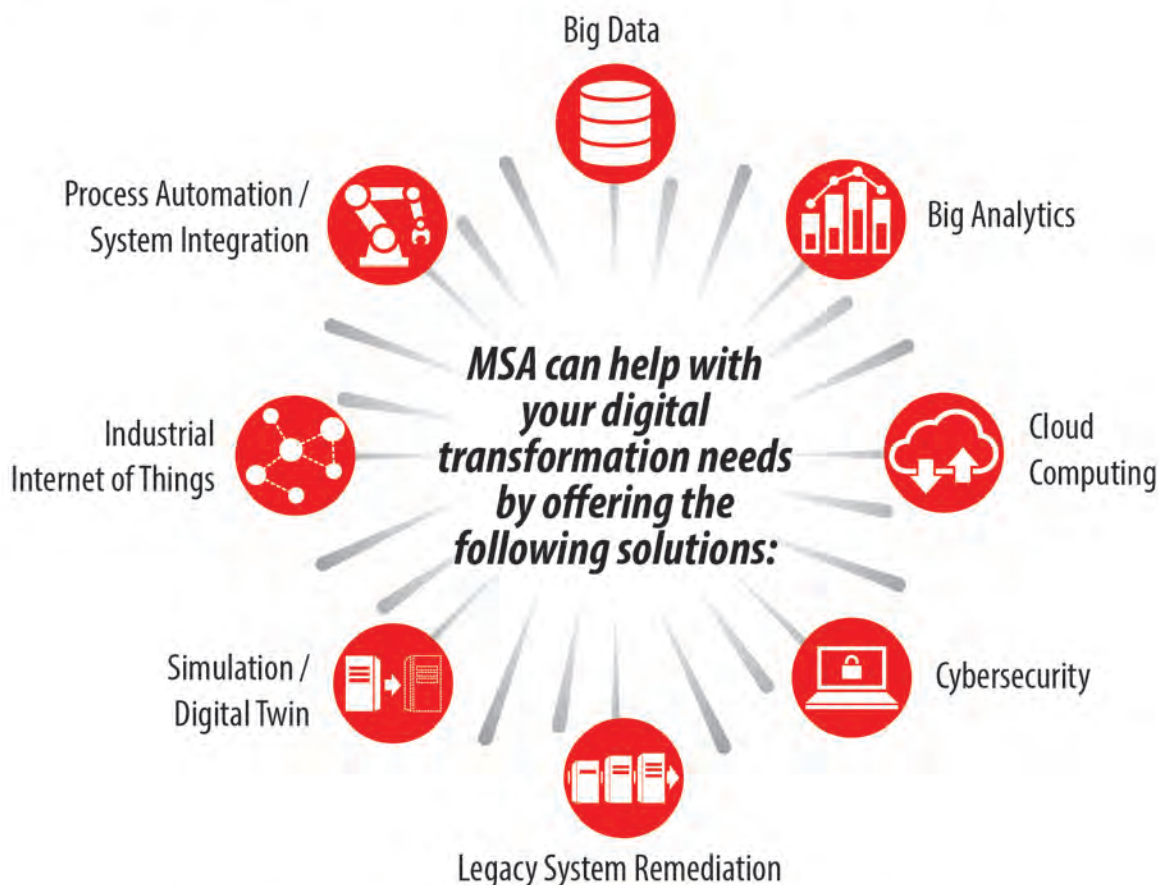
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Machinex completes 3 MRF installations

Equipment manufacturer Machinex, based in Plessisville, Quebec, recently helped bring three material recovery facilities (MRFs) online. Each plant has

been designed to enhance local recycling efforts and material recovery.

Machinex says the three projects, developed in collaboration with the



city of Phoenix, Republic Services Inc. and Interstate Waste Services (IWS), integrate advanced sorting technologies to improve efficiency, boost recovery and support long-term sustainability goals.

Machinex has partnered with the city of Phoenix to help the municipality achieve ambitious waste diversion goals. The 30-tons-per-hour residential single-stream system, operated by Austin, Texas-based Balcones Recycling, features an integrated design aimed at maximizing recyclables recovery from curbside collections.

The Phoenix includes a Machinex Mach Trommel front-end solution; two Mach Ballistic Separators; the SamurAI sorting robot powered by the company's proprietary artificial intelligence; and 11 Mach Hyspec optical sorters in a configuration that improves safety and efficiency, allowing for high recovery rates of different paper and plastic grades and glass, according to Machinex.

For Republic Services in King of Prussia, Pennsylvania, Machinex says it delivered a significant upgrade to the MRF, which currently is processing 25 tons per hour of single-stream and commercial material.

The facility is equipped with Mach Hyspec opticals and Mach Motion Floors, optimizing it for clean paper recovery and high-efficiency handling of various material streams.

Recognizing the importance of a system capable of handling both residential and commercial single-stream recyclables, Teaneck, New Jersey-based IWS partnered with Machinex to develop a solution for its MRF in North Arlington, New Jersey.

Designed to handle both residential and commercial single-stream recycling with a capacity of 40 tons per hour for residential and 20 tons per hour for commercial materials, the system includes key technologies such as the SamurAI robot and Mach Hyspec opticals for capturing different plastic grades and fiber.

The multilevel system also features the Mach Ballistic Separator, two of Machinex's two-ram balers, compactors, a film capture system and a Mach OCC and fines screens.



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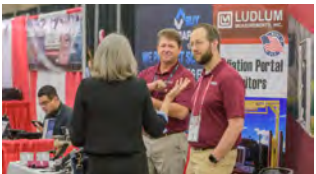


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EQUIPMENT REPORT

Atlas, Mantsinen add Louisiana dealership to network

Heavy equipment dealership CLM Equipment has been added to the SMH Group dealer network in the United States and will now offer Atlas and Mantsinen material handling equipment in Louisiana, brands distributed by SMH in the U.S.

SMH, based in Concord, North Carolina, says CLM, which has locations in Lake Charles, Lafayette and New Orleans, is a well-established provider of heavy equipment solutions and notes the partnership further strengthens the availability and support of these brands across key markets in the southern U.S.

CLM says adding Atlas and Mantsinen products to its portfolio aligns with its mission to provide customers with the best material handling solutions.

The SMH Group now has a network of eight dealers in 21 states that offers equipment from Atlas and Mantsinen for applications including recycling, scrap metal, demolition, waste management, logging and port operations.

German-made Atlas material handlers are known worldwide for their fast cycle times, optimized handling and extended lifespan, according to SMH, adding that Finnish-made Mantsinen material handlers are larger than those made by Atlas, with the "gigantic" Mantsinen 300 weighing more than 900,000 pounds and with a reach greater than 130 feet.

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STARLIGHT FACILITIES SOFTWARE.

Starlight Software Solutions LLC, a Denver-based company that provides software for the hauling and recycling industry, has launched its Starlight Facilities product, integrating scale house operations with the company's existing roll-off management software.

Starlight Facilities software:

- offers real-time data integration that eliminates manual weight ticket recording by drivers, automatically adding billable items and capturing additional revenue
- tracks material percentage breakdown, enabling facilities to provide fast and accurate Leadership in Energy and Environmental Design, or LEED, reporting to their customers
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DREHER DX 60/100

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Cameron Keefe

REGIONAL SALES MANAGER AT SIERRA INTERNATIONAL MACHINERY

Cameron Keefe may have grown up in the recycling industry, but it wasn't until his teenage years he realized he had a passion for it. "I did grow up in the industry, [but] not necessarily in the way that some kids grew up, where they're in the yard, boots on the ground, sweeping floors," he says.

At around 15 years old, Keefe's father, publisher of the Recycling Today Media Group, took him to attend his first Paper & Plastics Recycling Conference (PPRC).

"I think that's what sold it for me, that this industry is pretty cool," he says. "I just absolutely fell in love with what [my father] was doing and meeting everybody and being able to see that there's so much upside to this industry."

Keefe entered college a few years later, and though he knew what industry he wanted to pursue a career in, a summer internship with Middletown, Ohio-based Cohen Recycling helped him realize his interest in the scrap metal side of the industry.

Today, he is a regional sales manager at Bakersfield, California-based Sierra International Machinery, where he sells equipment to recyclers in Ohio, Kentucky, Tennessee, Alabama and Mississippi.

For Keefe, a typical day means being out on the road and meeting customers face to face.

"I go to, primarily, different metal yards to start the morning, I feel like that's where the bread and butter is for Sierra," he says. "Then, I'll go into a MRF or a transfer station later in the day."

"Being in front of people is the best way to make a sale in the recycling industry. [The industry] is really just a family-run business, when you look at it ... A majority of the guys out there are mom-and-pop shops that have done business with the same people for 30-plus years."

In the following interview, Keefe discusses what it takes to be a successful salesperson in the recycling industry and ways to recruit young professionals.

RECYCLING TODAY(RT): What does it take to be a successful salesperson in the recycling industry?

CAMERON KEEFE (CK): Being able to take a "no." A "no" doesn't mean there's not an opportunity, unless it's a firm no, but even then, I think there's always an opportunity, the timing is just off. So, I'd say don't get discouraged by any stretch of the imagination. If they say no, there's going to be another yes down the road.

Having a passion for it helps. Being able to speak about the industry or speak about your products passionately and trusting them goes a long way. The people who are on the buying side can pick up on that. If you don't fully trust your product, or you don't know how your service team is going to do, they pick up on that.

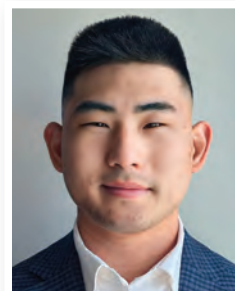
RT: How can the recycling industry recruit more young professionals?

CK: As a young person myself, I never knew the magnitude of opportunities in this industry. You go work for a bank [and] there are so many positions within the bank, but that's just the bank. You look at the recycling industry, [and] you have metals. Break it down even more from there [and] you have nonferrous and ferrous metals, you have equipment operators, yard managers, the list goes on and on, and what that looks like for me is going to universities or going to high schools specifically and saying, "There is a great opportunity for you." ... But it takes [those of] us who are in the business to be the first [salesperson] for the industry.



“

I never knew the magnitude of opportunities in this industry.”



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Hear the full interview by visiting *Recycling Today's* podcasts section at www.RecyclingToday.com/tag/podcasts.

Do you know any new or young professionals in the recycling industry? Send suggestions to Tess Kazdin at tkazdin@gie.net.

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