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# scraprecycling

WINTER 2024  
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TO REDUCE ITS CARBON EMISSIONS,  
INCLUDING EMBRACING HYDROGEN.

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BY BRIAN TAYLOR

## FORGING A LINK IN THE CHAIN

**B**atteries have become a larger part of the way people live and as a sector within the global economy, with a predominant reason being a transition away from fossil fuels.

The growing population and roster of applications for batteries has, for scrap processors, brought an industrywide (if clichéd) strengths, weaknesses, opportunities and challenges (SWOT) matrix.

An operational threat currently exists in the volatile and flammable nature of lithium-ion batteries, a configuration used not only in electric vehicles (EVs) but also in smartphones and numerous other smaller devices. Fires in shredder yard stockpiles have become all too common.

“  
For several years,  
company owners  
and executives  
have discussed  
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recycling  
lithium-ion  
batteries from  
end-of-life EVs  
represents  
an opportunity.”

For several years, company owners and executives have discussed to what extent recycling lithium-ion batteries from end-of-life EVs represents an opportunity.

Spurred on in part by government prodding and incentives, automakers and battery producers have begun to establish the infrastructure needed to process end-of-life EV batteries to extract the lithium, cobalt, nickel and other metals deemed critical to an EV-heavy future.

Whether such investments in the United States yield a return on investment depends on numerous factors, including just how many EVs Americans want to buy in the next 20 years or so.

A presenter at a recent conference on EV battery recycling mentioned another potentially troubling circumstance: EV batteries outlasting their warranties and being exported or otherwise used in ways that question how many batteries actually will flow into battery recycling plants.

Another presenter at the same conference made a statement regarding end-of-life EV batteries that will ring true to veteran metals recyclers: “Access to scrap is going to be the key to survival in the [battery recycling] supply chain.”

For an American scrap processing sector that long ago learned to relinquish downstream recycling aspects of certain automotive components (such as lead-acid batteries and catalytic converters) to other companies, that old piece of wisdom could provide the best guidance.

Specifically, large-tonnage scrap companies that have established and experimented with their own auto salvage and dismantling business units could determine the first link in the chain is the proper place to be when it comes to establishing a presence in the EV battery recycling sector. **SR**

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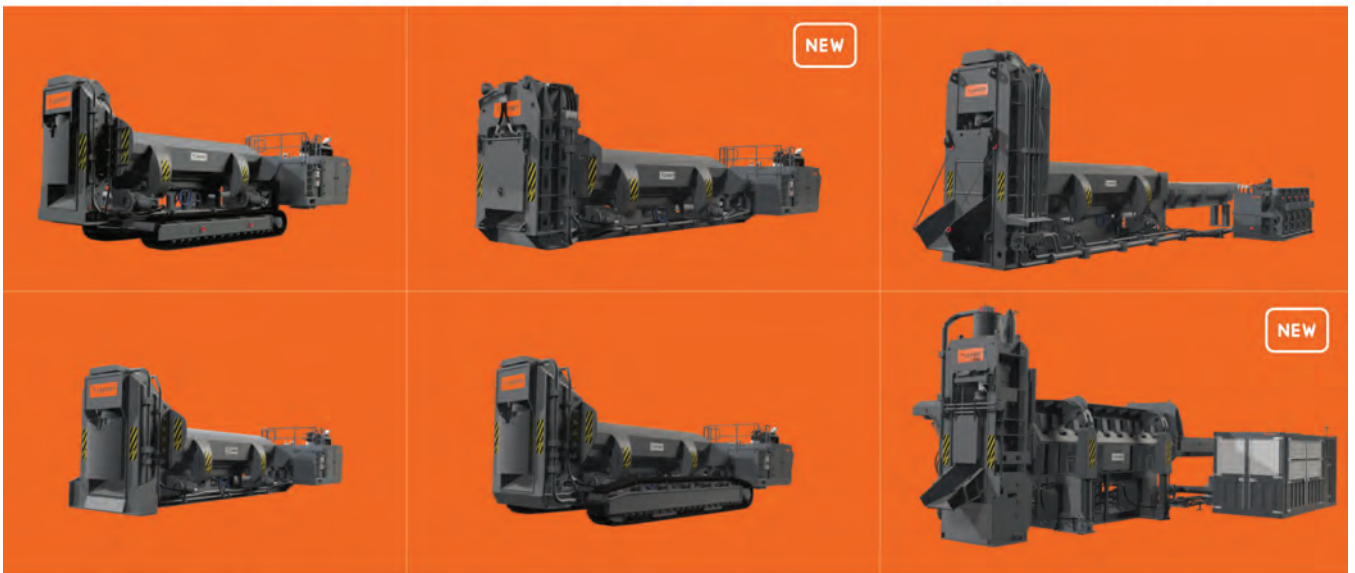




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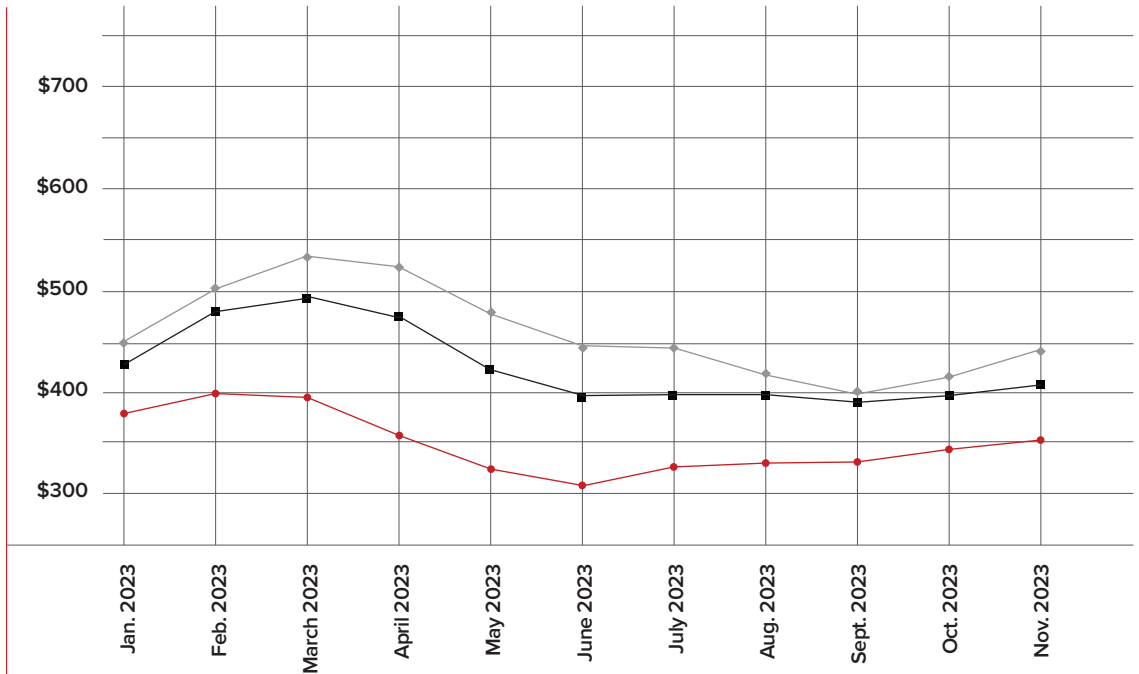
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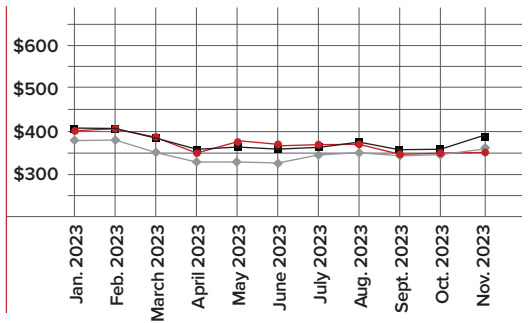
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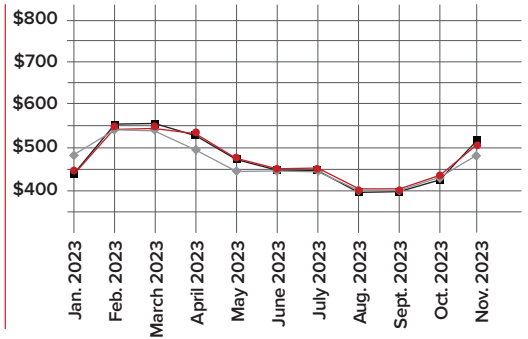
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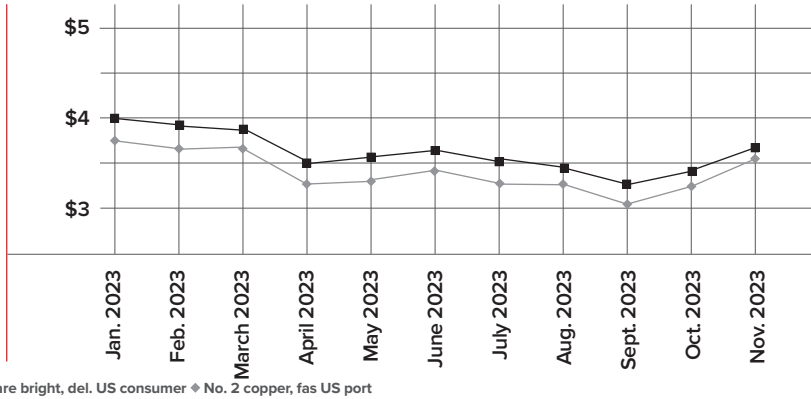
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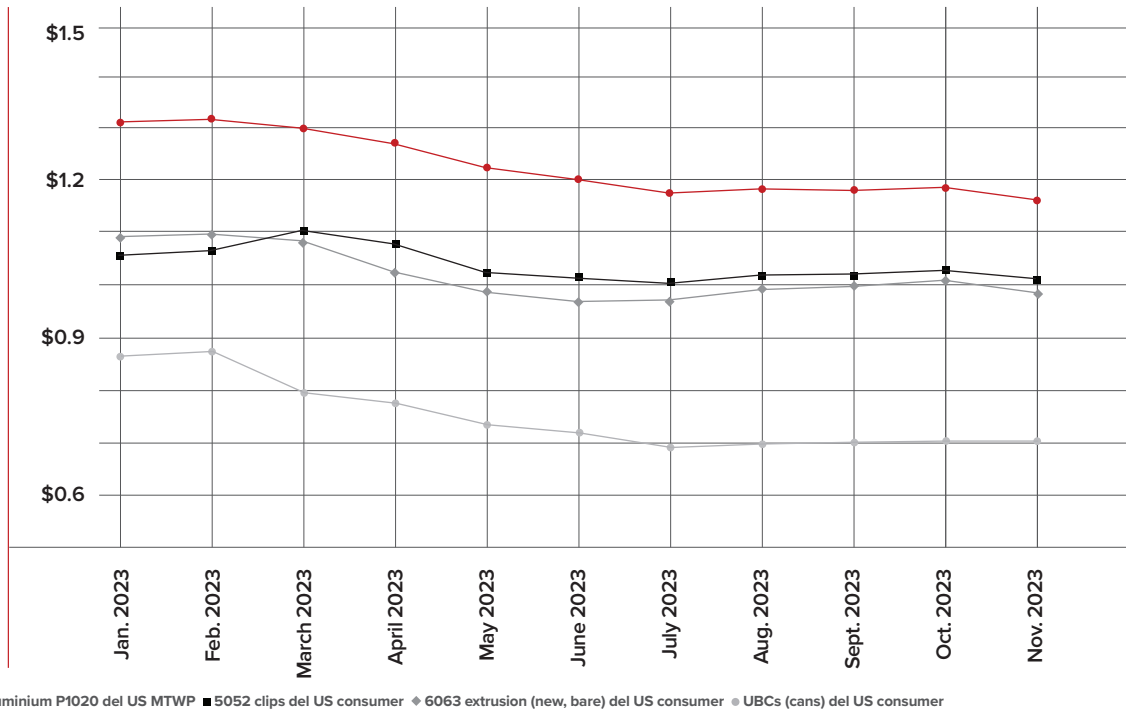
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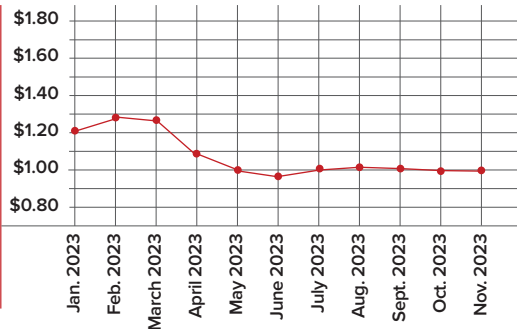


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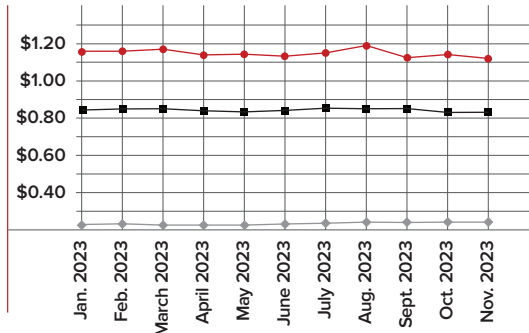
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In its race to meet decarbonization goals, the steel industry is seeking sustainable solutions to produce high-quality steel while minimizing its environmental impact.

Although hydrogen-based direct reduction shows immense potential to decarbonize the industry, the transition scenario is largely dominated by the scrap-based EAF (electric arc furnace) route.

Steel producers are exploring ways to maximize scrap utilization or transitioning to new scrap-based EAF steelmaking processes. Simultaneously, the scrap industry continues to invest in scrap processing facilities to provide the scrap qualities and quantities demanded by the steel industry.

Magaldi Group, with its comprehensive portfolio and extensive expertise, notably in scrap handling solutions, stands ready to support the transformational journey of both the steel and recycling industries.

## **SCRAP MANAGEMENT: FLEXIBILITY AS THE WATCHWORD**

Steel mill demands in terms of quantity, quality and purity of delivered scrap are expected to rise in the coming years.

Obtaining the right scrap at the appropriate price, volume and quality poses challenges as the composition of scrap can vary across regions and markets.

To control costs, maintain production capacity and succeed in a net-zero world, steelmakers must adopt a

different approach to scrap handling.

Implementing scrap treatment processes and enhancing flexibility in handling different scrap varieties become crucial to maximizing utilization and meeting quality requirements.

Rugged, dependable and built to last, Magaldi's heavy-duty steel belt conveyors for scrap handling offer the necessary flexibility to address the evolving demands of steel mills and the recycling industry, enabling steelmakers to optimize their operations and achieve their production targets effectively.

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The Magaldi Superbelt® HD (Heavy-Duty) conveyor is designed to meet the demands of every scrap handling application. With a host of exceptional features that provide competitive advantages, this conveyor system is engineered to transport large amounts of heavy scrap metal from scrap yard or production lines to different processing equipment (e.g., shredders, crushers, shears, HMS cleaner, etc.) or to the furnace.

## **HIGH DEPENDABILITY AND UPTIME**

The Superbelt® HD conveyor is renowned for its high dependability and uptime. The key component is a redundant patented mesh system, which ensures trouble-free continuous operation, eliminating any risk of sudden failure.



### **DURABILITY AND STRENGTH**

Built to last, the Superbelt<sup>®</sup> HD boasts incredible sturdiness and durability. The heavy-duty construction enables it to handle heavy loads and high volumes of material without breaking down or wearing out. This translates into cost savings over the long term as the conveyor requires minimal maintenance and has a prolonged service life.

### **NO SPOTS FOR MATERIAL PINCHING AND LEAKING**

With a unique overlapping pan design, the Superbelt<sup>®</sup> HD conveyor eliminates concerns about material pinching and leaking. There are no spots where the scrap can get stuck or leak, ensuring smooth and consistent material flow.

### **HIGH ABRASION AND JAM-FREE DESIGN**

One of the key factors contributing to the superior performance of the Superbelt<sup>®</sup> HD conveyor is the friction-free design, which ensures high abrasion resistance and smooth material flow.

### **EXTREMELY LOW MAINTENANCE**

Unlike conventional conveyor systems, the Superbelt<sup>®</sup> HD is designed with simplicity in mind. With few moving parts and no critical wear points such as chains, sprockets, hinges or rails, routine maintenance is minimized and operational costs are lowered.

### **MATERIAL WEIGHING**

The Superbelt<sup>®</sup> HD conveyor also allows for material

weighing. Equipped with a unique frame with load cells and an electronic control unit, it enables real-time mass and rate calculations, providing accurate measurements during material handling. This information can be used to streamline operations, minimize waste and improve overall process efficiency.

### **HIGH FLEXIBILITY**

From light scrap to large, heavy chunks, the Superbelt<sup>®</sup> HD conveyor is designed to accommodate different material types with ease, providing the flexibility needed in a fluctuating market.

The conveyor can be adapted to suit challenging geometries, including inclinations of up to 75 degrees, and changing production conditions, ensuring optimal space utilization and seamless integration into a company's existing processes.

### **ENGAGE OUR MATERIAL HANDLING EXPERTISE**

As the steel industry transitions to a low-carbon future, exploring new business models and technologies will be essential.

By focusing on circularity and adopting new approaches to scrap handling, steel companies can future-proof their production strategies and capture value in a low-carbon economy.

Magaldi's expertise in material handling processes can be instrumental in achieving this goal, helping steel companies adapt to changing market demands while enhancing the sustainability of steel production. ●



# A NEW ERA IN STEEL

BY DEANNE TOTO

**W**hen the U.S. Department of Energy (DOE) announced funding for seven hydrogen hubs throughout the U.S. this past October, Cleveland-Cliffs Chairman, President and CEO Lourenco Goncalves was among those expressing support.

“Today’s announcement marks the very beginning of a new era in steel producing,” he said. “With clean hydrogen in our backyard, Cliffs’ hydrogen-ready blast furnaces and direct reduction plant will be the first in the world to replace CO<sub>2</sub> with a new byproduct that does not contribute to global warming: This new byproduct will be H<sub>2</sub>O.

“Furthermore, Cliffs’ willingness and ability to offtake a significant portion of the entire production of the hub eliminates the chicken-and-egg dilemma associated with clean hydrogen development and, in doing so, makes hydrogen viable for other industries, including the automotive sector.”



## CUTTING THE CARBON

Cleveland-Cliffs, the largest flat-rolled steel company in North America, defines vertical integration.

The Ohio-based company is involved in everything from iron ore and coal mining to iron pellet, coke and hot-briquetted iron (HBI) production to ferrous scrap processing to downstream finishing, stamping, tooling and tubing. That level of integration lends advantages to a firm with ambitions to reduce its Scopes 1 and 2 greenhouse gas (GHG) emissions by 85 percent by 2030, using 2017 as the baseline. As of 2022, Cliffs had achieved a 32 percent reduction, Goncalves said Nov. 2, 2023, to a crowd assembled at the United Steelworkers Local 979 hall in Cleveland.

Cliffs gathered union and community representatives that evening to gauge their reactions to its plan to use hydrogen in its steelmaking process, with many in attendance voicing their support.

Hydrogen and green energy are part of a four-prong approach the company is using to reduce the carbon intensity of its steelmaking.

## A MULTIFACETED APPROACH

In addition to hydrogen and green energy, the tactics Cliffs is employing to reduce its GHG emissions involve using direct-reduced HBI, which it produces in at its plant in Toledo, Ohio, in its blast furnaces; increasing the amount of prime ferrous scrap it uses; and injecting natural gas into its blast furnaces.

Goncalves said using HBI in its blast furnaces has yielded “enormous” benefits. “That material goes to the blast furnace prereduced, so the oxygen portion of that iron has already been removed,” he said. Therefore, no coke is needed, resulting in less carbon emissions. “It’s as simple as that.”

Maximizing its use of scrap allows Cliffs to use the same amount of iron to produce more steel. “The normal charge of scrap in a BOF [basic oxygen furnace] is between 10 [percent] and 18 percent,” he said. “In our plant, we use between 25 [percent] and 30 percent. So, we are using the same amount of pig iron, therefore the same amount of coke, therefore generating the same amount of CO<sub>2</sub> to produce more steel.”

Photos courtesy of Cleveland-Cliffs



**CLEVELAND-CLIFFS IS TAKING STEPS TO REDUCE ITS CARBON EMISSIONS, INCLUDING EMBRACING HYDROGEN.**

# MAKING



With Cliffs' operations being based in the Midwest, the company also has access to natural gas. "We have access to a reductant and to a fuel that's extremely efficient and green," Goncalves said. "Keep in mind that natural gas is 96 percent CH<sub>4</sub>, so there is a little carbon, but there's a lot of hydrogen in natural gas."

Cliffs also has experimented with using hydrogen in one of its blast furnaces and is working with the Roosevelt Project out of the MIT Center for Energy and Environmental Policy Research to help facilitate this transition. (See the sidebar on Page 12.)

## **TAPPING INTO HYDROGEN**

Cliffs' blast furnace in Middletown, Ohio—the smallest of its seven furnaces,

including two in Burns Harbor, Indiana, two in Cleveland and one in Dearborn, Michigan—operated for half a day using hydrogen. "It cost me a fortune," Goncalves said. "But I proved my point. We can reduce iron using hydrogen."

Through the Bipartisan Infrastructure Law, the U.S. government is helping companies like Cliffs gain access to hydrogen through \$7 billion the Department of Energy (DOE) has made available to help fund Regional Clean Hydrogen Hubs (H2Hubs).

The DOE says the H2Hubs will kickstart a national network of clean hydrogen producers, consumers and connective infrastructure while supporting the production, storage, delivery and end-use of clean hydrogen. The H2Hubs are

expected to accelerate commercial-scale deployment of hydrogen that can help to decarbonize industries such as steel-making and transportation.

According to the agency, the seven hubs were selected based on technical merit and impact, including the ability to produce at least 50 to 100 metric tons of clean hydrogen per day.

Up to \$1 billion of the funding has been allocated to the hub being developed by the Midwest Alliance for Clean Hydrogen (MachH2).

"MachH2 is expected to generate numerous sources of clean hydrogen production across the U.S. Midwest, including in northwest Indiana near Cleveland-Cliffs' two largest steel plants, Indiana Harbor and Burns Harbor.



Cleveland-Cliffs currently is building a pipeline to bring hydrogen from the fence to Indiana Harbor Blast Furnace No. 7,” the company said when the DOE announced the funding in late October of last year.

Cliffs said its “large, stable hydrogen offtake ensures the hub’s viability and will mark a major step forward for the continuation of aggressive CO<sub>2</sub> emissions reductions by Cleveland-Cliffs’ integrated steel mills. These integrated mills are uniquely capable of producing the most advanced steel products demanded by the automotive industry, for national defense applications and numerous other important industrial sectors.”

Other hubs to receive funding are the Appalachian Hydrogen Hub in West Virginia, Ohio and Pennsylvania; the Gulf Coast Hydrogen Hub in Texas; the Heartland Hydrogen Hub in North Dakota, South Dakota and Minnesota; the Mid-Atlantic Hydrogen Hub in Pennsylvania, Delaware and New Jersey; the

Pacific Northwest Hydrogen Hub in Montana, Oregon and Washington; and the California Hydrogen Hub.

The MachH2 hub spans Illinois, Indiana and Michigan, with the potential to expand into other Midwestern states. Located in a key U.S. industrial and transportation corridor, the MachH2 will enable decarbonization through strategic hydrogen uses including in steel and glass production, power generation, refining, heavy-duty transportation and sustainable aviation fuel, the DOE says. The hub plans to produce hydrogen by leveraging diverse and abundant energy sources, including renewable energy, natural gas and nuclear energy.

When speaking in Cleveland, Goncalves said the DOE funding addresses the chicken-and-egg problem affecting hydrogen: “Nobody uses hydrogen because there’s no hydrogen, and there is no hydrogen because nobody uses [it].”

Goncalves said the MachH2 hub will produce 1,000 tons of hydrogen daily and that Cliffs’ offtake for Burns Harbor alone would be 200 tons, or 20 percent of that total. “That is going to make the hub viable from the get-go,” he said.

Cliffs plans to trial hydrogen at Burns Harbor, the largest blast furnace in the company’s footprint and the U.S.

It also is looking to capture the CO<sub>2</sub> it does generate, and the geology in northwest Indiana should lend itself to that. “Hydrogen is coming first,”



## Ensuring a smoother transition

The Roosevelt Project out of the MIT Center for Energy and Environmental Policy Research examines the transitional challenges associated with decarbonizing the U.S. economy by minimizing worker and community dislocations and sustaining employment levels in at-risk communities by leveraging opportunities for regional economic development.

The project gets its names from three members of the Roosevelt family: Theodore, who was known to be an environmentalist; Franklin, who embodied labor rights and economic equality; and Eleanor, who was a champion of social equity.

The project has produced research papers that included policy recommendations, David Foster, a visiting scholar with MIT who is involved in the Roosevelt Project, said Nov. 2, 2023, at an event hosted by Cleveland-Cliffs. He added that many of those recommendations have been adopted by the Biden administration. It also looked at areas of the country where the transition is going to be difficult given their ties to the fossil fuel industry, developing social policies to address related concerns. The third phase involves decarbonizing industries like steel.

The Roosevelt Project’s Keith Cooley said the team is looking at the pathways to decarbonize the steel industry—including using hydrogen—the cost to the workforce and associated community issues to “understand what the potential negative consequences of this transition might be ... to see how we can sort of defang those problems.”

Goncalves said. “We need to reduce the CO<sub>2</sub> emissions and then capture the rest with carbon capture.”

Additionally, Cliffs has an agreement with EDP Renewables in Houston to purchase 7 percent of its electricity companywide from a wind farm in Indiana and is exploring self-generated electricity. “Here at Cleveland works in the last reline of the blast furnace that we did a couple of months ago, we installed a new steam turbine generator to utilize additional blast furnace gas,” he said.

### MORE THAN STEELMAKING

Goncalves noted Cliffs’ leading role as an



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## Cleveland-Cliffs featured on DOE's Better Climate Challenge Road Show

The U.S. Department of Energy (DOE) is featuring Cleveland-Cliffs in its "Better Climate Challenge Road Show" series, which showcases real-world pathways for public and private organizations to decarbonize.

As a partner in the Better Climate Challenge, the company has committed to Scopes 1 and 2 emissions reductions goals across its portfolio.

In the episode, viewers learn how Cliffs is leveraging its direct reduction facility in Toledo, Ohio, and other technologies to decarbonize its steelmaking operations. The Toledo facility is a hydrogen-ready plant that produces hot-briquetted iron (HBI), an alternative to scrap and imported pig iron used in the steelmaking process.

"We appreciate the [DOE's] recognition of our leadership in accomplishing

significant goals to decarbonize our business," Cliffs Chairman, President and CEO Lourenco Goncalves says. "We are making it happen today as the only steel company participating in the Better Climate Challenge program. HBI consumption in our ironmaking furnaces is a proven real path forward to further reduce our carbon footprint while producing high-quality steel for a more sustainable future."

The DOE recognized Cleveland-Cliffs as a Greenhouse Gas Emissions Reduction 2023 Goal Achiever last October through its Better Buildings Initiative and Better Climate Challenge. The company's commitment covers 46 of its operating facilities.

The episode can be viewed online at <https://betterbuildingsolutioncenter.energy.gov/roadshow>.

automotive supplier, which he attributed to its integrated steelmaking assets and commitment to blast furnace/BOF steelmaking. "Supplying highly specified automotive-grade materials, particularly exposed parts, dictates the use of blast furnaces and BOFs," he writes in Cliffs 2022 Sustainability Report. "We believe this will continue to be the case and, over time, we are confident we will be able to drive sustained reductions in carbon emissions from our integrated steelmaking footprint."

Goncalves concludes the report with this message: "Cleveland-Cliffs has been, and continues to be, built for future generations. The decisions we are making today will resonate for decades, and we do not take that responsibility lightly." **SR**

The author is editorial director of the Recycling Today Media Group and can be reached at [dtoto@gie.net](mailto:dtoto@gie.net).

**REI**

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# Closing a gap in RED METAL SEPARATION

**STEINERT CHUTEC takes small nonferrous fractions and separates them into valuable products.**

**M**ultiple options exist when creating valuable products out of nonferrous fines. But in the view of Kyle Rice, Midwest Territory Manager at Walton, Kentucky-based STEINERT U.S. Inc., recyclers often have stopped at recovering zorba.

"Historically, zorba was the end-all product, and that would be exported," Rice says. "That shifted with some additional X-ray equipment: X-ray transmission and X-ray fluorescence."

Introduced three-and-a-half years ago, STEINERT CHUTEC is designed to close gaps in sorting the fines resulting from heavy metals liberation and add value by recovering red metals, such as copper and brass, and zinc, that often have been exported. Using X-ray fluorescence and a 3-dimensional sensor, the machine captures and separates desired metals as they cascade down a chute.

STEINERT CHUTEC is designed for the present as well as the future as onshoring of production capacity for red metals increases.

"The response to STEINERT CHUTEC has been very good," Rice says. "It's been very popular both internationally and in the domestic U.S. market where people are moving ahead and putting these in. A lot of people who already had these mixed-heavy-metals products and were having to export them now have an option to further separate them with STEINERT CHUTEC. You see a lot of onshoring of production capacity for metals like copper and brass, and these machines are going to be a part of filling that production demand for postconsumer scrap."

"In terms of being able to address all size fractions and separate them to the quality of products that you're going to need to feed into the domestic processing locations, STEINERT CHUTEC is going to be there for the long haul," he adds.

The machine, developed by Germany-based STEINERT, is designed to accommodate metals ranging from 5 millimeters to 30 millimeters in size, although much larger fractions are also being processed. Scrap is fed into a vibratory feeder housed inside a shell that also contains a chute. As material falls off the feeder, it slides down the



chute and passes an X-ray sensor. Air valves arranged on a bar shoot jets of air at the desired metal fractions and eject them into a splitter, separating them from the rest of the scrap.

Operators can use STEINERT CHUTEC's computer to program which metals to detect.

"We're making the detection of the object itself, and then it's making a quick millisecond decision on what it's able to detect from that piece," Rice says. "If it's a copper piece and you're trying to sort out copper, STEINERT CHUTEC hits it with the air jet to push it past a splitter. It's all happening instantaneously out of freefall that it's detecting what the composition of that piece is and making a quick decision."

Why focus on the fines fraction when separating heavy metals? Steinert estimated there was added value in being able to detect more red metal content such as copper and brass, as well as concentrate precious metal content along with it. For that reason, STEINERT CHUTEC was designed with the highest detection resolution on the market to help separate red metal units specifically out of a fines fraction that historically has not been processed to the fullest extent of its value.

"Overall, at Steinert, we look to be a comprehensive solutions provider, and STEINERT CHUTEC was born to address the gap in fines heavy metals separation," Rice says.

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*A STEINERT CHUTEC chute sorter uses X-ray fluorescence technology for sorting fine heavy metals with grain sizes down to 5 mm.*

# Pioneering innovation with STEINERT recycling technology: A vision shared by SA Recycling CEO George Adams

**Adams shares the role STEINERT technology plays in the company's operations.**

**D**uring an interview with George Adams, CEO of SA Recycling, he provides insights into the company's journey, innovations and future ambitions. With a long history in the recycling industry, Adams shares his views on sustainability, his future vision and the key role STEINERT technology plays in the company's operations.

Adams, who has been in the recycling field since he was 17, humbly states, "I began driving tow trucks when I was 17. Later, I started working alongside my father for 40-something years. My two brothers also work in the company and are my partners, and after all these years we're still really close. Then my sons came into the business after they finished college. So, I guess that's what makes it the most fun—working with my sons."



Ultimately, however, Adams' leadership has been fundamental in steering SA Recycling to remarkable success. His participation in global recycling organizations, such as ISRI (Institute of Scrap Recycling Industries) and BIR (Bureau of International Recycling), highlight the company's dedication to recycling and navigating global political terrain to ensure sustainability worldwide.

SA Recycling began its journey in Anaheim, California, where it currently processes 250,000 tons of shredded materials each year.

The company processes nearly 5 million tons of scrap annually at its 140 locations.

Adams recalls the evolution and expansion of SA Recycling's facilities, highlighting Anaheim as a hub for research and development.

#### **HIGHLY RELIABLE SORTING SYSTEMS FOR PROCESSING LIGHT AND HEAVY METALS**

In terms of recycling capabilities, Adams praises the company's relationship with STEINERT. "We have utilized their eddy current separators for quite some time now in many of our locations to get most of our nonferrous metals. For approximately four years, we have also been using their multisensor sorters, primarily to upgrade zorba to twitch, meaning extracting an aluminum mix from a nonferrous metal stream."

The STEINERT KSS | XT CLI combines four sensors. Two optical sensors offer color and three-dimensional shape data, while the inductive sensor identifies metals.

Density variances are recognized using X-ray transmission (XRT). Also, X-ray fluorescence technology (XRF) is in use in Anaheim.

Since 2019, a STEINERT CHUTEC XRF sorter efficiently segregates heavy

metals by type, such as copper, brass, zinc or stainless steel.

Adams appreciates the efficiency of the STEINERT sorting systems in processing high volumes of material, praising the speed and accuracy they bring to metal extraction, as well as their exceptional reliability.

"When we started measuring, the big thing was that they had a faster belt speed on their machine than what other people had. The even bigger thing is that over the years we have realized that we simply don't lose bearings on their eddy currents—they just don't break, ever."

#### **ACCURATE METAL SEGREGATION FOR A BETTER TOMORROW**

In Adams' perspective, the future isn't just a destination, it's a complex journey. He emphasizes a comprehensive recycling ecosystem that extends beyond metal and proudly mentioned SA's commitment to recycle everything—including water, which the company uses in its yards and runs back to its shredders to conserve valuable resources.

While he acknowledges solar power as a positive step, Adams focuses on maximizing metal recycling to reduce the greenhouse gases generated in the production of primary metals and, thereby, better serve the environment.

Through collaboration with technology pioneers like STEINERT, SA Recycling faces a future where precision, sustainability and efficiency converge seamlessly. As he envisions the future of metal recycling, the CEO leans forward with confidence. He sees STEINERT's advancements in LIBS technology

for aluminum alloy sorting as the direction the industry is heading in—emphasizing precision segregation to meet the demand for specialty alloys production reshoring to the U.S.

"I think the harder thing right now is adapting to the next phase, which is using equipment to get specific segregated alloys. Because I think that's really going to be the future of metal recycling. Everybody wants segregated alloys."

Adams recognizes STEINERT's role in enhancing recycling processes, accenting the shared commitment SA Recycling and STEINERT have toward meeting evolving market demands. This collaboration demonstrates the importance of cutting-edge German technology in advancing global recycling efforts.

His confidence in STEINERT's capabilities reflects his deep belief in the German engineering behind it. "Made in Germany means something to me," Adams says with a nod. "STEINERT embodies that label perfectly."

*Several STEINERT KSS sorting systems with X-ray transmission technology generate high-purity aluminum products.*



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# GSCC: IS ONE PATH ENOUGH?

To conclude our four-part series, we look at different paths steelmakers are taking in their bids to become more sustainable and achieve green steel certification. **BY ZULMA HERRERA**

**A**dopting a single certification for two steelmaking paths—electric arc furnace (EAF) and blast furnace—is proving difficult.

Around 70 percent of crude steel globally is produced via blast furnaces, which emit more CO<sub>2</sub> than EAF production, with hopes to reduce this to 60 percent or less of the estimated 2.1 billion to 2.5 billion metric tons of projected annual demand by 2050. Currently, 94 percent of emissions in the sector are produced via blast furnaces.

Considering these figures, can one certification measure green steel? Should considerations beyond greenhouse gas

emissions (GHGs) be included? Are assumptions dynamic and driving change fast enough to meet 2050 guidelines?

*Scrap Recycling's* series on green steel has covered two leading contenders, Responsible Steel (RS) and the Global Steel Climate Council's Steel Climate Standard (GSCC's SCS), as well as the fundamental road maps set out by the International Energy Agency and the Science Based Targets Initiative that are in line with the Paris Agreement to limit global warming to 1.5 C above pre-industrial levels by 2050. The World Trade Organization added its perspective with the Steel Standards Principles (SSP), which both entities endorse.

Both certifications realize the importance of using recycled material to decarbonize steelmaking, but blast furnace production has affirmed its necessity in the RS model based on assumed limited availability of recycled material inputs. The forecasting models usually presume limited recycled steel availability of 1 billion to 1.2 billion metric tons annually by 2050, which could, at best, meet 50 percent of the raw material needed for crude steel production, necessitating primary production.

SCS focuses on climate change and has said that without a clear focus on emissions, the 2050 net-zero target is not possible. In contrast, RS seeks to facilitate





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a transition by including all stakeholders and blast furnace-heavy producers in developing countries but allows the same net-zero label to be used for higher-emissions and lower-emissions steel production through its sliding-scale design, which could limit transformation.

Both certifications can play a major role with only 26 years until net zero must be achieved.

**CHALLENGING THE ASSUMPTIONS**

Philip Bell, president of the Washington-based Steel Manufacturers Association (SMA), says recycled material forecasts in some certifications do not account for technological innovation, elasticity of supply and lower end-of-life cycles per updated data.

For example, when Russia invaded Ukraine in early 2022, pig iron tonnages from the two leading exporters were affected and prices soared. The situation initially looked dire for steelmakers dependent on pig iron, but, within months, the affected mills altered their feedstock to use more recycled steel. “U.S. mills are now consuming 50 percent less pig iron than prewar,” Bell says, adding that the elasticity of ferrous scrap allows more

volumes to appear at the right price.

“Financial incentives impact both the development of scrap collection and processing infrastructure as well as obsolete scrap collected,” David D. Hodory, vice president at Cincinnati-based David J. Joseph Co., a subsidiary of Nucor Corp., said during a recent presentation to the Organization of Economic Cooperation and Development Steel Committee. Moreover, new research shows some countries have an average 18-to-20-year recycling cycle, yet some models presume up to 35 years, not fully accounting for consumption growth.

China is a recycled steel reservoir but lacks a distribution network or supply chain. It has a 28 percent obsolete scrap collection rate compared with 57 percent in the U.S. and 47 percent in the EU.

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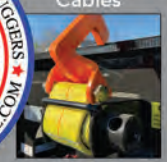
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carbon footprint, with an opportunity to improve by using renewable energy.

“When looking at other technologies or roots that will lead us to a low-carbon future, we must also look at today,” Bell says. “When we look at the investment, subsidies and incentives by governments in the EU, U.K. and Canada, they include subsidies for blast furnace producers to convert to an existing, proven, low-carbon steelmaking form, which is EAF-based.”

Thus, EAF conversions and developing direct-reduced iron (DRI), which requires lower operating temperatures and much less or no coke during the iron reduction process for improved energy consumption and emissions versus using coke, should be the first steps in decarbonization. To supplement ferrous scrap, EAFs use pig iron, DRI and hot-briquetted iron, which contribute to their emissions.

“The myth of scrap availability is facilitating the longer change period,” Bell says

of the EAF transition. “There is plenty of ferrous scrap to support the initial development of a broader EAF industry. For future growth, it is beneficial for governments to look at their incentives and subsidies to develop their scrap markets and supply chains into a more robust system.”

**SUSTAINABILITY AND EMERGING MARKETS**

With a background in developing sustainability standards in the forestry, agriculture, marine and mining sectors, Matthew Wenban-Smith of OneWorldStandards, headquartered in London, helped design RS, noting it was developed as a sustainability standard, not a climate change standard. “The right sustainability model develops a balance between pragmatism, corporate interests and civil society in a credible format that maximizes business and ESG [environmental, social and governance] value for the greatest impact,”

he says. “In contrast, SCS was designed as a climate change standard.”

Given the exclusion of social factors, some do not categorize SCS as an industry decarbonization standard or a sustainability plan. The Paris Agreement, however, includes financial, technical and capacity-building support to aid developing countries.

SteelWatch, an organization headquartered in the Netherlands with a mission to “turbo-charge” the transformation to a decarbonized steel sector, has not endorsed any standard, noting their flaws—some more severe than others. “We want to see steel become the backbone of a decarbonized economy,” says Roger Smith, the Tokyo-based Asia lead at SteelWatch. “We want a steel industry that works well for workers and the environment without cherry-picking.”

Smith recommends Step 1 should focus on material efficiency, making steel

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## GREEN STEEL CERTIFICATIONS

products last longer and lightweighting them, while Step 2 makes sure end-of-life steel is recycled with less contamination.

"The U.S. scrap-based steelmakers are extremely well-positioned," Smith says. "If they just add renewable energy, they're essentially at zero emissions today, so they are not our concern."

According to SteelWatch's research, regions like Asia are the main source of steel industry emissions, and the organization wants to focus on a standard to drive progress in the region.

### A NEW OPPORTUNITY

"The Carbon Border Adjustment Mechanism [CBAM] puts a price on the carbon embedded in imports, which is hugely important and sends a powerful message," Smith says. GHGs also are a factor in the import discussion in the U.S.-EU trade agreement under negotiation.

"A few years ago, the discussions



did not explicitly mention the desire to align with the 1.5-degrees benchmark," he adds. "The era has changed. There's a revival, and that provides a chance to do things differently and better. That's what we really want to see.

"RS offers a framework for driving

net-zero progress. Certification at the highest Level 4 gives an idea of what that means and the methodology behind it, along with verification."

However, Bell says that RS Level 4 certification means the steel produced in a blast furnace creates seven-to-eight times more carbon than steel produced by an EAF bearing the same "net-zero" label.

SteelWatch favors RS given the multi-stakeholder inputs, with nonprofits and industry building it together with transparency, consideration of limited recycled steel supplies and vast documentation. "On the iron-making side, it's more complicated, it's more expensive, and that's where we really want to see standards driving technology development of things like DRI," Smith says.

### MINDSETS MUST CHANGE

SteelWatch says it wants Asian steelmakers to consider investing in noncoal-based

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technologies and to withdraw from those not meeting certain requirements. Asia is diverse and includes China and the biggest growth market, India, as well as major steel-producing developed economies like South Korea and Japan, which are blast furnace-heavy.

Bell says China has set a 2060 net-zero goal, while India has a 2070 goal, making the 2050 emissions goals difficult for the industry to reach if the steel industries in those countries lag.

“Japan is a good example of the chicken-and-egg conundrum where the steelmaker says, ‘We don’t have the product,’ and the buyer says, ‘Well, if you don’t have it, we cannot buy it,’ and then the discussion fizzles out,” Smith adds.

Japan is a developed country with the opportunity to change more quickly than others in the region, yet it is blast furnace-heavy. As a significant scrap exporter, Japan can increase recycled

material consumption domestically.

Despite being certified as a RS company, South Korea’s POSCO could reline a furnace, Smith says, which keeps the same polluting asset for 20 more years, contrary to the goal.

Others criticize Australia-based BlueScope, also RS certified, which has invested in steel sector decarbonization in the U.S. but not in Australia, despite sufficient capital. It proposed a furnace relining as a possible bridge to lower-emissions steelmaking technologies once technically and commercially viable. According to an International Renewable Energy Agency report, 70 percent of the global blast furnace fleet will require relining by 2030.

**OPPORTUNITY TO ACCELERATE**

Fundamentally, the climate has changed dramatically in the last five years, so, the idea of sustainability and ESG goals being

material to business is new but gaining traction in Asia as evidenced by South Korea, Japan and even China setting their own net-zero goals.

“The biggest difference between Asia and Europe or the U.S. is the pace, which is slow for the former,” Smith says. “Asian



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companies are not on track for 2030 nor in line with the 1.5 degrees-type scenario for 2050 and are of two minds. On the one hand, their governments are pushing them to decarbonize, providing incentives, and public pressure is building; but, on the other hand, their business models have been built around high-quality steel using coal-based methods.

“There’s a real fear about the shift and what the future looks like for facilities and workers,” he continues. “Companies are inconsistent between their public commitments and statements and their actual business practices. That needs to change. There [are] big goals, but I haven’t seen any companies with clear road maps for achieving them. This decade is going to be a time to take action.”

Government research and development investments should focus on using lower-grade DRI and lower-grade scrap with better results alongside expanded

collaborations with public and private partnerships. Per Andersson, head of secretariate for the Stockholm-based Leadership Group on Industry Transition (LeadIT) launched by the governments of Sweden and India at the UN Climate Action Summit in September 2019 and supported by the World Economic Forum, says the group wishes to collaborate on and support recycling and circular solutions as they are central to achieving the net-zero carbon goals.

The certifications could impact several factors, including investor interest, buyer decisions, environmental regulations and trade. For example, the Sustainable STEEL Principles is a set of commitments to adopt a common measurement and disclosure framework designed for banks to support the steel industry in forging a pathway to net-zero carbon emissions, while the Clean Competition Act has been introduced to U.S. Congress, which

could add carbon border fees on some imported products, including steel.

All steelmakers need to decarbonize. “If steel from scrap is favored globally, but if those unable to make steel from scrap receive barriers and tariffs, then it’s about protectionism, not decarbonization,” Wenban-Smith says. Steel trade is about 25 percent of global steel production, and barriers to trade should be minimized, the SSP says.

Long term, SCS and RS certifications could work together to sharpen the different approaches each follows. The former’s pace and focus can support the latter’s larger goal of helping move communities toward decarbonizing steel effectively as ferrous scrap and DRI consumption are optimized for blast furnaces and EAFs. **SR**

Zulma Herrera is chief operating officer at Davis Index and can be reached at [zulma.herrera@davisindex.com](mailto:zulma.herrera@davisindex.com).

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# Matching heritage *with* high tech

A new iron foundry commissioned by Charlotte Pipe and Foundry Co. draws upon a 120-year heritage while deploying 21st-century technology. BY BRIAN TAYLOR







Iron foundries have been part of the North American business landscape since the 17th century, and by the early 19th century, cast iron pipes were being produced in the northeastern United States.

By that measure, North Carolina-based Charlotte Pipe and Foundry Co., founded in 1901, could be viewed as a relative newcomer, but the company has been manufacturing iron pipes for more than 120 years.

Charlotte Pipe and Foundry hasn't rested on its legacy despite its lengthy tenure, however, and its forward-thinking nature is visibly evident in the form of a \$460 million greenfield iron foundry the company commissioned last year in Oakboro, North Carolina.

#### STAYING TRUE BUT NOT STANDING STILL

"Charlotte Pipe has always been committed to investments that will benefit our associates, our customers and our shareholders," Roddey Dowd Jr., vice chair of the company's board of directors, said at an October 2023 groundbreaking event to celebrate the new facility.

Referring to its century-old foundry in Charlotte, North Carolina, which has been phased out with the opening of the Oakboro facility, Dowd added, "While our Uptown Charlotte location has provided stakeholders with a solid platform to deliver outstanding results, our new

Oakboro foundry will allow a more efficient layout of our plant and equipment and give us the flexibility to expand to meet future needs."

Investing to grow and diversifying are not new concepts for the 2020s philosophy at Charlotte Pipe. As a fifth-generation, family-owned company, each of those generations seems to have taken steps to ensure Charlotte Pipe remains relevant in its core plumbing products and iron foundry markets.

The company launched a plastics division in 1967 following investments in iron foundry automation and technology in the 1950s, correctly gauging future market interest in lightweight and affordable plastic pipe alternatives.

Charlotte Pipe's geographic expansion got underway in the 1980s with facilities in Texas and Pennsylvania.

Succeeding Dowd family generations and other company leaders added more product lines over the years, particularly in the growing plastic pipe sector, and added or acquired facilities in Alabama, Florida and Utah. Currently, the company is designing and building a 134,000-square-foot polyvinyl chloride (PVC) pipe production facility near Wichita, Kansas.

In the metals sector, Charlotte Pipe made a major commitment with the 2022 acquisition of Neenah, Wisconsin-based castings firm Neenah Enterprises, which operates as a wholly owned subsidiary.

Neenah, with roots of its own tracing

## Keeping a legacy industry's flame glowing

The Cast Iron Soil Pipe Institute (CISPI), based in Mundelein, Illinois, is proud of the history of the sector it represents, noting that an underground cast iron pipe network installed in 17th century France remains functional today.

CISPI, which includes the Charlotte Pipe and Foundry Co. among its members, also demonstrates a willingness to use more recent terminology to describe the production of iron pipes, referring to the sector as "green from the beginning" and having a history of sustainability.

The notion that metal is infinitely recyclable and the fact that scrap comprises a sizable percentage of raw materials used by its members are part of CISPI's green portrayal of cast iron pipes. "Today, the members of the Cast Iron Soil Pipe Institute take 'environmentally friendly' to a level beyond recyclable' by utilizing 96 percent postconsumer recycled materials in the production process," CISPI says.

The association claims its members consume hundreds of millions of pounds of ferrous scrap each year, including items such as old radiators and car parts. "Few of the [other] materials used in construction can support this recyclability claim," CISPI says.

In the next chain in the recycling loop, CISPI characterizes scrap iron pipe as 100 percent recyclable and destined to be remelted and recycled at the end of its useful life.

"Cast iron piping systems can be recycled to make new cast iron pipe and fittings," CISPI says. "Additionally, engineers renovating old buildings may choose to reuse much of their existing cast iron drain, waste and vent systems. This lowers renovation costs and decreases the number of new resources required—yet another net gain for our environment."

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## COMPANY PROFILE

back to the 19th century, operates construction and industrial casting foundries in Neenah as well as in Medley, Florida, and Lincoln, Nebraska.

Throughout the last several years, even as the company acquired new foundries and expanded its plastic pipe production portfolio, the leaders at Charlotte Pipe were drawing up and finalizing a plan to relocate and modernize its flagship iron foundry.

### BEST (AND CAREFULLY) LAID PLANS

Moving the foundry 35 miles from its Charlotte location to outlying Oakboro was far from impulsive and not caused by feeling unwelcome in its long-time home, the company says.

“Building a new foundry to replace our existing Charlotte plant was first contemplated in the 1960s and then again in the mid-2000s,” Bradford Muller, vice president of corporate communications, tells *Scrap Recycling*. “We have long considered relocating because we were landlocked in our Uptown Charlotte site.

“There was no pressure from the local community or elected officials in Charlotte for Charlotte Pipe to move.”

Instead, the move was prompted by a restriction on growth opportunities at its historic site.

When announcing the start of the Oakboro project in 2020, the company indicated it had invested heavily in capital equipment, environmental control technology, infrastructure and people during the previous decades to operate an “efficient, modern [and] safe foundry” at its existing location.

“However, after long and careful consideration, the board of directors has made a determination that it is in the best interest of the company to build a new, state-of-the-art foundry,” the company said at the time.

How production lines connect and how hot and cold metal, material handling equipment and people operate can all be upgraded when a company draws up a new floor plan.

The planners at Charlotte Pipe also kept in mind its critical feedstock of ferrous scrap, which provides a large percentage of the raw material for the new Oakboro facility, which will consume as much as 150,000 tons per year.

The company seeks out clean auto cast, 2-foot plate and structural, or P&S, and shredded clips as ideal scrap grades for its cast house and casting lines.

Charlotte Pipe buys sufficient volumes, so rail shipping can be cost-effective. The company added a rail spur to connect its new







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plant to the short-line Aberdeen Carolina & Western Railway, which crosses central North Carolina.

The Aberdeen line connects to the Norfolk Southern Railway, giving the Oakboro foundry rail access to bring in ferrous scrap from the East Coast and the Midwest.

"With our rail system, we can procure scrap from northern Michigan down to Miami, Florida," Muller says. "Typically, our scrap comes from the Eastern Seaboard from New York to Savannah, Georgia."

On the outbound side, many of the company's shipments depart via truck, with an exception. "We ship cast iron pipe and fittings (finished goods) via rail to only one location, our warehousing facility in Cedar City, Utah, to better serve our customers in the western United States," Muller says.

The investment in rail service is one of several that has Charlotte Pipe optimistic about its future in Oakboro and beyond.

### PREPARING FOR A LONG-TERM FUTURE

Although Charlotte Pipe had considered building a greenfield foundry for more than 50 years, several circumstances aligned within the past five years to greenlight the significant investment.

"We had operated on the current site for more than 100 years, and we were finally able to successfully build the new foundry after acquiring sufficient land and capital necessary to complete the project," Muller says.

The land the company acquired in Oakboro gives it 700 acres on which to build and grow.

"In July 2020, we broke ground on an ambitious \$460 million plant, which opened in September of 2023," he adds. "At its peak, the project saw upwards of 500 men and women on the job site each day, resulting in more than 1.2 million man-hours worked over three years."

Charlotte Pipe has invested \$58 million in the Oakboro plant's environmental systems and controls, including an on-site 70,000-megawatt substation. Such investments are not new or exclusive to Oakboro, the company says, noting all Charlotte Pipe products are made in the U.S. and "meet or exceed federal, state and local environmental regulations and standards."

On the technology and automation side, Charlotte Pipe says it uses the latest tooling and machinery to meet increasing demand and makes investments in process improvements and equipment that have led to increased productivity and shortened lead times.



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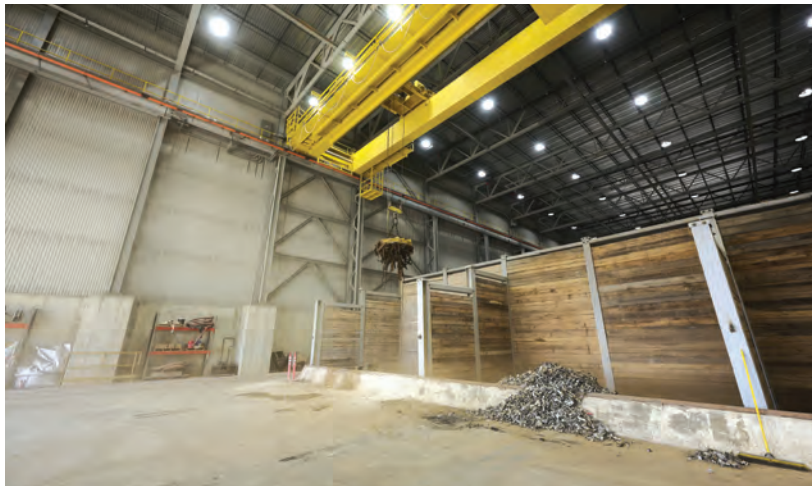


Charlotte Pipe describes the foundry in Oakboro as one of the largest and most modern in the world and says the investment ensures the firm will remain deeply rooted in the Charlotte region and continuously operate in North Carolina.

“A generational project, the relocation and expansion of our legacy foundry is a strategic move by Charlotte Pipe to improve its processes and offerings in ways that will allow the company to continue serving the plumbing industry and our community for the next 100 years,” CEO Hooper Hardison says.

The idling of the old foundry in Charlotte’s Uptown neighborhood also has created a property development opportunity for Charlotte Pipe.

In late 2022, the company engaged Dallas-based real estate services and investment company CBRE to market its 55-acre parcel of land in Charlotte, likely after a sizable industrial dismantling and



demolition project takes place.

The now up-and-running Oakboro foundry and the \$80 million PVC pipe production project underway in Kansas have Charlotte Pipe poised for a future that will allow it to remain one of the largest

makers of cast iron and plastic pipe and fittings in the U.S. **SR**

The author is senior editor with the Recycling Today Media Group and can be contacted at btaylor@gie.net.



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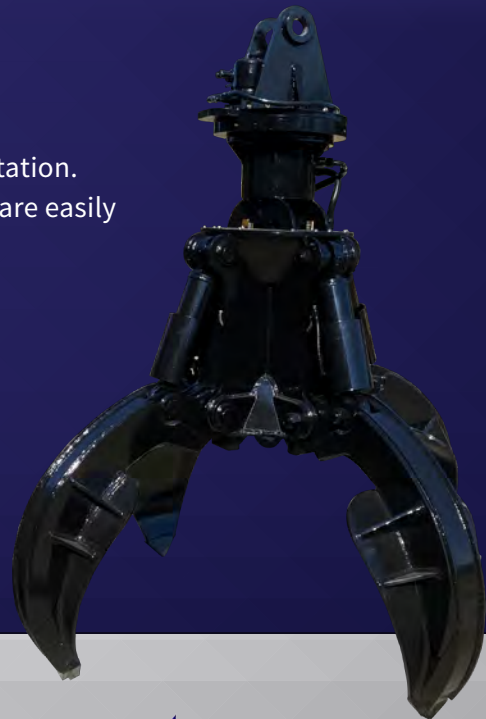


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# LOST MOMENTUM?

Nickel, the once-promised metal underpinned by strong EV battery demand and expanding stainless steel consumption, had a weak run on the LME last year. What happened to the dream metal? **BY SHOHINI NATH**

**N**ickel prices slipped nearly 50 percent this year, and though the London Metal Exchange (LME) three-month contract had a strong start last year at more than \$30,000 per metric ton, it reached \$16,500 per metric ton toward the start of December 2023. The contract fell to a low of roughly \$16,000 per metric ton in November, which means in less than a year, it shed \$13,355 per metric ton.

## HOLDING OUT FOR RECOVERY

Market participants are holding out for recovery in the second quarter of 2024, given demand for electric vehicles (EVs) could boost Class II nickel use. However, concerns also are being raised on the supply side.

The December 2023 outlook for LME nickel remained soft after the three-month contract fell 7.6 percent in November. Moreover, any anticipated rally could fade once the shorts are flushed out, says Edward Meir, president of Commodity Research Group at London-based Marex.

Nickel's fundamentals remain daunting, Meir notes, as the market was in a 23,900 metric ton surplus in September 2023, following an excess of 15,300 metric tons the previous month.

During the first nine months of last year, excess supply totaled 155,000 metric tons, among its widest surpluses.

If nickel is to have any hope going into this year, it will have to come from supply cutbacks. But for the market to experience that, prices could have to move lower, Meir says.

## IS USE FADING?

Nickel consumption faces headwinds in light of the slowdown in China's EV battery industry and the shift toward lithium iron phosphate (LFP) batteries, which do not use cobalt or nickel. As a result, the market is burdened with increasing amounts of Class II nickel-based units that will struggle to find homes, at least in the first quarter of this year, especially if Western markets remain closed to Indonesian facilities thought to be owned by the Chinese.

NICKEL PRICE FORECAST (\$/METRIC TON)	2023 EST.	2024 EST.	2025 EST.
World Bank	22,350	20,000	20,500
ING Nickel Forecast Averages	21,927	18,925	19,500

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At roughly 70 percent, the stainless steel sector consumes most nickel. Despite the expected demand from EV battery makers, only 3 percent of nickel is used in battery production.

In 2023, expected nickel use in the battery sector was slower at 4 percent annual growth. The introduction of nonnickel batteries, coupled with China's shift from battery-EVs to plug-in-hybrid EVs despite record EV sales, has been a concern for nickel battery manufacturers.

### 2023 PRICE TRENDS

Several factors have conspired to drive nickel prices downward, and the metal does not seem to be out of the woods yet. Toward the end of July 2023, nickel underperformed as the surplus grew. A weak global macroeconomic environment and elevated inflation made things worse in the second half of the year.

Indonesia's expanding output kept the

nickel surplus high even at the end of the third quarter and continued to do so.

China's lower-than-expected market recovery after the prolonged effects of COVID-19 lockdowns has been the key concern for nickel consumption as the country accounts for more than half the global amount. Its factory activities contracted in October of last year, leaving the global economy high and dry.

Before its popularity faded last year, demand for nickel looked promising in 2022, with a spurt in e-mobility sparked by the transition toward a greener economy. Nickel demand was projected to soar, and mined and refined nickel production started to increase. Expanded nickel production capacities in Indonesia and the Philippines, especially for Class II nickel, were supposed to meet growing demand.

### THE INDONESIA EFFECT

Nickel is the center of Indonesia's efforts

to become an EV battery hub and, since the country's ban on ore exports in 2020, Chinese firms have aggressively invested in the Indonesian nickel market.

Chinese funding continues to pour into Indonesia to tap into the country's nickel reserve, which was close to reaching 55 percent of the global supply toward the end of 2023. Western investors are cautious about Indonesian nickel, though.

Concerns around environmental issues have been unfolding for some time. The Indonesian government has issued several suspension orders, and new mining quotas have been kept on hold. Authorities are investigating illegal mining and ore exports.

The tug-of-war between roaring production of EVs and massive emission cuts will last for a few years without a clear winner. On one end, economies are trying to reduce their carbon footprints, while exhaustive nickel mining and



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smelting for growing use in lithium-ion batteries have become necessary. Accelerating the energy transition has harmful environmental impacts.

Moreover, safety issues at Indonesian nickel smelters have raised questions and concerns, while labor unrest hinted at dampening output. Production in Indonesia and the Philippines has remained high, with Indonesia's output rising to 1.58 million metric tons in 2022, accounting for nearly half the global production.

Even with trade and pollution challenges, nickel production plans haven't stalled in Indonesia as it ramps up efforts:

- Korea's LX International and STX each have acquired a stake in an Indonesian nickel mine.
- Vale Indonesia partnered with China's Zhejiang Huayou Cobalt and Huali Nickel Indonesia to build a nickel processing plant on the island of Sulawesi.
- In August of last year, Indonesia and

China partnered to form an EV supply chain with the Indonesian Chamber of Commerce, seeking investments from Chinese mining companies.

- In March of last year, Jindal Stainless acquired a 49 percent stake in an Indonesia-based nickel pig iron company to strengthen its raw material supply chain.
- Also in March of last year, POSCO Holdings of South Korea announced a memorandum of understanding with China's Ningbo Richin Industry for nickel production in Indonesia.

**MARKET IMBALANCES?**

The first and foremost factor pressurizing nickel prices is the surplus that the market is grappling with. As of October 2023, LME warehouse Class I nickel volumes have dropped by 9 percent since January, underlining the surplus situation with stocks of around 44,784 metric tons as of

Oct. 31. Nickel warehouse stocks remain historically low, with 2015 volumes above 430,000 metric tons, while in 2020 they came down to the 240,000-to-250,000-metric-ton range.

Global refined nickel output is forecast to rise by 6 percent annually by 2025, Australia's Resources and energy quarterly (REQ) report released Oct. 3, 2023, indicates. Meanwhile, mined nickel is expected to rise at an annualized rate of 5.8 percent until 2025, reaching 3.8 million metric tons.

Global nickel surplus expanded last September to 23,900 metric tons from 14,200 metric tons in September 2022, according to data from the International Nickel Study Group (INSG), Lisbon.

In August 2023, the surplus was 15,300 metric tons. Between January and September of last year, the surplus was 155,000 metric tons compared with 60,500 metric tons in the nine-month

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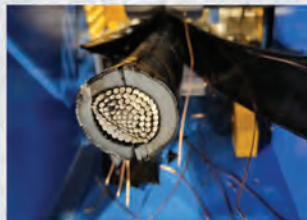
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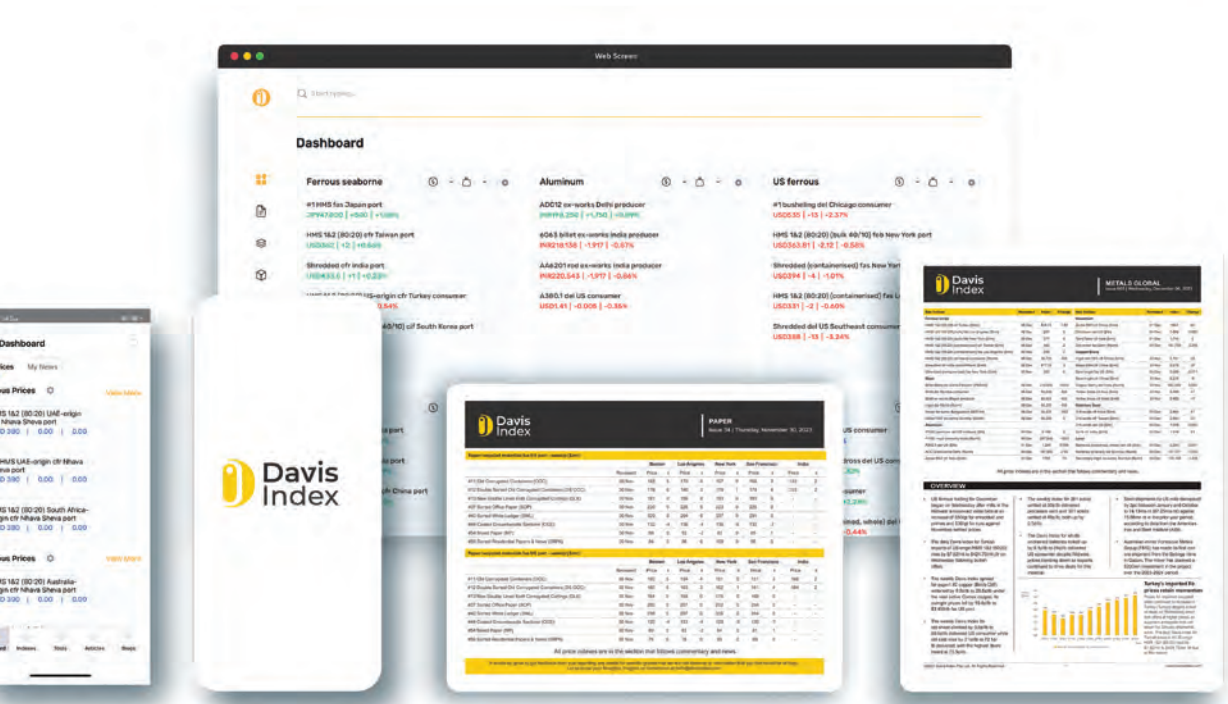


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period the previous year, Meir notes.

The Indonesian output surge of the last few years is more of a tsunami as opposed to an ordinary ramp-up, he adds.

INSG's data pegs 31 percent more output annually in the first seven months of 2023, spurred on by a whopping 85 percent jump in intermediate products, such as nickel pig iron, matte and sulfates.

Exports of Indonesian sulfates began in May 2023 and grew to 25,000 metric tons as of November, accounting for 38 percent of total arrivals into China.

Overall nickel supply is projected to grow by 12 percent in 2023 and by another 9 percent in 2024, according to INSG.

Nornickel, the Russian mining giant, has said potential supply risks could result from the announcement that the high-grade nickel saprolite ore reserves in Indonesia are likely to be exhausted within six years. The nickel market has not yet grasped this potential supply risk

amid the high production of Class II nickel available at a discounted price.

In addition, several miners are left with shrinking margins, and Nornickel's forecast deems current nickel prices unsustainable. However, the nickel surplus could exceed 190,000 metric tons this year with high production of low-grade nickel thanks to China and Indonesia. Other regions will see a relatively flat production trend.

This year, the stainless sector is forecast to increase its nickel use by

7 percent annually, while moderate growth of 6 percent and 10 percent is predicted for the alloys and superalloys, respectively, Nornickel says. Nickel demand from the EV sector could rise more than 25 percent in 2024 owing to restocking cycle in the battery supply chain.

**PRODUCTION ESTIMATES**

Nickel mining giants around the world, including Glencore, First Quantum, Eramet and Vale, have slashed their nickel production guidance for 2023. Vale

NICKEL	2022	2023 E	2024 E
Consumption (million metric tons)	3.02 (+5%)	3.13 (+4%)	3.42 (+9%)
Supply (million metric tons)	3.13 (+16%)	3.42 (+9%)	3.62 (+6%)
Market Balance (kilotons)	113	250	190
Low-Grade Nickel Balance (kilotons)	145	200	140
High-Grade Nickel Balance (kilotons)	-32	50+	50+

Source: Nornickel

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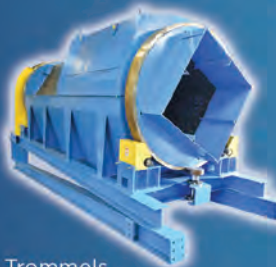
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## NICKEL

expects to produce 160,000 to 175,000 metric tons, down from 179,000 metric tons produced in 2022. First Quantum dropped its expected production to 25,000 to 29,000 metric tons from the 28,000 to 38,000 metric tons. Glencore has revised its guidance to 102,000 metric tons from 112,000 metric tons. However, Australia's South32 has maintained its nickel guidance despite weak September 2023 volumes. French mining company Eramet also lowered its nickel output target for 2023 by 5 million wet metric tons to 30 million wet metric tons.

### IMPACT ON RECYCLED STAINLESS STEEL

The LME nickel prices continue to influence prices for recycled stainless steel despite the LME nickel chaos that happened in March 2022. Last year was a rather squeamish one for recycled nickel grades. U.S. recycled stainless steel prices have moved at a severely slow pace since July 2023.

In January 2023, prices for 304 (18-8) peaked at 69.8 cents per pound and found their lowest point in June at 53.4 cents per pound. From August to September of last year, prices moved up to 57.5 cents per pound, buoyed by increasing export prices and a slight improvement in LME nickel prices, but have since remained range bound between 55 cents and 56 cents per pound. Since January of last year, prices dropped by more than 17 percent for the 304 solids grade.

Export demand gave support to U.S. recyclers mostly in 2023, with higher demand coming from Mexico, India and Taiwan. The U.S. Department of Commerce reported that 267,000 metric tons of stainless steel were shipped from the country in the first half of last year, which was an increase of 78 percent from the previous year.

Recycled stainless steel prices remained rangebound across two months as of early December 2023, and the market is projected to be bearish, with a small recovery this January.

Several factors will go into the pricing outlook, with LME nickel on top followed by demand. The latter has been severely weak in the second and third quarters of 2023, and the final quarter of the year historically has been soft. The market remains uncertain regarding the whereabouts of recycled stainless steel demand in the first quarter of this year, but a rebound is expected at least by the second quarter.

China continues to slash its stainless steel production to align with environmental goals, while recycled stainless steel use has dropped given the availability of cheaper nickel pig iron (NPI). In Indonesia, however, putting an end to NPI projects is being considered, which could invite additional export duties in a bid to incentivize local downstream markets.

Thirty-one major steel mills in China planned to produce 10 percent less stainless in November of last year versus October, Meir says. With Western stainless demand also flagging, this will not help the nickel price outlook much over the short term.

For what it's worth, INSG has refined usage increasing by 5.9 percent annually through September 2023. But 16 percent of that growth is in China, while demand in the rest of the world already is down 8.4 percent year over year. **SF**

Shohini Nath is a stainless steel analyst and editor at Davis Index and can be reached at [shohini.nath@davisindex.com](mailto:shohini.nath@davisindex.com).



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# OBSTACLE COURSE

Turkey is struggling with steel trade barriers and high costs. What does the future hold for this benchmark market?

BY OLGA YAKYMCHUK



A muted global steel product market negatively affected steel exports from Turkey, one of the major players in international trade, through most of last year. On top of that, the country is struggling with many restrictions, competition and geopolitics.

## EXPORTS DOWN

From January through September of last year, Turkey exported 2.52 million metric tons of rebar, down 45 percent compared with the 4.55 million metric tons it exported in the prior-year period, according to the Turkish statistical source SteelData.





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The sharp decline was caused by weaker demand from foreign buyers and the decreasing competitiveness of Turkish steelmakers because of their rising production costs.

Turkish long steel producers must compete in local and international markets with squeezed margins, negatively affecting the country's export sales. New exporters like Algeria, Egypt, the United Arab Emirates and Saudi Arabia, which have captured the market with aggressive offers, have put Turkish steel exports under additional pressure.

Algeria and Egypt, particularly, are active because they are not subject to anti-dumping or countervailing duty measures as of mid-December 2023. In contrast, Turkish rebar sales to the U.S. have been severely hit by Section 232 tariffs of about 25 percent and individual anti-dumping duties levied on several Turkish mills.

Sales to the European Union have been limited by steel safeguard quotas. Turkey's rebar exports to the region dropped 69 percent from 365,000 metric tons to 114,000 metric tons in the first nine months of 2023, and Turkey dropped to the fourth-largest rebar supplier to the EU behind Egypt, Norway and China.

From January through September of last year, the main destinations for Turkish rebar were Israel and Yemen. However, exports to Israel decreased 25 percent to 591,000 metric tons during the first nine months of 2023 compared with 786,000 metric tons in the same time frame in 2022. While rebar exports increased by 3 percent to 553,000 metric tons from 538,000 metric tons to Yemen during that period, the prospects for exports to these countries have dimmed given the ongoing Israel-Hamas war and Yemen's possible involvement.

### ENUMERATING THE CHALLENGES

Another upcoming challenge for Turkey is having to adapt to the EU's ban on imports of steel products rolled from Russian semis, which will come into force April 1. It is expected to be difficult for Turkish mills to completely replace Russian steel inputs with steel from alternative sources. Turkish companies imported 2.62 million metric tons of steel billet from January through September of last year compared with the 1.88 million metric tons in the prior-year period, including 1.2 million metric tons of semis from Russia.

Turkey's flat product exports suffer from competitive pricing from China, India and South Korea. As a result, the country exported 923,000 metric tons of hot-rolled coils between January and September 2023, down 36 percent from 1.44 million metric tons in the same time frame in 2022, SteelData indicates.



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In fact, the Turkish flat steel industry sees competition from imported products within its local market, too, with China, South Korea, Russia and Japan being the major suppliers. Turkey's flat steel imports from China increased by 60 percent to 2.53 million metric tons, from South Korea by 50 percent to 1.11 million metric tons and from Japan by 76 percent to 550,000 metric tons,

while flat steel imports from Russia dropped by 32 percent to 837,000 metric tons. The Turkish government initiated an anti-dumping probe Oct. 31, 2023, into hot-rolled coils imports from Russia, China, Japan and India given the sharp growth of imports in recent months.

High energy costs also have affected steel output. Turkey increased prices for electricity and natural gas in 2022 and 2023, with the most recent hike as of press time being 20 percent effective Oct. 1, 2023.

Most Turkish mills are electric arc furnaces, so they are under pressure and have reduced production. Crude steel output in the country was 24.4 million metric tons from January through September 2023, 10 percent less than the 27.25 million metric tons produced during that period in 2022. The country's ferrous scrap consumption also was reduced by 10 percent to 20.28 metric

tons from 22.55 metric tons, according to SteelData. This figure included 14.07 million metric tons of imported material and 6.21 million metric tons of domestic material.

Finally, reconstruction began in the Iskenderun region of Turkey after earthquakes that occurred in February of last year; however, activity is limited and much lower than initially anticipated at the beginning of last year. The construction sector is muted in Turkey amid increasing interest rates, which already had reached 30 percent last September, and inflation and permanent currency depreciation are other negative factors. It remains to be seen whether the construction sector in Turkey will pick up pace into 2024. **SR**

Olga Yakymchuk is senior ferrous analyst at Davis Index and can be reached at [olga.yakymchuk@davisindex.com](mailto:olga.yakymchuk@davisindex.com).

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# SAFEGUARDING STEEL



Latin America often receives large imports of steel from China, which has affected the region's steelmakers adversely. Will tariffs on Chinese steel help?

BY IVAN LECHUGA AND ENRIQUE ROSEL

**C**hina remains the primary source of extra-regional imported steel, representing 29 percent of the total product imported by Latin American countries. This has led to 63 percent of anti-dumping actions initiated in Latin America specifically targeted against China.

Alejandro Wagner, executive director of Sao Paulo-based Alacero, explained at a recent summit that the Latin American steel sector has a significant concern as Asian countries have incentives to export their material, creating distortions in international competition.

From January through October of last year, China produced 874.7 million metric tons of crude steel, more than double the combined production of the next five countries, which was 376 million metric tons, according to the latest report available at press time from the World Steel Association, Brussels.

“Today, a significant portion of the steel consumed in the region, both directly and indirectly, comes from that country under conditions that are not of a fair market, replacing quality jobs and impacting the environment,” Wagner said of Chinese imports at the summit.

## TARIFFS AS A LAST MEASURE

Mexico and the rest of Latin America want to preserve hard-fought growth by protecting domestic industries.

On Aug. 16, 2023, Mexico imposed tariffs for steel and aluminum imports ranging from 5 percent to 25 percent for 392 articles to address nonmarket overcapacity and provide domestic sectors with fair market conditions and clarity. The temporary tariffs, applicable until July 31, 2025, affect countries like China, with which Mexico does not have a free-trade agreement.

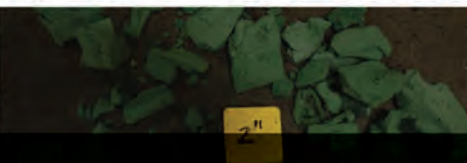
The Office of the U.S. Trade Representative lauded the measure, with spokesperson Sam Michel saying





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# Mexico and the rest of Latin America want to preserve hard-fought growth by protecting their domestic industries.”

Mexico’s efforts would help to address “global nonmarket excess capacity” in the steel sector.”

These new tariffs were added to the existing 10 percent to 25 percent rates on automotive and auto parts imports. Mexico’s automotive sector has been benefiting from the recent nearshoring trend, and it could provide the country with an annual gross domestic product (GDP) growth rate of 3.7 percent after growing by 2.7 percent on average every

year during the past two decades.

The Mexican secretary of economy eliminated the countervailing duty of 45 cents per kilogram (\$450 per metric ton) on galvanized steel hexagonal mesh imports originating in China. Mexico introduced 15 percent import tariffs for several steel products in 2021 that were renewed in 2022.

## **BRAZIL**

Brazil also reinstated tariffs in the

9.6 percent to 12.8 percent range on 12 steel products last September at the urging of local associations that included the Brazilian Steel Institute (Aco Brasil), which noted Mexico was doing the same.

The measure by Brazil’s Ministry of Development, Industry, Commerce and Services also is meant to level the playing field for domestic consumers. Brazil reduced the rates in 2021 and 2022 yet reconsidered its position in 2023.

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**CHILE**

Recently, Chile's steelworkers' union demanded the government increase tariffs on Chinese steel imports.

Chilean unions say the country's economic downturn is because of unequal

conditions in the face of Chinese steel imports as that country's labor costs are cheaper, resulting in a more affordable final product.

For this reason, the unions proposed Gabriel Boric's administration enact

measures to protect jobs and domestic production by imposing tariffs on steel imports from China. However, these tariffs have yet come into effect as of press time.

**A REVERSE EFFECT**

Some Latin American countries also have been subject to scrutiny and a call for tariffs given a jump in their steel exports. Earlier this year, the U.S. steel industry's stakeholders pressured President Joe Biden into reinstating 25 percent steel tariffs under Section 232, which restricts imports in the interest of national security, defined as economic security and military readiness, after what they claimed was a "surge in imports of Mexican steel."

The rates were implemented during the Donald Trump administration then removed in 2019 after an agreement was reached with Mexico.

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**TARIFFS AND RECYCLED MATERIAL**

Tariffs can elevate the price of domestic recycled ferrous material as importing steel becomes more expensive.

In this case, according to GLE Scrap Metal, with locations in Michigan and Florida, metal processors could see domestic companies asking for material instead of importing it, increasing demand, production and pricing.

On the other hand, if a country receives tariffs on its metals exports, an oversupply of material could occur if domestic traders find it more expensive to move material abroad, driving the price of domestically generated recycled material downward.

**THE QUESTION ABOUT CHINA**

China has not been impassive as tariffs have been levied on its steel products worldwide. It has imposed retaliatory

tariffs (which are considered as such by the World Trade Organization) against the U.S., claiming the latter has been individualist and protectionist.

Last August, the Chinese Minister of

“

Between January and April of last year, steel exports from China reached 25.65 million metric tons, a 24.5 percent increase compared with 2022.”

Commerce demanded the United States eliminate tariffs against its steel and aluminum exports.

To put things in perspective, however, China witnessed a significant uptick in steel exports during April 2023, hitting a record-breaking 7.97 million metric tons—the highest monthly export volume since December 2016. Between January and April of last year, steel exports from China reached 25.65 million metric tons, a 24.5 percent increase compared with 2022.

This data, reported by the Chinese General Administration of Customs, precedes the anticipated cancellation of export rebates, effective May 1, 2023. **SR**

Davis Index’s Ivan Lechuga is a ferrous analyst, and Enrique Rosel is a reporter for the Latin America region. Contact them at [ivan.lechuga@davisindex.com](mailto:ivan.lechuga@davisindex.com) and [enrique.rosel@davisindex.com](mailto:enrique.rosel@davisindex.com).

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# A COMPACT CARBON FOOTPRINT

Wieland's recent investments expand its production of low-carbon copper.

BY DEANNE TOTO





Wieland's Shelbyville, Kentucky, plant

“  
We see North America as an extremely attractive market. These markets are in need of more and more copper as we move forward toward the sustainable future. We are seeing rapid movements toward green energy and the electrification of vehicles.”

– Matt Bedingfield,  
president of recycling,  
Wieland North America

**W**ieland Group is the world's leading supplier of semifinished products made from copper and copper alloys. The 200-plus-year-old company established in 1820 in Ulm, Germany, has expanded to 80 locations across Europe, North America and Asia and continues its growth, investing in its operations in response to the megatrends of globalization, urbanization, digitization and decarbonization that require copper.

Wieland is increasing its recycling and melting capacity in Europe with an 80 million euros (\$85.8 million) investment at its Vöhringen, Germany, facility, which was announced in fall 2022. It says the approximately 80,000 metric tons of additional annual recycling capacity “represents a significant next step in the company's strategy to expand its recycling capabilities worldwide.”

That investment joins another major investment in Shelbyville, Kentucky, which broke ground in June of 2022. The 78-acre site will be able to produce approximately 85 million pounds of low-carbon copper annually, with room for significant expansion.

The recycled content in Wieland products will reach an average of 80 percent globally after these facilities come online, the company says, but it has a larger number it's working toward.

Matt Bedingfield, president of recycling, Wieland North America, says the company has committed to 90 percent recycled content in its products by

2030, and its investments in the U.S. will play a significant role in achieving that.

#### EXPANDING IN AMERICA

Bedingfield references Wieland's long history of operating in the U.S. but notes its purchase of Global Brass and Copper (GBC) in 2019 took it to a new level.

GBC was a converter, fabricator, processor and distributor of specialized nonferrous products, including a range of sheet, strip, foil, rod, tube and fabricated metal component products. The company operated under the Olin Brass, Chase Brass and A.J. Oster brand names in North America and specialized in processing copper and copper alloys. It used scrap, virgin metals and other refined metals to melt, cast, roll, draw, extrude, weld and stamp finished and semifinished alloy products.

Bedingfield says the acquisition enabled Wieland to get its rolling, extruding and distribution capabilities in the U.S. to match those in Europe.

Since the GBC acquisition, Wieland has acquired 13 other companies in the U.S. Most recently, it purchased Farmers Copper Ltd., a copper, brass and bronze alloys supplier founded in 1980 with two operating sites in San Antonio and Texas City, Texas, that serve the aerospace, marine, defense, oil and gas and electrical market segments. It also recently purchased Small Tube Products, a principal producer of small-diameter and thin-wall specialty tubing made of copper, copper alloys and aluminum headquartered in Duncansville, Pennsylvania. Its precision



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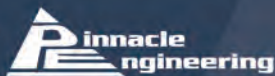
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“We see North America as an extremely attractive market,” Bedingfield says, noting Wieland supports a strong manufacturing base in the country’s automotive, aerospace, building construction and HVAC sectors. “These markets are in need of more and more copper as we move forward toward the sustainable future. We are seeing rapid movements toward green energy and the electrification of vehicles.”

Following Wieland’s announcement of its Shelbyville investment, Bedingfield said, “This is viewed [as being] greater than another standard business investment.” Instead, he said it’s seen as a “foundational long-term commitment” to its customers, its employees and the planet.

Bedingfield mentions how the U.S. secondary copper refining market has disappeared over the last couple decades. “It’s led to the U.S. needing to export about 50 percent of our scrap, which is equal to roughly 1 million tons,” he says. In addition to exporting nearly half of the copper scrap generated in the country, the U.S. imports 1 million tons of refined copper annually.

“It doesn’t make sense,” Bedingfield adds. “It’s the least sustainable tactic. Now that technology has caught up with today’s environmental regulations and restrictions, we believe it’s time to bring [secondary copper refining] back.”

### SERVING CUSTOMERS

Bedingfield says Wieland’s recent investments are designed to help its customers close the loop by managing their scrap and supplying them with low-carbon-footprint products.

Wieland is working to establish closed-loop relationships with its customers. “We have increased the amount of customer scrap that we’re taking back,” he says. “We’re looking forward to doing

### LOCATION, LOCATION, LOCATION

Several factors influenced Wieland’s selection of Shelbyville, Kentucky, as the location for its recycling and refining facility, according to Matt Bedingfield, president of recycling, Wieland North America. “The obvious one is the convergence of [Interstate]-65, I-64 [and] I-71,” he says. “With that many interstate systems coming together, it makes it a logistics hub.”

The highway access also means scrap generators are drawn to the area. “We’ve seen a manufacturing boom and investment in Kentucky, Indiana, Ohio [and] Tennessee,” he says. “So, that’s well within our radius of being able to serve, collect scrap from and close the loop with them.”

Bedingfield adds that state and local government and utilities have worked closely with Wieland to help make the business case for the plant. “So far, that support has done nothing but grow,” he says. “We couldn’t be happier with the selection that we’ve made.”

Shelbyville will employ 70 to 75 people and is leveraging automation so its employees are working smarter, not harder. It also is paying competitive wages and providing a safe work environment, Bedingfield says, making Wieland a company people want to work for.



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**RED METALS CONSUMER PROFILE**



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"Between our Granite City facility, formerly Total Metal Recycling, and our new operation in Shelbyville, we're going to be able to accept virtually any scrap from our customers, regardless of whether we sold it to them."

Total Metal Recycling was formed in 1993 to provide toll processing of scrap wire. It later added purchasing and recycling of copper scrap, electronic scrap, lead, tin, zinc, aluminum, nickel, cobalt, titanium, residues and other recyclables. It processed approximately 100,000 tons of scrap per year when Wieland purchased the company in late April 2022.

At the time, Wieland said Total Metal Recycling "perfectly integrates" into its North American operations given its location near Wieland's foundry in East Alton, Illinois, as well as its plant in Shelbyville.

That plant will allow Wieland to supply "100 percent-recycled-content, extremely-low-carbon-footprint" metal with a purity of "99.99 percent and higher" to its customers, Bedingfield says. "This should enable many applications that previously couldn't prioritize recycled content to begin using this material in their processes and thereby lower their carbon footprint, as well."

**PROCURING OBSOLETE SCRAP**

In addition to creating closed loops with its industrial customers, Bedingfield says Wieland has centralized scrap procurement in the U.S. through the recycling group and Vice President of Recycling Procurement Sebastian Perron.

Foundry grades the company traditionally purchases include brass shells and other brass scrap; No. 1 copper, including chops and bare bright; and No. 2 copper.

For Shelbyville, Wieland will purchase scrap with 85 percent copper content or higher, Bedingfield says, including a birch/cliff-type product with copper content ranging from 92 percent to 96 percent to a light copper package to No. 3 copper. "Then we're looking to expand that mix into things like enameled wire," he continues. "With Total Metal Recycling, we're able to take virtually anything."

Wieland is targeting early 2024 to start operations in Shelbyville. During the ramp-up phase, the company will be adjusting its assets and processes, Bedingfield says.

"Following that, we'll start introducing variation into the product mix and get more creative in our mixes to produce the high-purity ingot."

Wieland has been operating a pilot program to buy and sort



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MODEL	WEIGHT	REACH	CLAM SHELL	GRAPPLE
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90	215,000 lbs	88'	5 - 7 yards	5 - 6 yards
95	295,000 lbs	91'	5 - 7 yards	5 - 7 yards
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small volumes of scrap for Shelbyville. “We’ve been working with some key suppliers that’ll support us during startup, and we’re open to discussions with others interested in supplying the plant,” Bedingfield says. “We’re interested in developing multiple relationships to broaden our options and ensure our suppliers have options, as well.”

Wieland is building traceability into its Shelbyville and Granite City operations.

“We have different scales as we’re shredding and sorting on the front end, so we can understand the recovery,” he says. “We’ll be able to send that information back to our suppliers so they can understand their supply chain and identify potential issues.

“On the back end, we’ll be able to take buttons as it’s coming out of the furnace, so we know the actual chemistry on every single heat. This information will be invaluable to our customers who need to

When you think about the applications of this copper for green energy [and] electrification of vehicles, it’s a no-brainer that it should be low-carbon-footprint, high-recycled-content [copper].”

– Matt Bedingfield, president of recycling, Wieland North America

understand the exact chemistry of our product,” Bedingfield adds.

Wieland plans to purchase approximately 100 million pounds of input material to generate roughly 85 million pounds of 100 percent-recycled-content, fire-refined ingot at Shelbyville. The other 15 million pounds of scrap the company sorts out at Shelbyville either will be used at other Wieland facilities or marketed outside the company.

The average carbon footprint per ton of copper cathode produced is 4.1 tons,

and Bedingfield notes Wieland will produce 0.97 tons of carbon per ton of ingot made in Shelbyville.

“When you think about the applications of this copper for green energy [and] electrification of vehicles, it’s a no-brainer that it should be low-carbon-footprint, high-recycled-content [copper],” he says. “Otherwise, the story doesn’t hang.” **sr**

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

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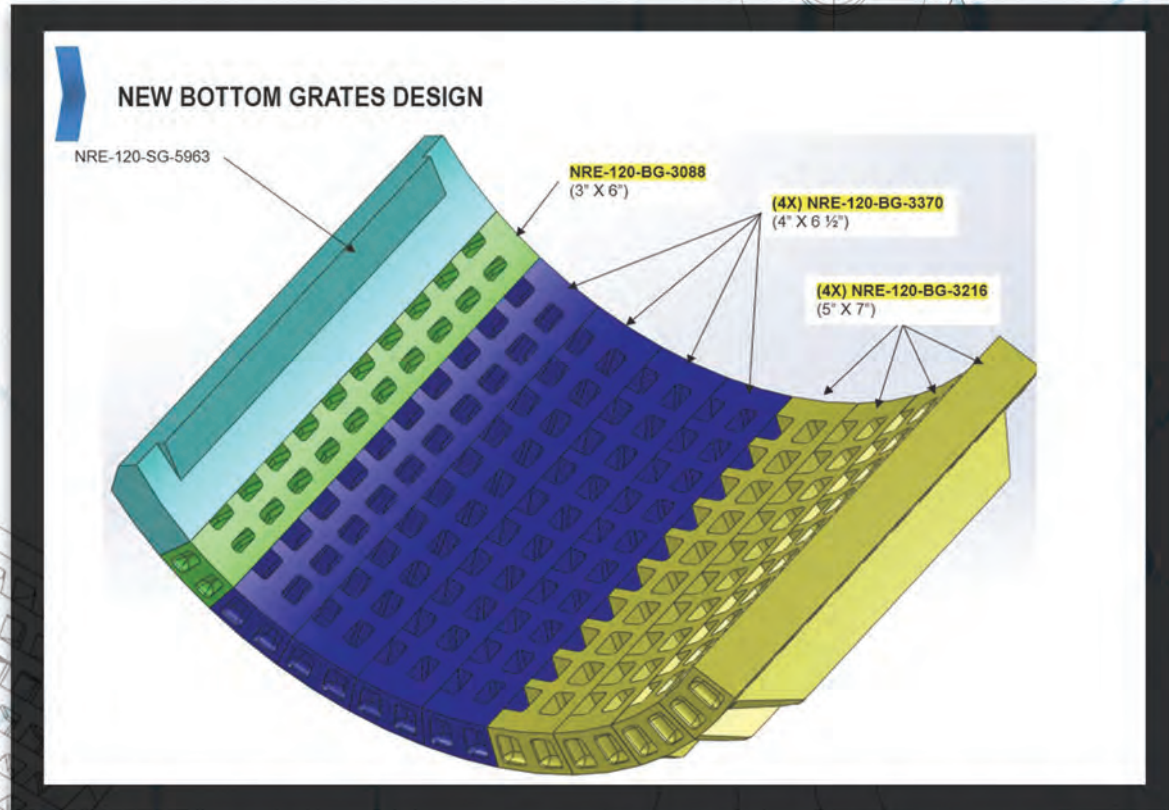
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# DEMAND DOLDRUMS

Aluminum scrap markets in the U.S. and Asia are expected to stay subdued through the first quarter amid demand headwinds.

BY GEORGE DCRUZE  
AND SHILPIKA BAJPAI

**A**luminum scrap markets in the U.S. and Asia have witnessed persistent weakness over the past few months, with any real upside likely only coming toward the end of the first quarter.

While economic issues in China are at the center of demand-side headwinds, importers in India and neighboring countries also are facing their own set of challenges in the aluminum scrap market. In the short term, consumption of Asia's barometer secondary aluminum grade, ADC12, will be driven by industrial and automotive production, along with manufacturing and infrastructure projects in the region.

On the flip side, strong economic growth has supported demand in countries such as India, Japan, Hong Kong and Malaysia. However, the largest consumer of secondary aluminum has been China. Many exporters in these countries have lost up to 40 percent of their usual business after Chinese buyers virtually exited the market.





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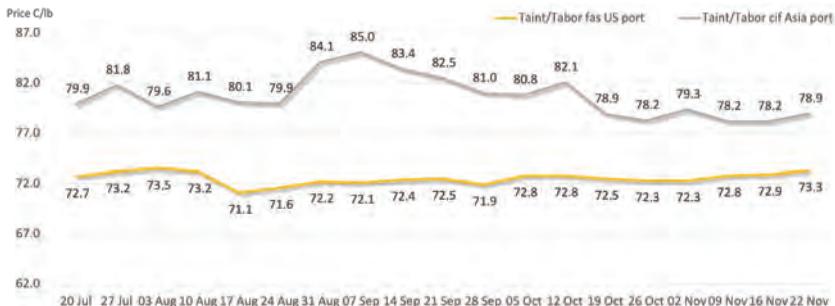


**UNCERTAINTY IN INDIA**

India, the largest consumer of aluminum scrap from the U.S. today, has its own challenges. One recent issue is the 2.5 percent import duty. The Aluminum Association of India, based in Bangalore, is a group of primary aluminum manufacturers that has suggested the government raise this duty to 10 percent to prevent dumping of material that previously would have found homes in China.

However, the secondary aluminum industry remains largely dependent on imported aluminum scrap to feed its furnaces given the unorganized nature of India's recycling system. The Material Recycling Association of India, Mumbai, has advocated for the abolition of the import duty on aluminum scrap as it would bring the primary and secondary aluminum industries to par.

Another issue is that companies within the secondary aluminum industry are



classified as micro, small and medium enterprise firms in India, which lack representation. Hence, most policies regarding aluminum are made with primary aluminum raw materials such as bauxite, alumina and coal in mind, while aluminum scrap has little support.

Lastly, a major headwind importers in India and across Asia more widely continue to face is the strengthening of the U.S. dollar against their currencies. Foreign

exchange losses are something importers work to contain.

**TIGHTENING SUPPLY IN THE U.S.**

The U.S. secondary aluminum market is in a similar circumstance. Exporters are hoping the new year brings new business from Asia and Europe, but chances seem slim. Tightening supply in the domestic market means export yards have to fight harder to get material to ship overseas.

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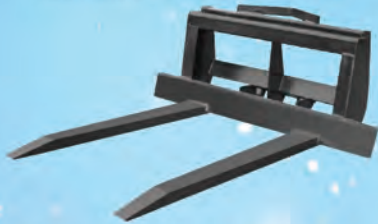




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Notably, the Midwest Transaction Price is at an annual low, making it relatively affordable for buyers to purchase mill-grade recycled material, like 6063 and 6061 extrusions, along with A356 wheels and aluminum-copper radiators.

This advantage might not last past January, once demand for P1020 picks up and drives the Midwest Premium up from its current floor. However, as supply continues to be squeezed into the winter months, aluminum scrap prices will rise and it will become harder to procure large loads of any grade. Hence, many domestic smelters have locked in material through their 2024 annual contracts.

Export demand for U.S. aluminum scrap has declined steadily in recent months in terms of volume, while pricing has been fairly level.

The Davis Index for taint/tabor settled at 73.3 cents per pound, fas (free alongside ship) U.S. port, Nov. 22, 2023, up 6 cents

per pound from 72.7 cents per pound, fas, July 20. In the same period under review, the index for taint/tabor was at \$1,740 per metric ton, cost, insurance and freight (cif) Asia port, down \$21 per metric ton from \$1,761 per metric ton, cif.

The slowdown in trading largely is because many consumers in Asia are in de-stocking mode, having bought up a great deal of material in the second and third quarters of 2023. Many Asian smelters report growing inventories of finished ingots, leading some to slow production. After China, the big buyer of ADC12 is Japan, where buyers are procuring only as much material as required for immediate consumption. As a result, market sentiment gradually turned bearish after July of last year, and shipments trended down.

**DEFYING THE TRENDS**

The shredded aluminum grade zorba 99/3 consistently has defied market trends.



Demand for zorba, a principal grade used in melts to produce ADC12, had been robust throughout the second half of 2023. There were short periods in September where only the zorba grades were being traded healthily, while others such as taint/tabor and tense were rather slow.

Zorba supply tightened toward the end of the year, pushing prices higher. The Davis Index for zorba 99/3 was 79.2 cents per pound, fas U.S. port, Nov. 22, 2023, up 6.8 cents per pound from 72.4 cents per pound, fas, July 20. In the same period, the index for zorba 99/3 rose \$60 per metric ton to \$1,795, cif China port, from \$1,735 per metric ton, cif.

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The U.S. domestic market has seen an inverse trajectory recently. Trading had been very slow since June 2023 as many smelters filled up on material in the first half of the year. Moreover, the United Autoworkers (UAW) strike at the Big Three automakers in Detroit forced smelters to use caution, which made for a quiet secondary aluminum scrap market from July to October. The strike ended after 45 days, giving an unexpected boost to secondary ingot trading. Prices for aluminum scrap and its end product, ingots, had been moving up steadily throughout this past November.

Aluminum scrap supply has seen a seasonal squeeze as colder temperatures hamper collection. The resulting higher prices are pushing up ingot prices as well. The Davis Index for die casting alloy 356.1 was \$1.60 per pound, delivered U.S. consumer, Nov. 22, 2023, down 10.2 cents from \$1.702 per pound, delivered, July

21. Pricing has recovered by 9.2 cents per pound, however, since reaching a low of \$1.508 per pound Oct. 27, 2023, around the peak of the UAW strike.

Apart from China's involvement in the aluminum scrap market, it also is the sole supplier of silicon, an important alloying element for secondary ingots. A recent hike in silicon prices has pressured margins for ingot sellers in the U.S. and Asia.

### A PROMISING OUTLOOK

The medium-to-long-term outlook for secondary aluminum is promising. An important factor is the lightweighting of cars for better fuel efficiency in combustion-engine vehicles and higher range in electric vehicles, translating to bolstered demand for 6063 and 6061 aluminum as well as ADC12.

Research by Troy, Michigan-based global consultancy Ducker Carlisle shows aluminum consumption is expected to

increase by 15.6 percent to 237 kilograms, or 522.5 pounds, per vehicle by 2026 in European cars compared with 207 kilograms, or 456 pounds per vehicle, in 2022. Market participants in Asia are forecasting similar growth.

The clean energy transition also supports aluminum demand. Aluminum is one of the principal metals used for solar panel construction. A recent study by CRU International for the International Aluminum Institute, London, expects solar demand to reach 5.2 million metric tons by 2030. Globally, aluminum demand is forecast to rise 40 percent to 119.5 million metric tons by 2030 compared with 86.2 million metric tons in 2020. **SR**

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# SCOTT NEWELL

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INTERVIEW BY CHRIS VOLOSCHUK

**S**cott Newell says he has been given the nickname “Professor Newell” by those working for his El Paso, Texas-based company, Newell Recycling Equipment LLC (NRE), because of his willingness to share information on shredding technology with customers, colleagues and competitors alike.

The nickname is meant as a lighthearted joke, but Newell’s shredder expertise is anything but. Having spent a lifetime in the scrap industry, his last name is synonymous with the equipment itself.

Scott and his father, Alton Newell, are responsible for the design of the modern automobile shredder. The original Newell shredder, developed by Alton, was named a National Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers in 1994.

Before he started manufacturing shredders, Scott spent the first seven years of his career running a scrap yard in Phoenix.

He estimates shredders bearing the Newell name, which have been installed all over the world, have been in operation for decades.

Throughout his manufacturing career, he’s continued to seek new and better ways to create machines that are increasingly productive and deliver a lower cost per ton processed.

Through NRE, Scott has overseen a continued global expansion of the family business, including into China, where nearly 70 of his shredders are operating. Twenty of those machines have more than 10,000 horsepower and can process more than 1 million tons per year.

“Fortunately, for me, we’ve been able to be very successful,” he says of the company’s global reach. “We’ve had our ups and downs, but we’ve always tried to handle ourselves transparently, and I think that’s allowed us to maintain relationships with people all over the world.”

In the following interview, Newell discusses the evolution of his shredder business and innovations that have pushed the technology forward.

**Q: When did you develop the philosophy of “What’s good for the shredding industry is good for us,” and why is that your mentality?**

**A:** I tell my engineers and my salespeople that anything that’s good for the shredding industry is good for us because if we’re seen as the innovators and the ones leading, then we get some prestige out of that. We get some credibility from that.

Sometimes people will come to me and say, “I can buy your machine and I can buy it cheaper from someone else,” and, I say, ‘Sure, if you want to buy last year’s machine, you can buy it from anybody.’ If you want to buy next year’s machine, you had better buy it from us, because we operate these

machines and we’re constantly looking for improvements, and the evolutionary changes are fantastic. [Sharing information] is good for us.

**Q: What makes for an efficient shredding operation?**

**A:** Let’s say I know it takes 14 kilowatts an hour to shred 1 ton of material to a density of 1.1 in a certain-sized machine, and then I know what the horsepower is, I can [determine] a theoretical capacity. If I use this machine at 100 percent capacity all day long, well, of course, nobody does that—we typically rate our machines at 50 percent or 60 percent of the theoretical capacity—that poses the question, why don’t we run at theoretical capacity?



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industry insiders. Listen to this and other podcasts in the series at [www.RecyclingToday.com/tag/podcasts](http://www.RecyclingToday.com/tag/podcasts).

The short answer is the shredder’s not being fed. If you could put the material in the shredder on a consistent basis, minute by minute, hour by hour, you would come closer to that theoretical capacity. That’s when we started looking at computer controls for the shredder.

Now, in the most modern machines, we have a computer controlling the speed of the feed rollers, the speed of the infeed conveyor, and we’re actually trying to drive the shredder motor closer to the real capacity.

**Q: What are some innovations coming into the shredder space? What might be the next wave in shredding?**

**A:** When I’m looking at the future, it’s more automated separation but also more in the plastic and waste streams. In some of the experiments I’ve been running on ASR [auto shredder residue], by using some very aggressive air separation, we can create an aggregate product ... that can be used to make concrete. ... There are a lot more things to recycle than just the metal, and if we can figure out how to do some of that, we can create some more products.





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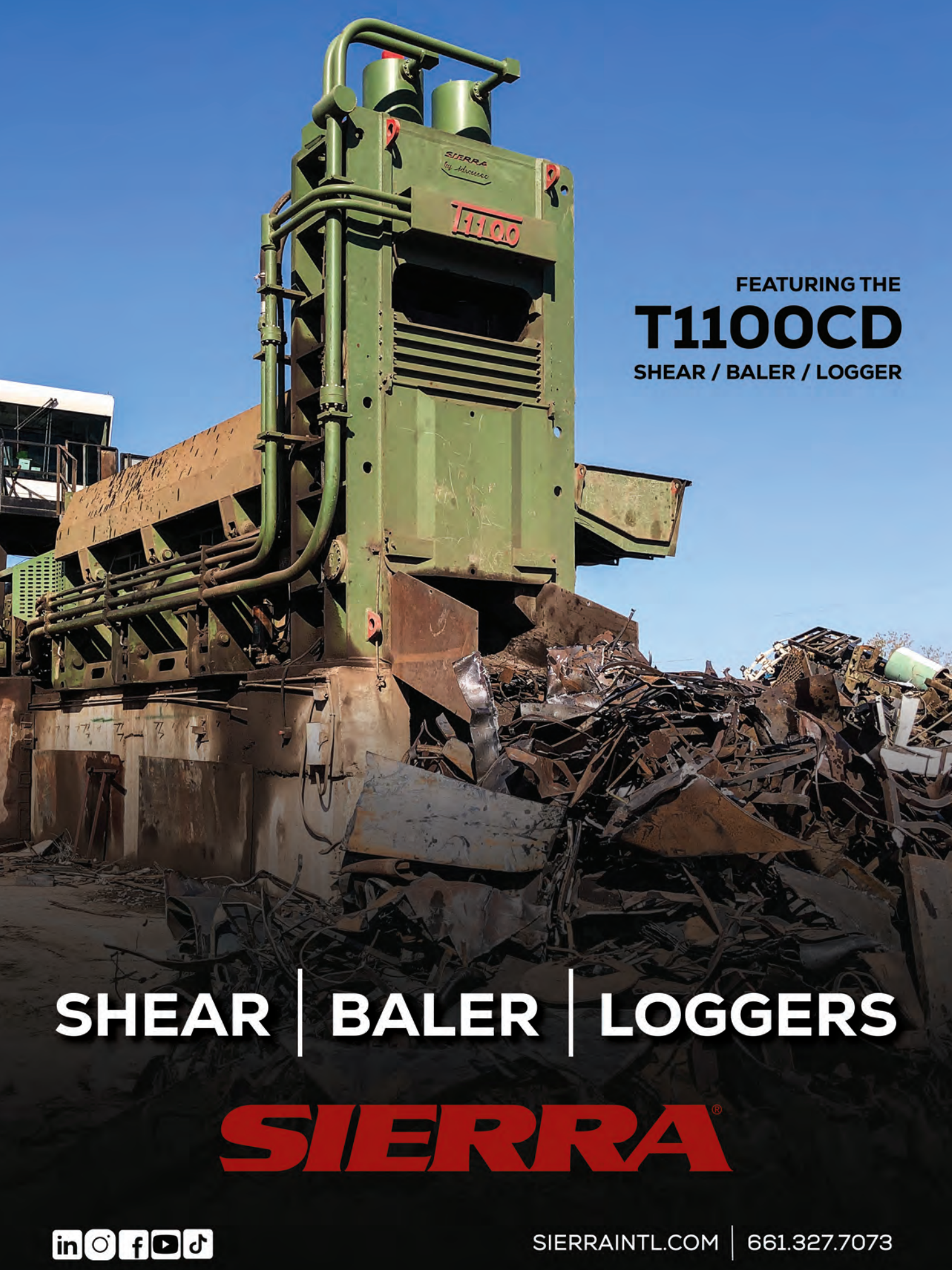


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