



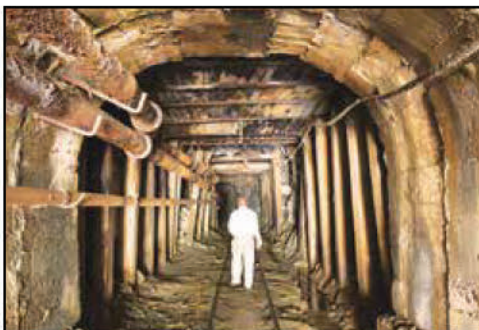
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Minerals and metals in electric vehicles



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Safely dismantling autos during recycling

by MAURA KELLER

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Automotive recyclers strive to utilize as many elements of an end-of-life vehicle as possible. To separate various components of autos, recyclers need to dismantle vehicles in a streamlined, effective and safe manner.

Environmental engineer and sustainability consultant at Green Hive, Cristina Solis said that technology continues to play a key role in end-of-life vehicle recycling.

“In the past, car leftovers like plastic, glass and textiles were discarded, and scrapyards mainly served as a source of spare parts for amateur mechanics. Today, the industry has improved and the dismantling process is conducted by skilled mechanics,” Solis said. Indeed, specialized tools have made the dismantling process more efficient and safer, while sustainable practices have been adopted, thanks to technology.

As Solis pointed out, this includes energy efficient machinery, waste reduction, and a lower carbon footprint due to improved logistics throughout the entire dismantling process.

Steve Mott is the vice president at Greenwave Technology Solutions, Inc. and owner of Scrap App, which purchases and scraps tens of thousands of junk cars every year. Greenwave recently commenced operations on a downstream processing system to recover millimeter-minus metals from automotive residue produced when shredding cars.

“This has significantly boosted recovery yields, revenues and margins from our car recycling operations,” Mott said. “As Greenwave continues to optimize the operation of its downstream processing system and brings a copper extraction component online, revenues generated by its downstream processing will rapidly expand our margins.”

Dismantling Safety Concerns

Technology aside, there are several big safety concerns surrounding the auto dismantling process within recycling facilities. In Mott’s opinion, lithium batteries present a significant fire hazard. Additionally, if oils or gas are still in the car when it goes through the automotive shredder, they could catch fire and cause injuries.

Solis added that employees interact with machinery, chemicals and tools, elevating the risk of on-the-job injuries. Within the dismantling process, dangers range from moving engine parts and electrical shocks to burns and eye injuries. In addition, the physical demands of the job, such as lifting heavy items, pose risks like musculoskeletal issues and eye injuries are common due to falling debris and chemicals, especially when working under cars.

End-of-life vehicles also are filled



End-of-life vehicles are filled with flammable liquids, which could result in serious injuries to workers.

with flammable liquids, the handling of which can result in chemical burns, and the use of power tools increases the risk of losing a limb.

“Slippery floors from greasy liquids add to the hazards, as do fire and explosion risks from handling fuel,” Solis said.

Establishing Safety Protocols

It is paramount that auto recyclers establish solid safety protocols, especially for the dismantling process.

“They should familiarize themselves with safety guidelines at local, state, and federal levels, carry out a detailed analysis of the facility to identify potential hazards, and consistently update an emergency action plan that covers various crisis scenarios, such as fires and chemical spills,” Solis said. To help identify the best safety protocols to put in place, the Occupational Safety and Health Administration (OSHA) offers comprehensive online resources for maintaining employee safety and regulatory compliance.

For example, chemical labeling should also adhere to OSHA standards, including the inclusion of specific elements like pictograms, hazard statements, a warning word such as “danger,” as well as safety handling instructions and emergency procedures.

When it comes to establishing safe dismantling practices, Solis pointed to several key guidelines that should be followed. First and foremost, protective gear such as goggles, gloves, and ear protection should always be worn, tailored to the specific type of repair being conducted.

“Disconnecting the battery is crucial when working on electrical systems to prevent electrical hazards,” Solis said.

Employee training is another vital component of auto dismantling safety. Auto recyclers and their employees

should be educated about proper operating procedures, including using safety shields and wearing protective gear. Certification programs further validate an employee’s competence in adhering to auto recycling industry standards and best practices that have been established within the auto recycling industry.

Greenwave has invested significant resources ensuring its employees are well trained. “We maintain an effective safety system and regularly update it while ensuring our equipment is well-maintained and utilized in accordance with our policies,” Mott said.

Of course to capture the ever-increasing types of material used in vehicles today, it is important for auto recyclers to dismantle vehicles to ensure the variety of metals can be sorted and sold for the best value.

Throughout the entire dismantling process, specific paperwork must be completed, including all vehicle records, waste check sheets, waste disposal records and certificate of destruction to name a few. Again, the regulations mandated by an automotive recycler’s location will indicate exactly the type of information the dismantler must record.

Streamlined Efficiencies

As with any complex procedure within the auto recycling industry, there are some common mistakes that auto recyclers should try to avoid when dismantling vehicles. Solis said these include not having a well-defined emergency response plan to not providing or enforcing the use of appropriate PPE, like gloves, goggles, and ear protection.

Also, overlooking critical safety procedures, such as neglecting to disconnect the battery, failing to adequately secure the vehicle, or omitting the use of essential PPE are also common mis-

See SAFELY DISMANTLING, Page A3

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EPA awards \$4 million to New Orleans to expand recycling infrastructure

The U.S. Environmental Protection Agency (EPA) announced \$3,982,000 in funding to the City of New Orleans to improve material management and to improve existing recycling programs in the city.

“We must continue to invest in comprehensive strategies that promote recycling initiatives in communities overburdened by climate change challenges,” said regional administrator Dr. Earthea Nance. “By providing nearly \$4 million in funding, EPA is fulfilling our promise to identify marginalized communities and fund projects designed to address climate change and improve public health. I would like to thank the City of New Orleans for continuing to fight the climate crisis and for ensuring overlooked communities continue to receive the resources they need for a cleaner environment.”

The City of New Orleans will expand its current residential curbside recycling program to all eligible households. This expansion will ensure universal and equitable access to curbside recycling, providing new recycling access to about 73,000 households and replace 10,000 legacy recycling carts. The city will also develop a 10 year solid waste master plan that evaluates recycling processing infrastructure and capacity, explores opportunities for organics diversion, including food waste, and explores infrastructure and policy needs to address waste diversion in multi-family and commercial operations. The grant supports the implementation of EPA’s National Recycling Strategy to build an economy devoted to keeping materials,



products, and services in circulation for as long as possible –what’s known as a “circular economy.”

The recycling grants for states and territories will provide funding to all 56 states, territories, and the District of Columbia via grants ranging from \$370,000 to \$760,000; with the highest grant amounts supporting those states and territories that need it.

These grants represent important steps toward achieving the EPA’s National Recycling Goal and Food Loss and Waste Reduction Goal. Funded activities include improving post-consumer materials management programs through developing or updating solid waste management plans and strengthening data collection efforts.

In the coming months, EPA will announce the selected recipients of the recycling grants for Tribes and intertribal consortia, as well as the recipients of EPA’s new Recycling Education and Outreach grant program.

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Safely Dismantling

■Continued from Page A1

takes that recyclers make. Addressing safety challenges in dismantling autos requires a proactive approach on the part of employers and employees that includes knowledge about hazardous materials management, adherence to PPE guidelines, and proper training coupled with certification programs.

Industry experts state that by prioritizing these measures, auto recyclers can create a safer working environment for those involved in this industry while minimizing potential risks associated with auto dismantling operations.

Looking ahead, Solis believes the dismantling process will be fueled by technological advancements and changing automotive paradigms.

“The rise of electric vehicles is adding a new layer of complexity to auto recycling, particularly in the area of lithium-ion battery recycling,” Solis says. “The industry will increasingly shift its focus towards not only the efficient ex-



traction of valuable metals like lithium, cobalt, and nickel, but also towards the innovative refurbishment of partially damaged batteries.”

It is expected that automation and robotics will cease to be mere science fiction and will become essential elements in future auto recycling facilities.

“Programmed for precise execution, these robotic systems will revolutionize

the extraction of valuable components like engines and airbags from vehicles,” Solis said.

Safety training also is expected to undergo a technological transformation, as virtual reality (VR) and augmented reality (AR) become standard tools for workforce development.

“These immersive technologies will provide a secure, virtual environment

where workers can refine their dismantling skills, consequently minimizing the likelihood of accidents in real-world settings,” Solis commented.

Mott also expects that an increasing number of fluids in the car, along with tires, will soon be recycled. “Then, components that typically generated a disposal cost will instead generate a new revenue stream,” Mott said.

Puerto Rico selected for \$4 million grant to promote less waste

The U.S. Environmental Protection Agency (EPA) announced that the Municipality of Trujillo Alto, Puerto Rico has been selected to receive \$4 million in the first EPA funding under EPA’s new Solid Waste Infrastructure for Recycling

(SWIFR) program. Puerto Rico will also receive more than \$612,000 to increase efforts to reduce waste across the Island. The funding will allow Trujillo Alto to collect recyclable material from homes and schools of six neighborhoods where

there was no recycling program due to lack of funds, equipment, and personnel. The grants will be awarded using funding from the Biden Administration’s Bipartisan Infrastructure Law (BIL).

The grant will help Trujillo Alto expand a recycling program into previously unserved rural areas. The project will provide a convenient way for the almost 37,000 people living in the municipality to divert waste from the landfill. A bonus is that the project will create almost 20 jobs. This will help Puerto Rico mitigate its a solid waste crisis, as many of its landfills are filling up. Reducing waste and bolstering recycling are critical components to addressing this crisis.

“The SWIFR grant program put the common adage ‘waste not want not’ into action. This funding will support the work that EPA is already doing with Puerto Rico to help reduce waste and improve the way materials are managed. It will also allow Trujillo Alto to take a big step forward in expanding its recycling program,” said EPA regional administrator Lisa F. Garcia.

“This is great news for our people. With the allocation of \$4 million, we will be expanding the Municipal Recycling Program to rural areas in the Municipality. The approved proposal will provide compactor trucks and hooks, shredding machines and about 30,000 containers for the recovery of recyclable materials,” said Trujillo Alto Mayor, Pedro A. Rodriguez. “Our goal is to provide a direct service to our residents and continue to promote recycling as a benefit to our municipality and the environment. We thank the U.S. Environmental Protection Agency (EPA) for approving our application, which will benefit residents of rural areas.”

Aside from Puerto Rico, all states and

territories received SWIFR funding. The money for states and territories will help support their efforts to improve post-consumer materials management programs through planning, data collection, and the implementation of plans. The funding is part of EPA’s overall efforts to invest in America by strengthening infrastructure and implementing programs for lasting change. It will aid communities and states in modeling what’s known as a “circular economy” by building a program to keep materials and products in circulation for as long as possible.

The secretary of the Puerto Rico Department of Natural and Environmental Resources (DNER), Anais Rodriguez Vega, highlighted: “With the allocation of these funds, DNER will standardize the collection of data on recycling, thus ensuring the efficiency and effectiveness of our efforts. These resources will also strengthen our training program, facilitating specialized training for both our internal team and representatives of Puerto Rico’s 78 municipalities. In addition, we will be hiring a project manager, an attorney, and an environmental specialist; which expands and strengthens our operational structure. This collaboration with EPA demonstrates our firm objective to lead Puerto Rico towards a sustainable future in harmony with our natural environment.”

EPA has selected 25 communities to receive grants totaling more than \$73 million under the newly created SWIFR funding opportunity. In addition, the agency is making available approximately \$32 million for states and territories to improve solid waste management planning, data collection and implementation of plans. Thanks to the Bipartisan Infrastructure Law, this investment totaling \$105 million is EPA’s largest recycling investment in 30 years.

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New Jersey honors recycling and sustainability leaders

The New Jersey Department of Environmental Protection (DEP) honored businesses, organizations and individual recycling leaders during an annual symposium hosted by the Association of New Jersey Recyclers (ANJR). Award winners included a Bergen County health facility that is reducing food waste, a Union County business that has been recycling foam materials since the early 1970s, and Marie Kruzan, the recently retired longtime executive director of ANJR.

In 1987, New Jersey became the first state to enact legislation requiring recycling in residential, commercial and institutional settings. Through strong grants and education programs, New Jersey has achieved an overall recycling rate of 55 percent.

The DEP urges all residents to participate in their local recycling program and do their part to keep non-acceptable materials, such as plastic bags, trash, propane tanks and used syringes, out of curbside and workplace recycling bins.

Award categories and recipients of the 2023 recycling awards include:

Institution – Bergen New Bridge Medical Center

Bergen New Bridge Medical Center in Paramus, Bergen County, implemented food waste reduction measures that prevented 14,562 pounds of food waste from occurring in 2022, which was the equivalent of saving 12,134 meals. The facility's food waste reduction initiative is run as an employee engagement program, which recognizes team members tracking food waste as Waste Warriors. The entire medical center was included in a campaign to raise awareness about the food waste initiative through their managers, internal communications and posters in food service locations.

Business – L'Oreal USA

L'Oreal USA operates facilities in Middlesex, Somerset and Union counties, and implemented recycling and waste reduction initiatives that enabled the company to recycle or reuse 56.5 percent of the waste generated at the company's New Jersey locations in 2022. L'Oreal recycles plastics, paper, corrugated cardboard, wooden pallets, oils, batteries, IT equipment, food waste and more. The company also recycles non-traditional materials, such as the ethanol used in its fragrances. Additionally, in 2022, 23.3 percent of the packaging used at its New Jersey manufacturing sites was from post-consumer recycled material. As part of L'Oréal's commitment to sustainability, manufacturing site members are educated about the efficient utilization and preservation of natural resources.

Government – Village of Ridgefield Park

The Bergen County community recycles traditional curbside recyclable materials and a wide variety of non-traditional recyclable materials, such as batteries, sneakers, crayons, razors, rigid plastics,



bottle caps, cooking oil, expanded polystyrene and more. In addition, convenient textile and plastic bag recycling drop-off sites have been established throughout the village. Recycling and sustainability programs are promoted through various means, including the Recycle Coach system, social media, the municipal website, recycling calendars, public events, information sessions for the public and through collaborations with schools and other organizations. Reuse is promoted in Ridgefield Park through periodic Swap & Shop events, during which residents trade items they no longer need.

Government – Joseph Slomian

Thanks to the leadership of Slomian, recycling coordinator for Monroe Township in Middlesex County, the community achieved a 65 percent recycling rate and anticipates an even higher rate in upcoming years. The township collects traditional curbside materials, but also accepts numerous materials at its recycling center, including paint, batteries, used motor and cooking oil, scrap metal, propane tanks, expanded polystyrene and electronics. Under Slomian's supervision, various upgrades and improvements were made at the recycling center. In addition, Slomian conducts periodic enforcement audits of curbside recycling and regularly speaks with residents about the need to recycle correctly. He uses the township's Enviro-Mobile (a mobile learning center), the Recycle Coach system, newsletters, special events, and more to educate residents about recycling.

Leadership – Anthony Marrone

Marrone, district recycling coordinator for Morris County, has implemented numerous successful recycling and waste reduction programs. He improved the operations of the county's household hazardous waste program, obtained NJDEP grants for equipment modernization, and addressed a curbside collection crew employee shortage by making a county-run Commercial Driver's License training program more accessible to staff. He also designed

educational flyers, decals, and signs, instituted a boat shrink wrap recycling program, performed municipal curbside inspections, and assisted municipal recycling coordinators. In addition, Marrone established an intern program for students seeking experience in the field of recycling, developed an electronic waste drop-off program, attended various events where he educates the public about recycling, and established reusable bag drop-off stations.

Rising Star – Jaime Luppino

Jaime Luppino has been the recycling coordinator for the Borough of Bergenfield in Bergen County for the past three years and in that time has led the program to new heights. She not only runs the recycling department, but also heads up the borough's Clean Communities initiatives. Luppino has created numerous recycling educational programs for residents and school districts, held a fundraiser at a local library where kids were asked to design a reusable bag, speaks at school assemblies, and sets up and staffs recycling information tables at special events. Luppino's passion and work ethic have also made her a premier recycling advisor for neighboring recycling coordinators.

Recycling Industry – Foam Pack Industries

Foam Pack Industries in Springfield, Union County, has been recycling expanded polystyrene (EPS) foam since 1971. The company recycles 500,000 pounds of EPS foam per year and accepts material from numerous industries, municipalities, and residents. During the past 50 years, Foam Pack Industries' recycling program has kept more than 20 million pounds of EPS out of landfills. Recycled EPS is used in the production of many products and packaging and is 100 percent recyclable. Foam Pack Industries, which recently ceased operations after many years, has worked closely with municipal and county collection programs and has educated the public about the benefits of recycling EPS.

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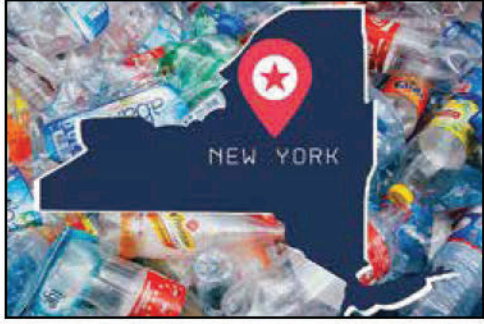
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NY DEC leads effort to investigate bottle bill fraud



The New York State Department of Environmental Conservation (DEC) joined a statewide multi-agency effort to help prevent returnable container schemes that defraud the state of millions of dollars each year. This new effort will help uncover practices that prevent bottles and cans without deposits from being redeemed, thus reducing funds that support crucial environmental and other state initiatives.

“New York’s highly successful Bottle Bill is an unfortunate target for unscrupulous criminals looking to make big bucks from the state’s nickels,” Basil Seggos, New York DEC commissioner said. “This newly launched effort will help foster coordination among state and local partners across the many jurisdictions included in Bottle Bill enforcement to help recoup lost revenue, hold violators accountable, and eliminate the competitive disadvantage experienced by companies that play by the rules.”

This new effort will bring together the expertise of multiple state agencies, including law enforcement and technical expertise from the State Department of Taxation and Finance (DTF), Department of Agriculture and Markets, State Liquor

Authority, and others to work collaboratively on collecting and interpreting data, auditing records, inspecting and certifying redemption and counting equipment, investigating complaints, and preventing or prosecuting fraudulent activities.

New York’s Returnable Container Act, known as the Bottle Bill, is one of the state’s most efficient and successful recycling programs. The Bottle Bill improves litter control, provides relief to overburdened municipal recycling systems, and increases beverage container recycling in New York. Recyclables collected through this program are readily returned for manufacturing of containers and other commodities. The law requires a deposit of at least \$.05 on containers for carbonated soft drinks, beer and other malt beverages, mineral water, soda water, wine products, and water that doesn’t contain sugar. A deposit is required on glass, metal, and plastic containers that hold less than one gallon or 3.78 liters.

The Bottle Bill captures an average of five billion beverage containers each year with 250,000 tons of plastic, glass, and aluminum recycled. Since the law went into effect, redemption rates averaged 65 percent, well above the recycling rate for most other packaging and products, and beverage container litter was reduced by 70 percent. These beverage containers are no longer littering roads or waterways and get recycled into new packaging and products.

Since the Bottle Bill was amended in 2009, \$.04 of each unredeemed \$.05 are remitted DTF, generating approximately \$117 million in revenue for New York

State in 2022 alone. Most of the funds collected go to the State’s General Fund; of these monies, there is currently \$23 million dedicated each year to the State’s Environmental Protection Fund. Bottle Bill sales data are often held confidential, but some estimates of the impact of fraud and underreporting of deposits reach tens or even hundreds of millions of dollars.

DEC and its state and local enforcement partners have successfully prosecuted redemption container fraud cases in the past, including a 2018 DEC and New York State Attorney General investigation of North Bergen Beverage that revealed sales of tens of millions of

beverage containers without initiating deposits, depriving the state of an estimated \$4 million. Bottle Bill fraud can take many forms, such as transshipping of filled beverage containers from non-deposit states; the fraudulent redemption of empty beverage containers from out-of-state and double-redemption schemes; reverse vending machine tampering; and deposit initiators not registering with DTF and not reporting, or under-reporting sales. It is hoped that as the work evolves, this process will reveal areas where laws, regulations, policies and/or procedure can be modified to strengthen the State’s ability to prevent fraud.



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Survey provides insight on recycling

The Foodservice Packaging Institute (FPI) released a summary of findings from its Resident Messaging Survey, sharing information related to resident assumptions on recyclability, awareness of what items can be recycled, and top sources of recycling instructions. The survey focused on recycling messaging related to take-out items such as plastic cups and containers, paper cups and pizza boxes.

“Findings from the Resident Messaging Survey will inform the development of effective messaging for FPI’s Community Partnership program as more and more communities add new items to their recycling programs,” said Natha Dempsey, president of FPI. “We share these findings with the recycling industry and communities throughout the country to help create messaging consistency and thereby improve recycling of foodservice packaging.”

Survey respondents indicated that the type of material plays a greater role than the form, such as a cup or box, in the decision to recycle an item. Survey responses on paper and plastic cup recycling further supported reliance on material over form for making recycling decisions.

The survey also found that two-thirds of respondents look to the package first to determine if it is recyclable, followed by information directly from the recycling program. The most relied-upon information was reported to be the recycling cart/bin signage, closely followed by information on the community or recycling company’s website.

The online survey was managed and analyzed by Resource Recycling Systems (RRS) in Fall 2022. Responses were received from 1,042 U.S. residents of at least 18 years of age reflecting a distribution of demographics roughly representative of the U.S. population and taking into consideration age and housing status.

“Even though most residents indicated they check the package to determine

recyclability, it is important to note that not all packaging meets the threshold to be labeled as widely recyclable, meaning residents are often directed to check their local program guidance,” said Ashley Elzinga, director of sustainability and outreach for FPI. “This points to the need for clear education campaigns to encourage correct recycling of materials.”

Findings specific to foodservice packaging included:

- 75 percent of respondents indicated they would recycle a paper cup. Rationale for recycling included that it was made of paper, followed by the cup form, suggesting reliance on material over form for making recycling decisions.
- If plastic containers are shown as included in recycling guidelines, but no cups are shown, the overwhelming majority of residents would recycle a plastic cup, suggesting that most residents consider a cup to be a type of container. This also suggests that material (plastic) plays a greater role than form (cup vs. container) in the decision to recycle.
- 90 percent of respondents said they would recycle a molded fiber drink carrier if presented with a sample recycling guidance brochure picturing an egg carton made of the same material. This suggests that residents will respond strongly and positively with regard to recycling behavior if shown images that look like the items they are sorting in the real world.

FPI recommends that messaging around recyclability should consider both material and form. However, it suggests grouping recyclables by material and referring to concepts that are most relevant or intuitive to the resident (for example, “paper cup” rather than “coffee cup”) as this can aid in recall and correct recycling behavior. Additionally, messaging emphasizing “clean and empty” can benefit the entire residential recycling stream.

RUBBER

U.S. Tire Manufacturers Association names new board members



The U.S. Tire Manufacturers Association (USTMA) announced the election of Alexis Garcin as chairman of the board of directors, for a two year term. Garcin is president and chief executive officer of Michelin North America, Inc.

Garcin succeeds Paolo Ferrari, president and chief executive officer of Bridgestone Americas, Inc., who served as USTMA’s board chair since 2021. Garcin was elected during a formal vote at the Association’s first board meeting of its 2024 fiscal year on October 11, 2023.

Garcin joined Michelin in 2002 and became chairman and president of Michelin North America in 2019. Previously, he served in numerous roles in France, Switzerland, Germany and now in the U.S.

USTMA has also elected two new members to the board of directors: David K. Chapman of Michelin North America and James Tsai of Toyo Tire Holdings of Americas.

Chapman is currently vice president of

public affairs for Michelin North America, overseeing public policy efforts in both the U.S. and Canada. He previously ran Michelin’s government and defense sales business. Chapman joined Michelin after a distinguished 30 year career in the U.S. Army, where he held leadership roles throughout his service, including command of the Defense Language Institute’s Foreign Language Center in Monterey, California.

Tsai is general counsel and secretary of Toyo Tire Holdings of Americas Inc. (TTHA), the holding company for the North American operations of Toyo Tire Corporation of Itami, Japan. Tsai has served in his current role since 2016 and joined the TTHA legal department in 2011. Prior to joining TTHA, he worked in private practice for 15 years specializing in corporate law. He is a member of the bar in Illinois, California and Washington, D.C.



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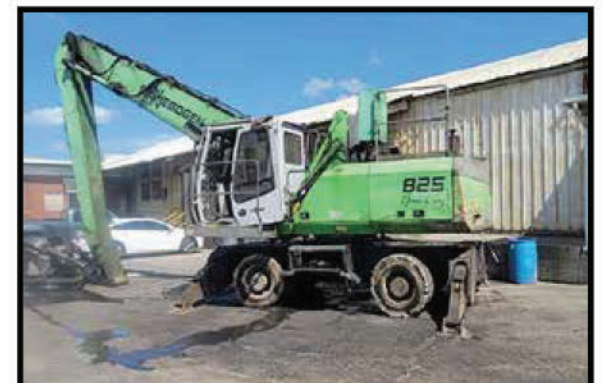
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WASTE

Weltec Biopower constructs three biogas plants in Greece



Weltec Biopower and Tetoros Machinery has built three biogas plants.

The Greek agricultural sector has trusted Weltec Biopower's biogas technologies since 2007 – and this trend is continuing. Most recently, three biogas plants were built, which the German manufacturer designed together with its Greek cooperation partner Tetoros Machinery. Two of these are located in the Epirus region, in northwestern Greece

– a 1 megawatt plant in the town of Arta and a 500 kilowatt plant in Ioannina. The third one, a 250 kilowatt biogas plant project, was realized in Serres, in central Macedonia. Here, an upgrade of the CHP plant to 750 kilowatts is also being implemented. The plant in Ioannina will go into production in the fall of 2023.

The region around Epirus is

particularly rural. Poultry and cattle production dominate the area. As in many other intensive farming areas, the biomass supply there is higher than the processing capacity of the existing plants. The construction of new biogas plants and the modernization of existing ones are therefore profitable, especially since such projects are supported by subsidies. Thus, not least, the rich substrate supply at the three plant locations was also an important factor for the investment decisions.

At the 1-megawatt plant in Arta, 150 tons of cattle slurry and 50 tons of dry chicken manure are processed daily. At the biogas plant site in Ioannina, the daily input is made up of 100 tons of cattle slurry and 30 tons of dry chicken manure. And in Serres, a substrate mix of 40 tons of cattle manure and 10 tons of energy plants enters the stainless steel digester daily. Here, in addition to his cattle farming, the operator owns land on which corn is grown.

At all three sites, the materials are first sent to a pre-storage tank. Special agitators and pump technology ensures the pretreatment. In the digesters, the proven agitators then mix the substrates for efficient biogas production. The two digesters in Arta each hold 4436 cbm, in Ioannina there is a

3993-cbm digester, and the tank in Serres measures 4905 cbm. "All tanks are made of high-grade stainless steel," specifies the responsible process engineer at Weltec Biopower, Tobias Peuker. According to him, the fermentation residue from the digester with its high nutrient content can also be used as fertilizer afterwards.

The three biogas projects are an important part of the Greek energy transition. For example, according to a report by DAPEEP S.A., the Greek market operator for renewable energy sources, new biomass, and biogas plants with a total capacity of 7 megawatts, came online in the first half of 2022. The Greek Energy and Climate Plan aims to double the share of renewable energy in electricity generation from 30 percent in 2021 to 60 percent in 2030. Weltec Biopower has already implemented a total of around 36 biogas plants and projects there since 2007. In the summer of 2023, Greece's entire one-day energy demand could have been supplied from renewable energy sources for the first time. "This means we are well on our way and will continue to make our contribution to achieving the goal," predicts Weltec Biopower's Greek sales partner, John Tetoros.

EPA releases new food waste reports



The U.S. Environmental Protection Agency released two new reports quantifying methane emissions from landfilled food waste and updating recommendations for managing wasted food. Over one-third of the food produced in the U.S. is never eaten, wasting the resources used to produce, transport, process, and distribute it – and much of it is sent to landfills, where it breaks down and generates methane, a powerful greenhouse gas.

"Wasted food is a major environmental, social, and economic challenge," said Michael S. Regan, EPA administrator. "These reports provide decision-makers with important data on the climate impacts of food waste through landfill methane emissions and highlight the urgent need to keep food out of landfills."

The reports' findings emphasize the importance of both reducing the amount of food that is wasted and managing its disposal in more environmentally friendly ways. Based on these findings, EPA is releasing an update to its Food Recovery Hierarchy, a tool to help decision makers, such as state and local governments,

understand the best options for managing food waste in terms of environmental impacts. The release of the new ranking – called the Wasted Food Scale – marks the first update since the 1990s, reflecting more recent technological advances and changes in operational practices. EPA's research confirms that preventing food from being wasted in the first place, or source reduction, is still the most environmentally beneficial approach. Evidence in these reports suggests that efforts should focus on ensuring less food is wasted so that food waste is diverted from landfills, which will reduce environmental impacts.

The research represents the first time EPA has quantified methane emissions from landfilling. This novel work published modeled estimates of annual methane emissions released into the atmosphere from landfilled food waste, giving a cost of landfilling food waste in terms of the impact on climate change. EPA conducted an analysis to estimate annual methane emissions from landfilled food waste from 1990 to 2020 and found that while total emissions from municipal solid waste (MSW) landfills are decreasing, methane emissions from landfilled food waste are increasing. These estimates indicate that diverting food waste from landfills is an effective way to reduce methane

emissions, a powerful greenhouse gas, from MSW landfills.

EPA reports being released include:

- "From Field to Bin: The Environmental Impacts of U.S. Food Waste Management Pathways," which examines the environmental impacts of disposing of food waste. This report synthesizes the latest science on the environmental impacts of how food waste is commonly managed in the U.S. This report completes the analysis that began in the 2021 companion report, "From Farm to Kitchen: The Environmental Impacts of U.S. Food Waste," which analyzed the environmental footprint of food waste in the farm to consumer supply chain.

- "Quantifying Methane Emissions from Landfilled Food Waste" represents the first time EPA has published modeled estimates of annual methane emissions released into the atmosphere from landfilled food waste. More food reaches MSW landfills than any other material, but its contribution to landfill methane emissions has not been previously quantified.

The reports will support future EPA efforts to reduce food waste. EPA's food waste research provides a better understanding of the net environmental footprint of U.S. food waste.

Recology acquires Sunset Garbage Collection in Oregon

Recology, an employee owned resource recovery company, has acquired Sunset Garbage Collection Inc. of Portland, Oregon.



The local hauling company, which employs 12 full time workers, is now Recology Clackamas. It serves 1,600 residential addresses in southeast Portland and 4,000 residential and commercial customers in Clackamas County. The operation also provides drop boxes and containers and collects food scraps from restaurants and other food-related businesses.

The sale included 18 collection vehicles, a 1.23 acre truck yard, and offices at 9035 Henderson St. in Portland.

Chris Carey, general manager of Recology's Northern Oregon Operations, will oversee Recology Clackamas. Shawn LaMont is the operations manager.

Sunset Garbage, founded in 1919 by John Guinazzo, began as a one-man route in lower southeast Portland. It branched out in 1934 to serve a country trailer park on SE 82nd and Harney then continued to grow.

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Sunset Garbage, founded in 1919 by John Guinazzo, began as a one-man

route in lower southeast Portland. It branched out in 1934 to serve a country trailer park on SE 82nd and Harney then continued to grow. The project will make significant contributions to decarbonization, offsetting carbon emissions at the plant by an estimated 105,000 tons over the next quarter century – the equivalent of providing electricity for nearly 25,000 residential homes. Along with the solar installation, Veolia is taking several other initiatives to reduce its impact on the environment at Gum Springs, including a plan to reforest nearly 1,500 acres surrounding the property to sequester carbon emissions, provide protection for local habitat and prevent erosion.

To make room for the new solar panels, Veolia recently cleared a 30 acre lot across the street from the facility. The cleared timber, amounting to over 4,300 tons of mixed hardwood and pine timber, was harvested for building materials which sequester carbon.

Republic Services' landfill gas converted into RNG



EVENSOL LLC, a renewable energy project developer focusing on biogas and methane mitigation, has developed two renewable natural gas (RNG) facilities in North Carolina that are now operational. The Foothills Renewables Project in Caldwell County, North Carolina, and the Upper Piedmont Renewables Project in Person County, convert landfill gas from Republic Services' landfills into RNG. They make a meaningful positive environmental impact, taking a natural byproduct of waste and converting it into renewable fuel.

EVENSOL, based in Sisters, Oregon, and its partners invested in excess of \$110 million in the combined projects. Charlotte, North Carolina-based Duke Energy is an equity investor in the two projects. Funding also included nearly \$73 million in loans guaranteed by the U.S. Department of Agriculture

and arranged by Greater Commercial Lending.

Both projects include the development, design, permitting, construction, commissioning and operations of a state-of-the-art RNG facility. Energyneering Solutions, LLC (ESI) designed, constructed and will operate the facilities.

The RNG from the facilities will provide clean transportation fuel to commercial fleet vehicles. Each project will initially produce up to 500,000 dekatherms of RNG each year. The combined 1 million Dth is equivalent to the average annual natural gas use of nearly 17,000 residential customers in North Carolina.

As a leader in the environmental services industry, Republic Services is committed to decarbonizing operations and providing low-carbon solutions to customers. These landfill RNG projects directly support Republic's long-term sustainability goal to beneficially reuse 50 percent more biogas by 2030.

Veolia North America acquires U.S. Industrial Technologies

Veolia North America, a provider of environmental solutions in the U.S. and Canada, has partnered with Today's Power, Inc. to install a five megawatt (MW) single-axis tracking solar energy system at its hazardous waste treatment facility in Gum Springs, Arkansas. The solar array is expected to produce over 250 million kilowatt hours over the next quarter century, making the Gum

Springs plant the only one of its kind in the U.S. to capture and generate as much power as it uses on an annual basis.

The solar facility will be operational by the fourth quarter of 2024. The electricity from the solar panels will be used to meet the facility's daily demands, with any excess going to feed the region's main grid, leading to net zero output.

Houston breaks ground on new transfer station

The City of Houston Solid Waste Management Department announced the groundbreaking of a new cutting-edge transfer station located at 5711 Neches Street in northeast Houston. Construction commenced on the \$13.5 million project, financed through the Capital Improvement Plan (CIP), mid-November 2023.

Houston City Council approved the construction in March of 2021. The facility can safely process up to 1,000 tons of municipal solid waste per day and is strategically placed in the Northeast area of Houston. The solid waste transfer station will improve the department's operational efficiencies, reduce the environmental impacts of route collection vehicles, and

improve the service delivery of curbside collection. The convenient location of this purpose-built disposal facility will also support the City's One Clean Houston initiative by providing an outlet for collection vehicles to quickly discard materials collected from surrounding neighborhoods plagued by illegal dumping.

"This highly anticipated project will not only enhance the efficiency of waste disposal but also bring about substantial benefits to residents with more route coverage, improved on-time collection, and faster turnaround times for trucks to return to their routes," said Mark Wilfalk, director of solid waste management department.

Veolia North America breaks ground on solar energy array at waste treatment facility

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PLASTICS

Indorama Ventures reaches 100 billion PET bottles recycling milestone



Indorama Ventures Public Company Limited has recycled 100 billion post-consumer PET bottles since February 2011. This has diverted 2.1 million tons of waste from the environment and saved 2.9 million tons of carbon footprint from the product lifecycles. Demonstrating its commitment to support the establishment of a circular economy for PET, in the last ten years Indorama Ventures has spent more than \$1 billion towards waste collection of used PET bottles.

Aloke Lohia, founder and group chief executive officer of Indorama Ventures said, "As we mark the recycling of 100 billion PET bottles, we want to thank consumers for recycling, and global brand owners for using recyclable and recycled packaging while also increasing collection rates. The scale of the waste challenge requires us all to do more, faster. In March 2020, we announced achieving the milestone of 50 billion PET bottles recycled in nine years. Today we hit the 100

billion mark in three and a half years."

"By recycling post-consumer PET bottles into new bottles, we give waste an economic value. This drives improvements in waste collection systems, meaning less waste and a cleaner environment. In the last 10 years we have spent more than \$1 billion towards waste collection systems for used PET bottles. We pledge to continue our long-term focus on circularity."

The company has also committed a further \$1.5 billion to expand its recycling business. To support increased recycling rates globally, Indorama Ventures has expanded its recycling facilities, infrastructure, and public education programs. The unique PET plastic used in soft drinks and water bottles is fully recyclable and is collected in practice and at scale. As a result, PET is the most recycled plastic in the world, and the company's recycling achievements support that. Building on its position as the world's largest producer of recycled resin used in plastic beverage bottles, Indorama Ventures is also seeking advanced technologies to deliver

more recycling infrastructure globally and reduce lifecycle carbon emissions.

The company now has 20 recycling sites in Asia, the Americas, and Europe. Recent developments include doubling the capacity of a recycling site in Brazil; and the opening of PETValue, the largest bottle-to-bottle recycling facility in the Philippines, in partnership with Coca-Cola. Both part of a \$300 million 'Blue Loan' Indorama Ventures received in 2020 from the International Finance Corporation (IFC), part of the World Bank, and Asian Development Bank. The loan has the objective of increasing recycling capacity and diverting plastic waste from landfills and oceans in Thailand, Indonesia, Philippines, India, and Brazil – countries seeking support in managing environmental waste. Indorama Ventures has also partnered with the Yunus Foundation, a leading non-profit organization promoting sustainable development with a global network, with the goal of educating one million consumers globally about recycling by 2030, with 200,000 reached so far.

September 2023 resin production decreases over August

U.S. production of major plastic resins totaled 7.9 billion pounds during September 2023, a decrease of 7.2 percent compared to the prior month, and an increase of 8.9 percent compared to the same month in 2022, according to statistics released by the American Chemistry Council (ACC). Year-to-date production was 71.9 billion pounds, a 1.7 percent increase as compared to 2022.

Sales and captive (internal) use of major plastic resins totaled 8.1 billion pounds during September 2023, a decrease of 6.4 percent compared to the prior month, and an increase of 4.7 percent from the same month one year earlier. Year-to-date sales



and captive use were 71.2 billion pounds, a 1.3 percent increase as compared to the same period in 2022.

Borealis expands its mechanically recycled plastic compounding capacity

In June 2023, Borealis signed an agreement to acquire Rialti S.p.A., a polypropylene (PP) compounder of recyclates based in the Varese area of Italy, subject to regulatory approvals.

This transaction has now been completed.

Rialti is one of the European market leaders specialized in production of sustainable polypropylene (PP) compounds with a focus on mechanically recycled PP feedstock from post-industrial and post-consumer waste. Based in the area of Varese, Italy, Rialti has over 30 years of experience. The company utilizes its annual capacity of 50,000 tons to make injection molding and extrusion PP compounds with applications in automotive, appliances and construction.

The acquisition will bring significant expertise and capacity to Borealis, expanding its PP compounding business

and, in particular, increasing its volume of PP compounds based on mechanical recyclates. The improved capacity will strengthen Borealis' speciality and circular portfolios, enabling the company to meet customer demand for an ever-wider range of sustainable, high-performance solutions. By adding Rialti's expertise in compounding of mechanically recycled PP to Borealis' know-how and innovation leadership, we contribute to close the loop for a more circular economy.

"Mechanical recycling is a key component of our integrated circular cascade model. The acquisition of Rialti provides a vital expansion of our recycle-based PP compound capacity, and marks another critical step on our path to reinventing essentials for sustainable living," said Lucrece Foufopoulos, Borealis executive vice president Polyolefins, Circularity and Innovation & Technology.

Republic Services and Blue Polymers break ground on plastics recycling complex

Republic Services, Inc. and Blue Polymers, LLC broke ground in Indianapolis, Indiana on the nation's first innovative plastics recycling complex that will house a Republic Services Polymer Center and Blue Polymers advanced polymer production facility to advance plastics circularity and supply recycled materials for use in sustainable packaging and other applications. Both facilities are expected to open in late 2024.



Republic Services is developing a national network of Polymer Centers paired with Blue Polymers production facilities to create high quality, customized recycled resins for consumer packaging and other applications. This summer, Republic Services announced the Blue Polymers joint venture, which will further purify recycled plastics from Republic's Polymer Centers.

"Through our Polymer Center network and Blue Polymers partnership, we're helping customers achieve their ambitious recycled content goals by producing high quality recycled plastics," said Pete Keller, Republic Services vice president of recycling and sustainability. "As a leader in the environmental services industry and one of the nation's largest recyclers, Republic Services is uniquely positioned to advance plastics circularity and the region's circular economy while

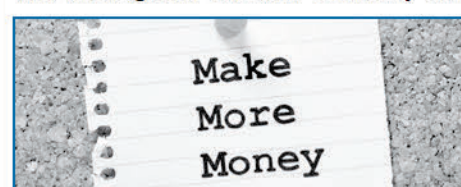
supporting Indianapolis' vision for a more resilient future."

Republic Services' Polymer Centers represent the first time a single U.S. company will manage the plastics stream through an integrated process from curbside collection of recycled material to production of high-quality recycled content for use in sustainable consumer packaging. The first Polymer Center is opening in Las Vegas, Nevada later this year; the Indianapolis site will be the second Polymer Center, which the company had previously identified as being in the Midwest.



The Indianapolis recycling complex will include two buildings totaling approximately 286,000 square feet and create an estimated 125 permanent, highly skilled local jobs.

The Indiana Economic Development Corp. (IEDC) committed up to \$2 million in incentive-based tax credits and up to \$100,000 in workforce-training grants to Republic Services, based on the company's investment and job creation plans. The IEDC will also commit up to \$4 million in Hoosier Business Investment tax credits, which are designed to help companies invest in smart manufacturing and new technologies.



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PLASTICS

APR and RecyClass to align design for recycling guidance

The Association of Plastic Recyclers (APR) recently announced updates to the APR Design® Guide for Plastic Recyclability to align with RecyClass, the European based non-profit initiative focused on advancing plastics circularity. The APR Design® Guide will now state that six percent of ethylene-vinyl alcohol copolymer (EVOH) is allowed for HDPE containers.

“Because the recycling process is very similar in both geographies, packaging will likely be processed similarly,” said Curt Cozart, APR chief operating officer. “Although some differences exist, APR Design® Guidance is nearly the same as RecyClass. The APR® Design Guide previously allowed for five percent EVOH in HDPE containers but will update to six percent to align with RecyClass Design for Recycling Guidelines.”

Through their respective technical committees, APR and RecyClass are accelerating global alignment of recyclability principles. In these groups, scientific data, gathered based on standardized

testing protocols, is shared and serves as the base for discussions on uncovering the complexities of plastic packaging.

Guidance on the use of EVOH in PP containers have also been streamlined through this collaboration.

“To achieve a truly circular future for plastics, harmonization is essential,” commented Paolo Glerean, chairman of RecyClass. “The real value of the collaboration between APR and RecyClass is evident in these latest recommendations, providing clearer guidance to the plastics industry globally. These joint efforts will allow the plastic packaging value chain to standardize their products on a larger scale and make the path towards the circular use of plastics more cost efficient.”



BUSINESS BRIEFS

C&C Manufacturing rebrands as S2 Manufacturing

C&C Manufacturing announced its new corporate name, S2 (Simple and Strong) Manufacturing to better align with its business today. S2 is a manufacturer and worldwide distributor of industry-leading brands that provide heavy equipment for scrap metal recycling, waste management and airport maintenance, including Aljon™, Ing. Bonfiglioli® and Vammas.

Leveraging its more than 60 year heritage of high quality products, the Aljon brand will also be elevated, using that name for its powerful and durable scrap recycling equipment, landfill compactors, car crushers and metal balers. Since 1963, Aljon’s commitment to excellence has made it a leader in quality and customer support.

“With the S2 Manufacturing name, we are building on the tagline of ‘Keeping Simple and Building it Strong,’ better representing the exciting future for the company and enabling us to seamlessly add new products,” said David Bradford, president and chief operating officer, S2 Manufacturing. “We continue our commitment to excellence for our Aljon products, serving our many customers in the scrap metal, recycling and waste management business.”

Casella Waste Systems hires new CFO

Casella Waste Systems, Inc., a regional solid waste, recycling and resource management services company, has added a new member to its senior leadership team. President & chief financial officer, Edmond “Ned” R. Coletta, will retain his role as president. The company hired Bradford J. Helgeson to serve as the new executive vice president & chief financial officer.

Brad Helgeson served as the executive vice president & chief financial officer of Covanta Holding Corporation for over eight years from 2013 until 2022. In that role, Helgeson oversaw capital decisions to support growth investments while managing the balance sheet to preserve liquidity and financial flexibility; improved budgeting and long-term planning processes for greater efficiency and to strengthen support across business lines; supported multiple strategic endeavors focused on growth and profitability; and led financial communication efforts to key external and internal stakeholders, during his time in the position. He was the vice president & treasurer at Covanta from 2007 to 2013.

Helgeson started in the environmental services industry as the vice president of finance & treasurer at Waste Services, Inc. from 2004 to 2007 after an investment banking career at Lehman Brothers and Donaldson, Lufkin & Jenrette.

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BUSINESS BRIEFS

Sunnking hires its first director of sustainability

■ Sunnking, Inc., a national electronics reuse and recycling company, has promoted of Kali Smith to director of sustainability.

Smith, who originally joined the Sunnking team in July 2022 as a marketing specialist, has demonstrated exceptional dedication to the company's mission, values, and vision for the future.

Smith holds a bachelor's degree from SUNY Oneonta and boasts a decade of corporate communications experience.

As director of sustainability, Smith will be at the forefront of developing and implementing innovative strategies to enhance Sunnking's commitment to environmental sustainability. Her responsibilities will include overseeing the development and execution of corporate environmental, social, and governance initiatives and strategies. Smith will also collaborate with internal teams, external partners, and industry stakeholders to advance Sunnking's efforts to promote a more eco-conscious electronics industry.

UNTHA appoints global marketing director

■ Austrian-headquartered UNTHA shredding technology has appointed a new global marketing director, as the engineering specialist plans a significant growth over the next five years.

Katie Mallinson joins company following almost 15 years working with the business as a supplier. Until recently, she was managing director of global communications firm Scriba PR, which she founded in 2013.

Now a permanent member of the UNTHA team, her role is to support the continued expansion of UNTHA in new and existing territories.

The internationally-recognized brand has established operations in Austria, Germany, the UK, Poland, North America, Iberica and Turkey, plus a continually-growing presence in Italy, France, South America, and Australia.

Mallinson will be based in the UK, with a visiting role to UNTHA's different global teams.

Waste Robotics hires Luis Martins as vice president sales & marketing

■ Luis Martins has joined the Waste Robotics team as their vice president of sales and marketing, bringing with him a wealth of expertise and an extensive track record in the field of waste management. With a strong foundation in mechanical engineering, Martins has dedicated his career to optimizing processing in the recycling industry.

A mechanical engineer by training, Martins career has been marked by his ability to design turnkey processing plants for recycling leaders spanning various industry segments, including construction and demolition, metals, municipal solid waste, single stream, commercial waste, and waste to fuel.

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 **RECYCLING**
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Minerals and metals in today's electric vehicles

by MAURA KELLER

mkeller@americanrecycler.com

The mining of minerals and metals for electric vehicles (EVs) and their batteries occurs in many locations, with different countries specializing in the extraction of different resources based on their geology and economic factors. According to Peter Hjorth, chief executive officer of Bluelake Mineral, the main minerals and metals of interest for EV batteries include lithium, cobalt, nickel, and manganese.

"The mining of minerals and metals for electric vehicles (EVs) and their batteries occur in many locations, with different countries specializing in the extraction of different resources based on their geology and economic factors," Hjorth said.

Cobalt

Over 60 percent of the world's cobalt production comes from the Democratic Republic of the Congo (DRC). The DRC has the largest proven reserves of cobalt, and the mineral is typically extracted as a byproduct of copper mining in the region.

"The mining industry in the DRC has been plagued by concerns over child labor, environmental degradation, and other human rights abuses," Hjorth said. "This has led to pressure from consumers and advocacy groups to establish more ethical sourcing practices."

While the DRC is the primary source of mined cobalt, China dominates the refining and processing industry. China imports a significant amount of cobalt ore and then processes it into usable forms for battery manufacturing.

Nickel

According to Hjorth, major nickel producers include Indonesia, the Philippines, Russia, and Australia. Indonesia, in particular, has ramped up its nickel production in recent years.

"Nickel mining, especially in Indonesia, has raised environmental concerns, particularly regarding deforestation and the impact on aquatic ecosystems due to the disposal of tailings," Hjorth said. "China is a significant consumer of nickel, especially for battery production. The country imports a lot of nickel ore for processing and consumption."



The price per ton of cobalt has soared by almost 70 percent, driven by a demand for rechargeable batteries and the growing popularity of electric cars.

Lithium

Australia is the world's largest producer of lithium, followed by Chile. Lithium is mined from hard rock (spodumene) in Australia, while in Chile, it's primarily extracted from brine pools.

"Both hard rock mining and brine extraction have environmental impacts. Brine extraction, for example, can consume vast amounts of water, a concern in the arid regions of Chile where these reserves are located," Hjorth said. China, once again, plays a significant role in the refining and processing of lithium. While Australia might mine the raw ore, a large portion of it is shipped to China for conversion into battery-grade lithium compounds.

Manganese

The largest producers of manganese are South Africa, China and Australia. While China is a major producer, it's also the world's largest consumer of manganese, primarily for steel production but also for battery manufacturing.

Hjorth pointed out that while the U.S. does have reserves of some of these minerals, the scale of mining operations, environmental regulations, economic con-

siderations, and historical development of the industry have meant that much of the raw material supply chain for EV batteries is located outside the U.S. However, there's growing interest in securing a domestic supply chain for these minerals in the U.S., both for economic reasons and to reduce dependency on foreign sources.

Alex Wylie is president and chief executive officer of Volt Lithium Corp., a lithium development technology and ESG focused company. Wylie said that when looking at EV batteries, the majority of minerals are used for their anode and cathode electrode parts.

"The key anode electrode mineral is graphite. In fact, the anode is made primarily of it," Wylie said. "Most of the graphite production and associated reserves are based out of China. China represents 65 percent of graphite production and reserves worldwide."

To Wylie's knowledge, the U.S. does not have meaningful reserves of graphite. Canada has significant graphite reserves; however, environmental permitting has significantly delayed the development of any mines.

"The U.S. and Canada are working to-

gether to ultimately accelerate the development of graphite mines in North America, with both countries placing it on their respective critical minerals lists," Wylie said.

Challenges & Effects on Metal Recyclers

The fact that a significant portion of minerals and metals essential for EVs are mined outside the U.S., especially in countries like China, presents various challenges for the automotive industry and EV manufacturing:

"Relying on foreign sources for essential materials exposes manufacturers to potential supply disruptions," Hjorth said. "Geopolitical tensions, trade wars, or export restrictions can jeopardize access to these vital materials. An example is China's dominance in the rare earths market, where potential export restrictions could significantly impact industries reliant on these materials."

In addition, price volatility is a concern. As Hjorth explained, limited sources and high demand can lead to price fluctuations. If a particular country dominates the supply of a crucial mineral and decides to

See MINERALS AND METALS, Page B6

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Steel import permit applications decrease

Based on the Commerce Department's most recent Steel Import Monitoring and Analysis (SIMA) data, the American Iron and Steel Institute (AISI) reported that steel import permit applications for the month of October totaled 2,123,000 net tons (NT). This was an 8.5 percent decrease from the 2,319,000 permit tons recorded in September and a 3.0 percent decrease from the September final imports total of 2,189,000. Import permit tonnage for finished steel in October was 1,757,000, up 11.2 percent from the final imports total of 1,580,000 in September. For the first ten months of 2023 (including October SIMA permits and September final imports), total and finished steel imports were 23,969,000 NT and 18,485,000 NT, down 10.0 percent and 14.6 percent, respectively, from the same period in 2022. The estimated finished steel import market share in October was 19 percent and is 22 percent year-to-date (YTD).

Steel imports with large increases in October permits vs. September final imports include standard rail (up 11,752 percent), tin plate (up 92 percent), wire rods (up 70 percent), oil country goods (up 49 percent) and hot rolled bars (up 41 percent). Products with significant year-to-date (YTD) increases vs. the same period in 2022 include standard rails (up 49 percent) and cut length plates (up 22 percent).

In October, the largest steel import permit applications were for Canada (528,000 NT, down 2 percent from September final), Mexico (304,000 NT, down 15 percent), Brazil (169,000 NT, down 63 percent), South Korea (146,000 NT, down 56 percent) and Japan (134,000 NT, up 101 percent). Through the first ten months of 2023, the largest suppliers were Canada (5,783,000 NT, down 1 percent), Mexico (3,642,000 NT, down 22 percent) and Brazil (3,292,000 NT, up 39 percent).

September steel shipments down 5.4 percent

The American Iron and Steel Institute (AISI) reported that for the month of September 2023, U.S. steel mills shipped 7,252,942 net tons, a 1.6 percent increase from the 7,140,355 net tons shipped in September 2022. Shipments were down 5.4 percent from the 7,663,767 net tons shipped in the previous month, August 2023. Shipments year-to-date in 2023 are 66,783,001

net tons, down 2.5 percent vs. 2022 shipments of 68,464,921 net tons for 9 months.

A comparison of shipments year-to-date in 2023 to the first nine months of 2022 shows the following changes: hot rolled sheet, up 7 percent, cold rolled sheet, unchanged and corrosion resistant sheet, down 2 percent.

Pacific Steel proposes auto shredder residue landfill in Montana

The Department of Environmental Quality (DEQ) published a draft Environmental Assessment (EA) for an application from Pacific Steel and Recycling for the construction of a landfill for auto shredder residue in Yellowstone County. The proposal includes approximately 90 acres within 320 acres of private property located at the corner of US Highway 87 and Shepard Acton Road.



In the application, Pacific Steel and Recycling proposes to landfill approximately 25,000 tons of auto shredder residue per year from their Billings recycling facility. DEQ reviews and licenses solid waste management facilities and assesses applications according to the requirements in state administrative rules. These requirements include groundwater monitoring, stormwater controls, and

operational standards. The application review and permitting process ensures that projects are protective of human health and the environment.

DEQ prepared the draft EA in compliance with the Montana Environmental Policy Act to analyze potential impacts of the proposal.

Steel imports down 4.1 percent in September vs. August

Based on preliminary Census Bureau data, the American Iron and Steel Institute (AISI) reported that the U.S. imported a total of 2,185,000 net tons (NT) of steel in September 2023, including 1,579,000 net tons (NT) of finished steel (down 4.1 percent and 15.1 percent, respectively, vs. August 2023). Total and finished steel imports are down 9.8 percent and 15.0 percent, respectively, year-to-date vs. 2022. Over the 12 month period from October 2022 to September 2023, total and finished steel imports are down 12.4 percent and 15.4 percent, respectively, vs. the prior 12 month period. Finished steel import market share was an estimated 20 percent in September and is estimated at 22 percent over the first nine months of 2023.

Products with a significant increase in imports over the 12 month period from October 2022 to September 2023 compared to the previous 12 month period include line pipe (up 19 percent), oil country goods (up 16 percent) and cut lengths plates (up 16 percent).

In September, the largest suppliers were Canada (537,000 NT, down 2 percent vs. August), Brazil (452,000 NT, up 116 percent), Mexico (358,000 NT, down 2 percent), South Korea (331,000 NT, up 30 percent) and Japan (66,000 NT, down 30 percent). Over the 12 month period October 2022 to September 2023, the largest suppliers were Canada (6,865,000 NT, down 1 percent compared to the previous 12 months), Mexico (4,425,000 NT, down 22 percent), Brazil (3,519,000 NT, up 28 percent), South Korea (2,634,000 NT, down 10 percent) and Japan (1,217,000 NT, down 2 percent).

Key steel products with a significant import increase in September compared to August are hot rolled sheets (up 49 percent) and ingots, billets and slabs (up 45 percent).

Scrap Metals MarketWatch

Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
FERROUS						
#1 Bushelings	per gross ton	\$387.00	\$388.00	\$398.00	\$400.00	\$410.00
#1 Bundles	per gross ton	385.00	383.00	380.00	387.00	389.00
Structural	per gross ton	337.00	358.00	361.00	370.00	379.00
#1 & #1 Mixed Steel	per gross ton	315.00	310.00	312.00	345.00	348.00
Crushed Auto Bodies	per gross ton	212.00	215.00	220.00	219.00	279.00
Shredded Auto Scrap	per gross ton	385.00	389.00	390.00	399.00	395.00
NON FERROUS						
#1 Copper Bare Bright	per pound	3.44	3.47	3.49	3.53	3.47
#2 Copper Wire & Tubing	per pound	3.31	3.35	3.37	3.40	3.42
Aluminum Cans	per pound	.71	.72	.71	.70	.70
Al/Cu Radiators	per pound	1.69	1.69	1.70	1.70	1.78
Aluminum Radiators	per pound	.51	.54	.56	.55	.60
Heater Cores	per pound	1.49	1.51	1.49	1.50	1.51
Stainless Steel	per pound	.60	.59	.58	.59	.61

All prices are expressed in USD. Printed as a reader service only.

DISCLAIMER: American Recycler (AR) collects pricing and other information from experienced buyers, sellers and facilitators of scrap metal transactions throughout the industry. All figures are believed to be reliable and represent approximate pricing based on information obtained by AR (if applicable) prior to publication. Factors such as grades, quality, volumes and other considerations will invariably affect actual transaction prices. Figures shown may not be consistent with pricing for commodities associated with a futures market. While the objective is to provide credible information, there is always a chance for human error or unforeseen circumstances leading to error or omission. As such, AR is not responsible for the accuracy or completeness of the information provided, or for outcomes arising from use of this information. American Recycler disclaims any liability to any person or entity for loss or damage resulting from errors or omissions, including those resulting from negligence of AR, its employees, agents or other representatives.

U.S. Imports of Steel Mill Products by Country of Origin (thousands of net tons)									
U.S. Imports of Steel Mill Products by Country of Origin (thousands of net tons)									
COUNTRY	SEP. 2023 PRELIM	AUG. 2023 FINAL	% VAR. SEP. VS. AUG.	YTD 2023 (9 MON.)	YTD 2022 (9 MON.)	% VAR. 2023 VS. 2022	OCT. 2022 TO SEP. 2023	OCT. 2021 TO SEP. 2022	% VAR.
Canada	537	547	-1.9%	5,255	5,250	0.1%	6,865	6,924	-0.8%
Mexico	358	364	116.1%	3,338	4,215	-20.8%	4,425	5,679	-22.1%
Brazil	452	209	116.1%	3,123	2,172	43.8%	3,519	2,750	28.0%
South Korea	331	255	30.2%	2,060	2,243	-8.2%	2,634	2,915	-9.7%
Japan	66	95	-29.7%	890	934	-4.7%	1,217	1,243	-2.0%
Germany	47	78	-39.8%	760	819	-7.2%	1,067	1,057	1.0%
Taiwan	38	44	-13.8%	475	857	-44.6%	656	1,110	-41.0%
China	31	40	-22.6%	486	492	-1.1%	646	650	-0.7%
Vietnam	30	93	-67.4%	428	814	-47.5%	550	1,266	-56.6%
Netherlands	31	51	-37.9%	361	419	-13.7%	537	593	-9.5%
Algeria	16	90	-82.4%	461	442	4.3%	528	568	-7.1
Italy	10	32	-68.1%	368	308	19.3%	511	371	37.9%
India	19	19	-0.3%	275	539	-49.1%	420	703	-40.3%
Romania	3	7	-52.7%	272	345	-21.1%	410	428	-4.1%
Australia	2	13	-82.1%	269	169	58.7%	398	218	82.5%
All Other	213	344	-38.1%	3,3023	4,201	-28.0%	4,091	6,017	-32.0%
Total	2,185	2,279	-4.1%	21,842	24,218	-9.8%	28,473	32,492	-12.4%
memo EU-27	162	300	-46.1%	2,980	3,174	-6.1%	4,216	4,091	3.1%



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Volvo Group to purchase near zero emissions steel

Volvo Group's collaboration with H2 Green Steel for near zero emission steel is another step forward on the continued journey towards a net zero GHG emission value chain by 2040. Under the long term agreement Volvo Group will purchase near zero emission steel from H2 Green Steel's new plant in Boden in Northern Sweden. Start of production is planned for end of 2025 with deliveries to Volvo Group starting mid-2026.

As commercial vehicles increasingly run on electrified solutions – reducing the emissions when the product is in use – the environmental footprint from the supply network and production becomes increasingly important.

“Collaborations which support our work to reduce emissions are crucial on the path towards net zero. Steel is a big contributor to the footprint of our products, and working together with both established and new players for developing decarbonized materials is key to advancing our progress in sustainable transport and infrastructure solutions,”

says Andrea Fuder, chief purchasing officer of Volvo Group.

Steel is one of the main materials in the manufacturing of trucks, buses and construction machines. Near zero emission steel focuses on reducing emission to a point where the impact on the environment is significantly minimized, if not entirely eliminated. A commitment set by the First Movers Coalition, of which Volvo Group is a founding member, is to have at least 10 percent of all steel purchased per year to be near zero emissions by 2030. Supply agreements such as this are important contributions towards accelerating the transition towards net zero.

“The commercial vehicle industry has actively been driving the demand for green steel, validating the market interest. When an undeniable large player like Volvo Group, working at the forefront of sustainable change, places a customer order it's a clear sign of confidence in both our company and our product,” said Henrik Henriksson, H2 Green Steel's chief executive officer.

Steel manufacturer pays more than \$100 million to reduce emissions from its Dearborn, Michigan facility

The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Justice announced a modification to a 2015 consent decree between the United States and State of Michigan and the Cleveland-Cliffs Steel Corporation (formerly AK Steel) to resolve Clean Air Act violations at the company's Dearborn, Michigan, steel manufacturing plant.

The decree required the Dearborn plant to implement certain measures to address visible air emissions from the plant. Because these measures failed to bring the plant into full Clean Air Act compliance, the modification requires Cleveland-Cliffs to undertake additional extensive measures at a cost of over \$100 million, which are expected to reduce visible emissions from the plant, as well as curtail emissions of manganese and lead. In anticipation of the agreement, Cleveland-Cliffs has already performed much of the required work.

The modification lodged requires replacement of the plant's electrostatic precipitator (ESP) that removes particulate matter from exhaust gases that stem from the plant's operations and thereby controls visible emissions. It also requires routine testing of the new ESP to assure compliance with applicable emission limits, certain operational parameters and regular monitoring for visible emissions.

The company will also pay a civil penalty of \$81,380 to the State of Michigan for violating the state permit's opacity, lead and manganese limits. Additionally, Cleveland-Cliffs will implement a state-law supplemental environmental project in which nearby residents will receive home air purifiers, at an estimated cost of \$244,000. The facility is located in an area with environmental justice concerns according to data from EPA's EJSCREEN tool.

Nucor explores sites to build rebar micro mill

Nucor Corporation is exploring potential sites in the Pacific Northwest to build a new rebar micro mill with an annual capacity of 650,000 tons, subject to approval by Nucor's board of directors. The new mill would produce a full range of rebar sizes and have spooling capabilities. This would be Nucor's fourth rebar micro mill, joining its existing micro mills in Missouri and Florida and the mill currently under construction in North Carolina.

“We have had great success with our rebar micro mills in Florida and Missouri and are on schedule to begin operating our third micro mill in the first quarter of 2025, which we are currently building in North Carolina,” said Leon Topalian, chair, president & chief executive officer

of Nucor. “Locating a new rebar micro mill in the Pacific Northwest provides us with an excellent opportunity to better serve our customers in the region and continue to build our modern economy with some of the most sustainable steel in the world.”

Rebar is used primarily in the construction of roads, buildings, sidewalks and other structures. Nucor produces steel by recycling scrap metal into new steel products, making the Company one of the cleanest steel producers in the world. Nucor bar steel products contain 97 percent recycled content. With the increase in federal infrastructure spending, the rebar market is expected to show continued strength.

EQUIPMENT SPOTLIGHT

Shears

The 2030 scrap metal recycling market is expected to be worth \$112.94 billion, globally, according to a recent report by Verified Market Research®. The market continues to expand as industries increasingly adopt sustainable practices, strive for increased economic benefits, and respond to new market sectors that are reliant on scrap metals. The following are some examples of the shredders available for efficiently processing a variety of scrap metals.

Daniel Coe, sales manager at Danieli, explained how “shear balers, side compression shears, and inclined shears play a vital role in scrap processing. A shear bale could be considered the Swiss army knife of the scrap yard because it serves multiple functions. Our state of the art DIS series involves a side pusher block system that adds to the density of the material. The patented DIS automatic blade changing system allows an operator to change blades in under an hour, which greatly reduces risk of employee injury. The DIS can process up to 110 tons per hour with a nominal production rate of 60 tons per hour.”

Danieli stationary shears can range from 500 to 3,000 tons of cutting force and allow scrap yards to bale and log material as well as shear P&S, HMS and more. “If scrap yard operators do not use some form of stationary shear, they are leaving money on the table because they aren’t processing material at an optimum level and therefore not upgrading the value of that material. With the ability to bale light goods, white goods, and ELVs it is then possible to transport more weight per load. A shear



Danieli Corporation

baler will outperform a mobile shear by approximately three to one. A typical mobile shear will process approximately seven to ten tons per hour and a similar size shear baler will process 20 to 23 tons per hour. Cost per ton is significantly reduced when using a shear baler compared to a mobile shear and side compression shears are particularly suitable for shearing and compacting heavy and bulky scrap metal. Load tables can be added to a side compression shear so that user production will increase while cost per ton is reduced. A shaker pan and staking, take away conveyor can be added to reduce handling costs. A shear baler or side compression shear chamber size may be limited when loading material. If feeding in longer material, double processing may be required and material is first cut to size by a mobile shear, then loaded into the chamber for

processing, which adds time and cost per ton,” said Coe.

“For oversized material that is time consuming to process, the inclined shear is the ideal machine choice because it is not restricted to a chamber size. Material is loaded into the chamber and is gravity fed into the shear head. Ideal materials for an inclined shear include oversized pipe, heavy plate, mill rejects, and materials which do not require baling. Some inclined shears do have a side compression pusher block, but optional size throat openings for shear heads may allow a variety of material widths to be processed,” he concluded.

Jonathan Miller, managing director, stated that “LEFORT has long been a leader in the scrap metal processing industry and the patented LEFORT Trax shears are some of our most popular models. The Trax product configuration allows the machine to be easily moved to various processing areas within a scrap yard, instead of moving scrap to the processing machine. Dozens of these versatile machines are in use in North America and besides providing easy mobility, these shears also do not require a foundation and so reduce construction and permitting costs as well as related challenges. The LEFORT Trax is available in various sizes up to 1,375 tons of shearing force.”

Miller added, “From the earliest alligator shears and small balers to the range of mobile machines and more recently the revolutionary Trax machines, LEFORT continues to lead the industry in research and development of products to provide scrap processors with more efficient methods of managing their materials. Through continuous



JMC Recycling Ltd.

See SHEARS, Page B5

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Continued on Page B5

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Shears

■ Continued from Page B4

reinvestment in our factory facilities and production technology, as well as our recent acquisition of Copex, LEFORT has more than doubled production. We've adapted to the increasing demand for products, including for the Konkeror and Trax lines of 'monoblock' machines and we also produce large stationary shears with up to 2,200 tons of shearing force."

Founded in 1947 and in Belgium by Nestor Lefort, Nestor's grandson and great grandsons manage the business to this day. In 2014, LEFORT America, based in Sunrise (Fort Lauderdale), Florida, was established. This expansion allows the firm to provide North American and Latin American customers with easier access to

the same parts and service support that has been provided for many decades, to clients in Europe.

McIntyre Alligator shears are manufactured by JMC Recycling and the McIntyre name has been prominent in the scrap industry since 1872. The company has been making shears and balers since the early 1970s and has sold over 60,000 machines worldwide since then. Vortex is the McIntyre North American master agent and Vortex owner, Nigel Dove, stated, "The MacIntyre brand is known for quality and longevity throughout the world. We will launch a new model at the 2024 ISRI convention, which will combine higher power with a smaller shear. So, the product bridges the gap in the range between smaller shears and larger, more powerful models. We also offer a gas engine powered shear that can be used anywhere within a scrap yard, because operation doesn't require electrical access. The model is available in sizes up to a 28" blade and 640-240t of force.

"Shear operators can sometimes be challenged by the risk of working too closely to a shear or getting pinched by the material being cut. We have worked with customers to develop a variety of solutions to increase safety in such situations — from hold down arms that steady material in place, right up to fully guarded machines. Of course, we are always happy to discuss customer ideas and needs, to better identify custom solutions as well. Although MacIntyre shears are generally used for cleaning nonferrous material for recycling, they have a variety of other uses as well — in titanium cutting, within auto feed machines used by aluminum extruders, and even by police and military facilities, for weapons destruction."



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Minerals and Metals

■ Continued from Page B1

adjust its production levels or change its export policies, it can significantly influence global prices.

“Also, sourcing materials from various global locations might lead to inconsistencies in material quality. Manufacturers must ensure rigorous quality control measures across their supply chain, which might be more challenging with foreign suppliers due to varying standards or regulations,” Hjorth said.

One of the biggest challenges in the U.S. for lithium mines is the time to develop the mine for hard rock production. According to Wylie, it can take up to 17 years to permit a mine in the U.S.

“To have a viable EV industry in the U.S., car manufacturers need a reliable and stable domestic supply of critical minerals,” Wylie said. “The U.S. and Canada produce the majority of critical minerals needed for the EV industry except for lithium. This creates a weakness for the entire supply chain for EVs, given that mineral’s key role in EV battery production. The looming shortfall in lithium now creates a more pressing need to bring additional North American sources online.”

Ongoing Impact on Metal Recyclers

All major market regions have realized the urgency to develop strategies for sourcing and recycling of critical raw materials for the EV, battery, military, and other strategic sectors of development. As Hjorth explained, this includes the U.S. and Europe which both have realized that it is not sustainable to be dependent on countries like China for sourcing of critical raw materials.

“We know that there are sufficient reserves to meet the global demand for battery materials, although some of the bottlenecks include the long lead time for building new mines and processing facilities and the large investments required, especially to mine and process responsibly,” said Cecilia Mattea, batteries and supply chain policy manager at Transport & Environment (T&E). “We know that there are sufficient reserves to meet the global demand for battery materials although some of the bottlenecks include the long lead time for building new mines and processing facilities and the large investments required.”

Technology also will be a key factor in ensuring most critical minerals are recycled from EVs economically. Wylie pointed out that a significant investment in recycling technologies will ensure that the majority of critical minerals are recycled from EVs.



“The innovation needed to achieve this will require significant collaboration between the public and private sectors, academia, research and development, and the capital markets,” Wylie said.

Over the medium term, metal recycling will become a significant supplier of critical minerals for the EV industry. “However, in the short term, EV growth will unfortunately and significantly outpace the

ability of the recycling industry to supply critical minerals. The U.S. needs a secure domestic supply of critical minerals to supply the materials to sustain the growth of the EV industry,” Wylie said. “Over the long term, there will not be enough critical minerals to supply the overall EV industry. Recycling will be a critical factor to ensure the ongoing growth of the EV industry over the long term.”

Steel Dynamics announces new leadership promotions

Steel Dynamics, Inc. announced leadership promotions for Christopher Graham, Richard Poinatte, Angela Reeve, Christopher Gionti, and Daniel Keown.

Christopher Graham, senior vice president Flat Roll Steel Group

Graham will assume responsibility and oversight for the company’s Flat Roll Steel Group, comprised of three EAF flat rolled steel mills and numerous other flat rolled steel processing locations, representing over 11 million tons of annual shipping capability. Graham will continue to report to Barry Schneider, president and chief operating officer.

Graham will also remain the interim lead for the company’s Long Products Steel Group until a replacement is named.

Richard Poinatte, senior vice president and treasurer of Steel Dynamics – finance, business development, and risk

Poinatte has been promoted to senior vice president of Steel Dynamics and will continue to report to Theresa Wagler. Poinatte joined Steel Dynamics in 2000, as the chief financial officer of one of the company’s joint venture businesses, which is now part of the steel fabrication platform. During his time with Steel Dynamics, he has held positions of increasing responsibility, including the operating position of general manager of the company’s Florida steel fabrication plant. Since 2008, he has been responsible for the company’s treasury, risk, and legal applications.

Angela Reeve, vice president of Steel Dynamics – human resources

Angela Reeve has been promoted to vice president of Steel Dynamics and will continue to report to Theresa Wagler, executive vice president and chief financial officer. Reeve has been a champion of the

company’s culture and people since close to its founding, joining the company in 1995. During that time, she has held increasing leadership roles in the areas of compensation, benefits, and human resources, holding leadership positions in these areas since 2012 – most recently as the companywide human resources director.

Christopher Gionti, vice president of Steel Dynamics and general manager Structural and Rail Steel Division

Gionti has been promoted to vice president of Steel Dynamics in recognition of his contributions to the company’s operations and leadership. Gionti has been responsible for the company’s Structural and Rail Steel Division as its general manager since 2014, and he will continue in this role. Gionti joined Steel Dynamics in 1998 as a plant mechanical engineer at the company’s Butler Flat Roll Steel Division and progressively grew in leadership responsibilities, including manager roles at the Engineered Bar Products Steel Division and as an operations manager within the flat rolled steel processing operations.

Daniel Keown, vice president of Steel Dynamics and general manager Columbus Flat Roll Steel Division

Keown has been promoted to vice president of Steel Dynamics in recognition of his contributions to the company’s operations and leadership. Since 2021, Keown has been responsible for the company’s Columbus Flat Roll Steel Division as its general manager, and he will continue in this role. Keown joined Steel Dynamics in 1998 as a process engineer at the company’s Butler Flat Roll Steel Division and grew in leadership responsibilities, including leading the Engineered Bar Products Steel Division as its general manager from 2014 to 2021.

Steel Dynamics to reacquire shares

Steel Dynamics, Inc. board of directors authorized an additional share repurchase program of \$1.5 billion of the company’s common stock. The authorization is effective immediately and adds to the previous \$1.5 billion program, which had \$278 million remaining authorized and available for repurchase on September 30, 2023. Since 2017, the company has repurchased \$5.2 billion of its common stock, representing 36 percent of its outstanding shares, and has paid cash dividends of \$1.4 billion through September 30, 2023.

“These actions reflect the board’s and senior leadership’s continued confidence in our ability to consistently generate industry-leading strong free cash flow throughout all market environments,” stated Mark D. Millett, chairman and chief executive officer. “We are committed to delivering shareholder value creation through profitable growth. We believe the strength of our operating model, capital structure, and liquidity profile provide us the unique ability to strategically grow, while also returning value to our shareholders.”

Under the company’s share repurchase program, purchases take place as and when determined by the company in open market or private transactions, including



transactions that may be affected pursuant to Rule 10b5-1 of the Securities Exchange Act of 1934, as amended. Pursuant to this program, purchases of shares of the company’s common stock, are made based upon the market price of the company’s common stock, the nature of other investment and growth opportunities, expected free cash flow, and general economic conditions. The share repurchase program does not require the company to acquire any specific number of shares and may be modified, suspended, extended or terminated by the company at any time without prior notice.

Dividends

The company’s board of directors declared a quarterly cash dividend of \$0.425 per common share. The dividend is payable to shareholders of record at the close of business on December 31, 2023, and is payable on or about January 16, 2024.

CMC celebrates new micro mill

Commercial Metals Company (CMC), along with state and local officials gathered to dedicate CMC’s new micro mill located in Mesa, Arizona.

The mill is CMC’s third micro mill and will be the first in the world to produce rebar as well as merchant bar quality (MBQ) products through a continuous production process from melting, casting and rolling activities and will be among

the most environmentally friendly steel-making operations in the world. Steel Arizona 2 as the facility has been named, makes CMC a coast-to-coast MBQ manufacturer.

The new micro mill employs roughly 185 people and will achieve an estimated nominal annual capacity of 500,000 tons, including 150,000 tons of merchant product.

Ardagh Metal Packaging and Crown Holdings fund additional recycling facility grants

Beverage can manufacturers Ardagh Metal Packaging (AMP) and Crown Holdings (Crown) are funding two new grants for can capture equipment at material recovery facilities (MRF), which sort single-stream recycling into materials for sale, that will annually capture more than 20 million aluminum beverage cans. These additional cans captured each year are worth around \$325,000 and when recycled will result in energy savings equivalent to powering more than 900 U.S. homes for an entire year.

These two grants are in addition to the four that AMP and Crown have previously funded as part of a program in collaboration with The Recycling Partnership. Collectively, the six can capture equipment grants that Ardagh and Crown have funded have catalyzed the installation of equipment that will capture more than 115.5 million aluminum beverage cans each year. The aggregate cans captured with these six grants are worth more than \$1.8 million and when recycled will result in energy savings equivalent to powering more than 5,000 U.S. homes for an entire year.

“Ardagh Metal Packaging is proud to



jointly fund with Crown these grants that continue to demonstrate there is a significant opportunity for MRFs to capture millions of aluminum beverage cans each year,” said Jens Irion, chief executive officer, AMP-North America. “That is why capturing missorted cans at MRFs is one of the pillars of action to make progress toward the ambitious U.S. aluminum beverage can recycling rate targets that AMP, Crown, and all CMI beverage can manufacturer, and can sheet producer members have committed to achieve.”

GreenWaste in San Jose, California, which serves 300,000 households throughout the San Jose area, will use the grant toward a second eddy current separator that will capture undersized aluminum and previously lost items from the MRF’s screening process. It expects to capture each year with this equipment 260 new tons of aluminum (17.6 million aluminum beverage cans).

RecyclingWorks in Elkhart, Indiana, which reaches more than 200,000 households, will use the grant toward a robotic sorter that can be installed in a small area on the residue conveyor. It will reduce by 45 tons (3 million aluminum beverage cans), the amount of aluminum landfilled.

This grant program with The Recycling Partnership is part of a comprehensive effort with the metal can trade association Can Manufacturers Institute (CMI) to spur the installation of equipment in MRFs to capture missorted aluminum beverage cans. Based on research from 2020, CMI found up to one in four aluminum beverage cans are missorted at a typical MRF and without the revenue from UBCs, most MRFs wouldn’t be able to operate without a change in their business model. Along with

the research and grants, CMI conducted testing in 2022 at several MRFs, noted the number of cans being missorted and the return on investment (ROI) to capture them, followed by a free ROI calculator for MRFs to use. CMI announced in September 2023 that it had fully financed a two-year lease of a robot from Everest-Labs with funding from AMP and Crown at a California MRF that will capture more than one million aluminum beverage cans per year.

The Recycling Partnership also announced that additional can capture grants had been awarded. “These improvements to our recycling systems will provide meaningful gains in aluminum circularity,” said Adam Gendell, director of materials advancement, The Recycling Partnership. “We see tremendous opportunities to continue upgrading our recycling infrastructure and we’re grateful to partner with the Can Manufacturers Institute to pursue our shared mission of reducing waste and increasing circularity.” CMI expects to soon announce additional can capture grants and leases to recycling facilities funded by AMP and Crown.

Novelis reports improved results for second quarter

Novelis Inc., a sustainable aluminum solutions provider, reported results for the second quarter of fiscal year 2024.

“We are pleased to see another quarter of sequential improvement in Adjusted EBITDA, driven by initial demand recovery in our core beverage packaging sheet end market as industry supply chain destocking activity is largely behind us,” said Steve Fisher, president and chief executive officer, Novelis Inc. “We delivered a solid second quarter, demonstrating the resilience of our business on account of our diverse customer base across premium end markets, our leadership position in aluminum recycling, a solid balance sheet, and the scale and efficiency of our global operations. The business will only be further strengthened in the coming years as we

complete strategic investments under way in new rolling and recycling capacity.”

Net sales decreased 14 percent versus the prior year period to \$4.1 billion for the second quarter of fiscal year 2024, primarily driven by lower average aluminum prices and a 5 percent decrease in total flat rolled product shipments to 933 kilotonnes, partially offset by increased product pricing and favorable product mix. The decrease in shipments is mainly due to lower beverage packaging shipments compared to prior year record levels. Also, challenging economic conditions impacted some specialties markets, mainly in building & construction, partially offset by higher automotive shipments on stronger customer demand.

Net income attributable to common

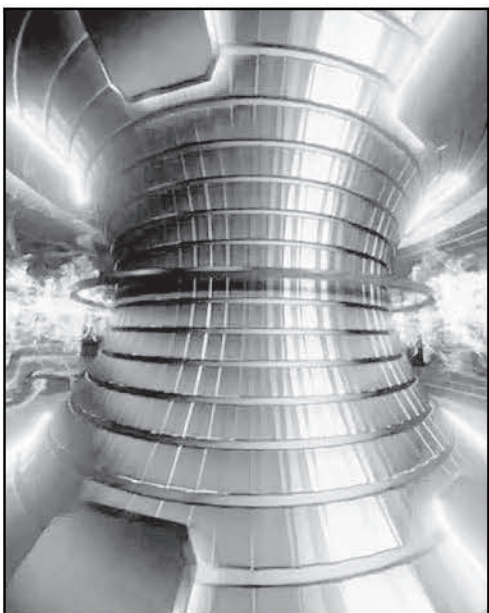
shareholders decreased 14 percent versus the prior year to \$157 million in the second quarter of fiscal year 2024, due mainly to lower Adjusted EBITDA. Adjusted EBITDA decreased 4 percent versus the prior year to \$484 million in the second quarter of fiscal year 2024. This was primarily driven by lower shipments, less favorable metal benefit from recycling, and a prior year favorable impact from capitalizing high operating costs into inventory. These factors were partially offset by higher product pricing, favorable product mix, and some lower freight costs.

Net cash flow provided by operating activities was \$290 million in the first six months of fiscal year 2024 compared to \$196 million in the prior fiscal year period, primarily due to favorable changes

in working capital, partially offset by lower Adjusted EBITDA. Adjusted Free Cash Flow was an outflow of \$300 million in the first 6 months of fiscal year 2024. This was higher than the prior year period outflow of \$96 million, due primarily to a planned increase in capital expenditures and increased strategic investments in new capacity, partially offset by higher cash flow from operating activities. The company had a net leverage ratio (Net Debt/trailing 12 months (TTM) Adjusted EBITDA) of 2.7x at the end of the second quarter of fiscal year 2024.

The company had a strong total liquidity position of \$2.3 billion, consisting of \$1.2 billion in cash and cash equivalents and \$1.1 billion in availability under committed credit facilities, as of

Nucor and Helion to develop fusion power plant



Nucor Corporation is collaborating with fusion power company, Helion to develop a 500 MW fusion power plant. This transformational project will offer baseload zero-carbon electricity from fusion directly to a Nucor steelmaking facility. Nucor and Helion are working together to set a firm timeline and are committed to beginning operations as soon as possible with a target of 2030. Nucor is making a direct investment of \$35 million in Helion to accelerate fusion deployment in the U.S. This is the first fusion energy agreement of this scale in the world and will pave the way for decarbonizing the entire industrial sector.

“Nucor continues to position itself as a leader in developing clean energy solutions to decarbonize the industrial sector. This agreement with Helion, along with recent

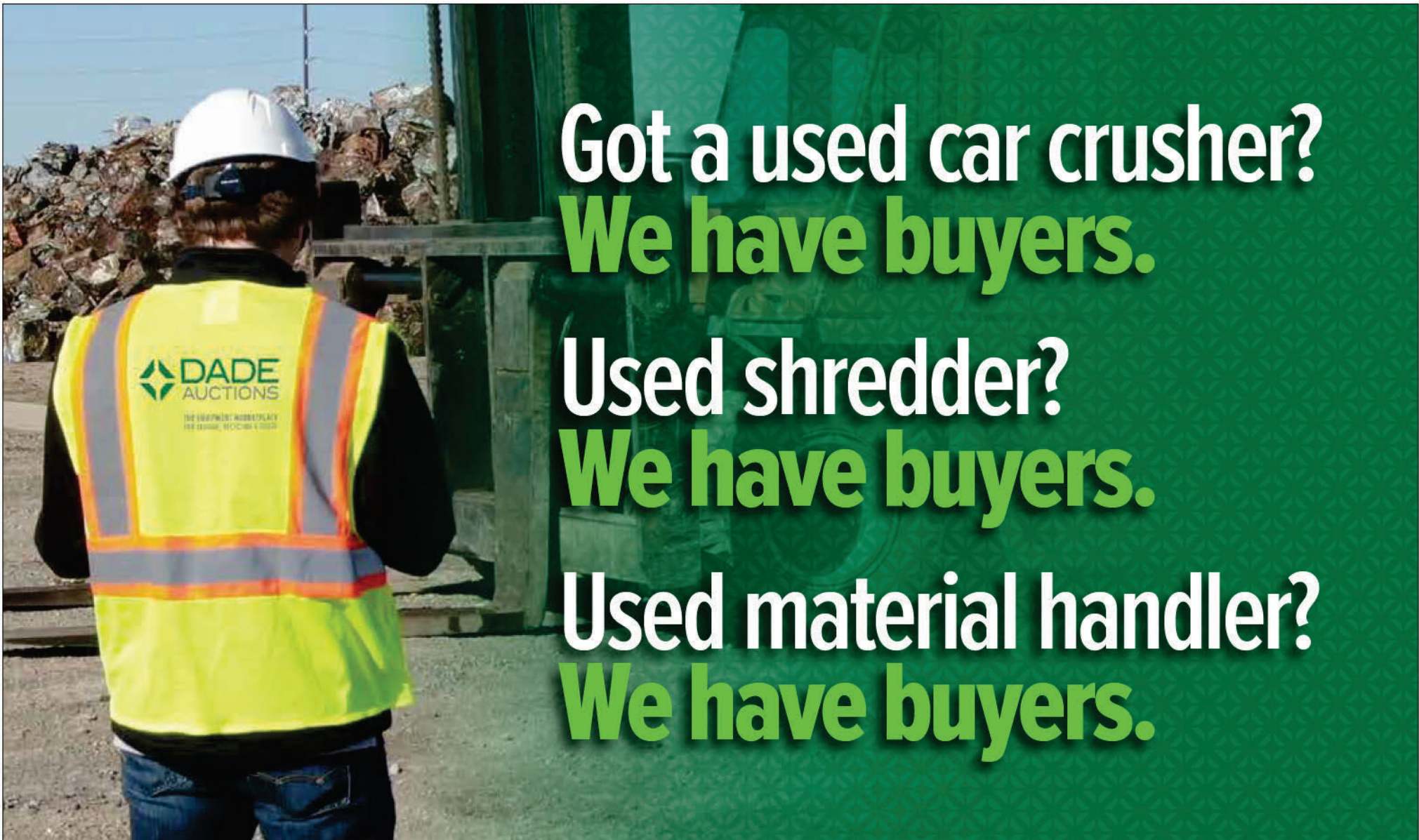
investments in clean energy, can change the entire energy landscape, forever change the world and embrace a clean energy future we could have hardly imagined a few years ago,” said Leon Topalian, chair, president, and chief executive officer of Nucor Corporation. “We believe in the technology Helion is building.”

Helion, with a history of innovation in fusion technology, has already achieved milestones, including the construction of six working fusion prototypes and being the world’s first private fusion company to achieve 100 million degree plasma temperatures. The company is building its seventh prototype, Polaris, which is expected to be the first to demonstrate electricity generated from fusion.

“We’re passionate about helping the

world reduce its dependence on carbon-based energy sources with abundant, clean fusion power,” said David Kirtley, chief executive officer of Helion. “We are proud to have investment from Nucor and to have the opportunity to work together on this project. Their commitment to providing their customers with the lowest embodied carbon steel and steel products available makes them a great fit for deploying 500 MWe of fusion power.”

Nucor is already one of the cleanest steelmakers in the world. The circular nature of recycling scrap in electric arc furnaces means that Nucor’s steel mills have a greenhouse gas emissions intensity that is three times lower than the average extractive blast furnace steelmaking plants.



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