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volume 26 number 6
APRIL 2026

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# castings sa

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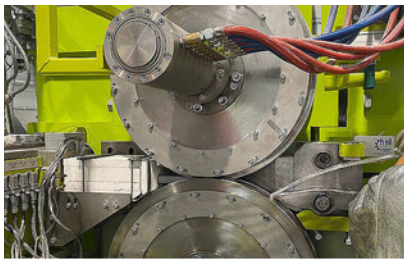

# Have you got a Plan B or even a Plan C?

You might need to start thinking about that if you haven't already. What am I referring to – well economic wars bring into sharp focus supply chain resilience and our industry, although always reliant on supply chain resilience, will be even more under pressure in the coming months.

Around about a month ago I had to write a column similar to this one. The difference was that the world was only roughly three days into the latest conflict between the US, Israel and Iran.

We are now starting to get a clearer picture of what the consequences of this conflict look like for the world.

It must be remembered that the metal foundry industry is fundamentally recognised as the backbone of industrial economies, with some estimates stating that 90% of all manufactured goods have relied on metal castings at some point of the supply chain. Foundries supply essential cast metal components to critical sectors including engineering, power, transportation, mining and manufacturing.

With a large percentage of manufactured goods containing metal castings, this sector provides the necessary structural components, ranging from engine blocks and railroad components to industrial machinery, that thus enable the modern industrial world to function. If the goods do not contain metal, it is more than likely that they have been manufactured on equipment that is largely made up of components that have emanated from a foundry. For food items the same applies. In fact, if you look around you everything you see that has been manufactured or processed has a connection to a foundry.

Foundries are also one of the largest contributors to the manufacturing recycling movement, melting and recasting millions of tons of scrap metal every year to create new durable goods. Moreover, many foundries use sand in their moulding process. These foundries often use, recondition, and reuse sand, which is another form of recycling.

The escalation of conflict between the United States, Iran and Israel is beginning to filter through to the metalcasting sector, with the effects centred on energy, raw materials and logistics rather than direct disruption to foundry operations, for now.

The most immediate pressure point is energy. Oil prices have risen sharply in recent weeks, driven by disruption to flows through the Strait of Hormuz. For foundries, where melting remains the most energy-intensive stage of production, this has translated into higher operating costs across electric induction furnaces, arc furnaces and gas-fired systems.

In regions reliant on imported energy, the increase is feeding through into electricity tariffs and fuel surcharges. At the same time, supply chains for key inputs are tightening. The Gulf region remains a transit route for aluminium, ferroalloys and other industrial materials. Disruptions to shipping have reduced availability and introduced volatility in pricing. Foundries dependent on aluminium casting are already reporting higher premiums, while lead times for alloying elements and imported scrap have begun to extend.

Vessel movements through the Gulf have basically come to a standstill, with some cargo rerouted and insurance costs rising. Longer transit times are affecting delivery schedules, and delays in consumables and raw materials are increasing the need for buffer stock, placing additional strain on working capital.

There is also a knock-on effect from the petrochemical sector. Rising prices for resins and chemical feedstocks are pushing up the cost of binders and coatings used in moulding and coremaking processes.

This adds further cost pressure at a time when margins are already under strain. While demand has not yet shown a marked decline, there is growing concern that sustained energy inflation and broader economic uncertainty could weigh on orders from key sectors such as automotive and capital equipment.

Cost inflation will remain the dominant issue the longer the conflict continues and supply chain instability will intensify. Competitive advantages though may shift toward regions with secure energy access and local raw material supply.

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# The Foseco sustainability toolbox...
## How our products can contribute

No carcinogens in Foseco products for 26 years.

Sustainability is a defining theme of the modern industrial landscape, particularly in energy-intensive industries, such as iron and steel foundries, and is often associated with increased regulation and costs. But strong positive business cases can be made for adopting more sustainable technologies and practices, particularly as they impact energy and resource consumption. This white paper will discuss current best practice available to ferrous foundries that underline the advantages such sustainable business choices can bring to financial, environmental and social performance indicators.

Sustainability is a defining theme of the modern industrial environment. This is most often associated with the need to reduce atmospheric emissions of CO2 in order to mitigate the negative effects of climate change. As important as this undoubtedly is, sustainability is a much broader topic that encompasses a range of environmental, social and economic actions.

Sustainability is also not a simple or linear process: Progress in one area can create challenges in others. For example, goals to reduce poverty and its associated challenges are predicated on economic development through inclusive and sustainable industrialisation. UN Sustainable Development Goals therefore aim to increase manufacturing's contribution to GDP and employment in developing countries.

With 90% of all manufactured goods relying on metal castings, this bodes well for the foundry sector. But it also means that foundries are likely to come under increasing pressure to make their processes as sustainable as possible in order to ensure a sustainable basis for manufacturing growth. And while the industry is a long-standing contributor to ▶

***FEEDEX FEF spot feeders deliver similar performance and benefits as***

sustainability in some areas, most notably through the recycling of scrap iron and steel, in other areas, such as energy and resource efficiency, there is still much room for improvement.

The good news is that there are solutions available today for the most pressing sustainability challenges. In the remainder of this white paper, we will consider some of these under the themes of energy efficiency, resource intensity, pollution control and, finally, Foundry 4.0. We do so, while recognising that financial sustainability is not incompatible with improving environmental sustainability. Indeed, by optimising energy and resource use, the two often go hand in hand.

According to one study, on average, the energy consumed by a foundry shop far exceeds that which it is predicted to use based on theoretical calculations, due to inefficiencies associated with the activities of metal melting and casting. Foseco offers opportunities to improve the energy efficiency of a foundry operation, significantly reduce environmental impact while maintaining the sector's competitiveness in the process. Such opportunities may be grouped into three broad categories: Improving the efficiency of casting processes; reducing rework and recycling via improved melt quality; and reducing process heat loss.

Although discussed separately below, it is important to note that these opportunities are interlinked. Lowering process heat loss will often result in cleaner casting by reducing the occurrence of temperature-related defects.

Meanwhile, reducing rework and recycling through cleaner casting will by default also improve process efficiency, as castings will move more quickly through the cleaning room and consume less energy on the way.

**Improving process efficiency**

Melting accounts for 30% of energy consumption in the foundry. Improving the efficiency of this process is therefore a key concern. This can be achieved in a number of ways. For example, by improving yield, output is maintained but less material is melted. Improving thermal efficiency by reducing heat losses shortens melt times, reducing the energy input required per melt. High thermal efficiency also reduces the energy required to hold a continuous supply of liquid metal of consistent composition and quality for casting, another major area of energy consumption in the foundry.

*traditional FEEDEX feeders, without the fluoride emissions*

Solutions to these challenges take a range of forms. From feeding sleeves and systems to fast dry water-based coatings, from cleaner casting to filters, from insulating lining systems to binders and equipment, Foseco has a solution.

Foseco has developed a range of feeding products designed to be environmentally friendly

Improving yield not only impacts the energy efficiency of the process; it also improves resource efficiency, the second critical element in foundry sustainability, when you consider that new steel products contain only 30% recycled steel.

The abovementioned technologies for optimised pouring are again important here in that they lower the occurrence of casting defects and thus the need to clean casts, as well as reducing non-productive or wasted metal. But so too are technologies that extend meantime between replacement of components and consumables.

Longer equipment lifecycles reduce both the amount of waste produced by foundries (and therefore, contribute to the aim of zero waste), as well the overall quantity of raw material consumed by equipment and consumables suppliers, such as Foseco.

There are also health and safety benefits gained by reducing the need for maintenance and so limiting the exposure of workers to man-machine interactions.

**No carcinogens in Foseco products**

Foseco has developed a range of feeding products designed to be environmentally friendly, specifically focusing on being fluoride-free and low-VOC (Volatile Organic Compounds), which directly addresses the elimination of hazardous emissions in foundries. While the provided search results emphasise Fluoride Emission Free (FEF) technology to reduce environmental impact and lower disposal costs, they also indicate that these products are formulated to be low-emission.

Foseco South Africa celebrates its 26th Year of being refractory ceramic fibers free in its feeding products. Foseco remains one of the only suppliers in Africa to supply a carcinogenic free feeder sleeve. Significant investment has enabled Foseco to be able to do this, as well as moral obligation globally.

Foseco prides themselves for removing the harmful RCFs from its feeder sleeves which have been classified as carcinogenic in the late nineties.

**The Foseco sustainability toolbox… How our products can contribute**

Sustainability has always been at the heart of our business. Our technology has helped our customers improve their processes and their environmental footprint. Advancements in material science, pioneered by Vesuvius, have helped to ensure that the amount of refractory material required to cast one ton of steel has reduced by 80% in the past 60 years.

Concentrated inoculants contain an increased quantity of the active ingredient and reduced silicon, providing similar performance to traditional recipes, but in smaller doses.

**FEEDEX VAK** self-centring feeder sleeves offer minimum footprint and contact area, optimum mould sand compaction, and constant feeder volume for improved yield, easy knock-off, and minimum fettling work.

**FEEDEX FEF** spot feeders deliver similar performance and benefits as traditional FEEDEX feeders without the fluoride emissions.

***FEEDEX VAK self-centring feeder sleeves offer minimum footprint and contact area, optimum mould sand compaction, and constant feeder volume for improved yield, easy knock-off, and minimum fettling work***

***A demonstration of a Feedex sleeve burning***

**The Intelligent Casting Unit (ICU)** automates the coating process to deliver a consistent layer thickness and ensure optimised coating performance.

**HOLLOTEX** shroud protects pouring metal from reoxidation, while reducing heat loss during mould filling.

**INSTA** powder-based coatings reduce packaging waste and transportation costs and emissions compared to ready-for-use coatings.

**KALMINEX FF** fluoride-free slurry for the production of free vacuum-formed exothermic sleeves eliminates the use of fluoride, while delivering similar performance to traditional slurry form recipes.

**KALPUR** direct pouring for automatic green sand moulding lines improves yield and cast quality by reducing fettling and non-metallic inclusions, lowering turbulence-related defects, and improving directional solidification.

**KALTEK** insulating ladle linings for iron and steel alloys improve thermal and energy efficiency, while ensuring metal quality in metal transfer vessels.

**KELLUNDITE** lining systems for coreless induction furnaces help reduce waste and energy consumption with increased refractory life and reduced sintering time.

**The ROTOCLENE** melt treatment process purges the melt with ultra-fine bubbles to effectively remove oxygen bi-fold and other inclusions, while also homogenising melt temperature.

**PARTISAL ECO** release agents include non-toxic oils with high flash points to replace harmful, more easily flammable petroleum-based oils.

**STELEX** filters enhance casting quality by removing non-metallic inclusions and providing better control of mould fill.

**SEMCO** water-based coatings eliminate the health, safety, and environmental issues that arise with solvent-based coatings, such as the release of VOCs and solvent-related respiratory conditions. The range includes:

**SEMCO CC** colour change coatings visually indicate when the coating is dry, reducing the potential for over-drying.

**SEMCO FD** fast-drying coatings reduce energy consumed in the drying process, while maintaining product performance.

**SEMCO FF** formaldehyde-free coatings are designed to reduce formaldehyde emissions in compliance with the latest EU regulations.

**SOLOSIL** inorganic binders are a range of low-viscosity, high-performance sodium silicate binders with advanced breakdown agents.

TRIAD Z castable linings for cupola melting increase campaign life, with high resistance to slag erosion, in an easy-to-mix solution that requires no post-application curing.

**VAPEX** multi-life nozzles overturn the standard practice of replacing nozzles after one shot and can be used as often as the VISO stopper for a safer working environment, higher productivity, and less waste. Warm start ladle package comprises KALTEK lining, warm-start VISO stopper, and VAPEX nozzle, and reduces preheating to a minimum.

**A better tomorrow**

With its complete range of foundry products and expertise, Foseco offers solutions that ready the foundry industry to overcome the sustainability challenge in all of its forms. Through our parent company, Vesuvius, we are also committed to sustainability in our own operations via the Vesuvius Sustainability Strategy, which includes commitments to the following:

- Fight climate change by reducing our own CO2 emissions and helping our customers reduce their own CO2 footprint with the use of our products and services. Our objective is to reach a net zero carbon footprint at the latest by 2050.

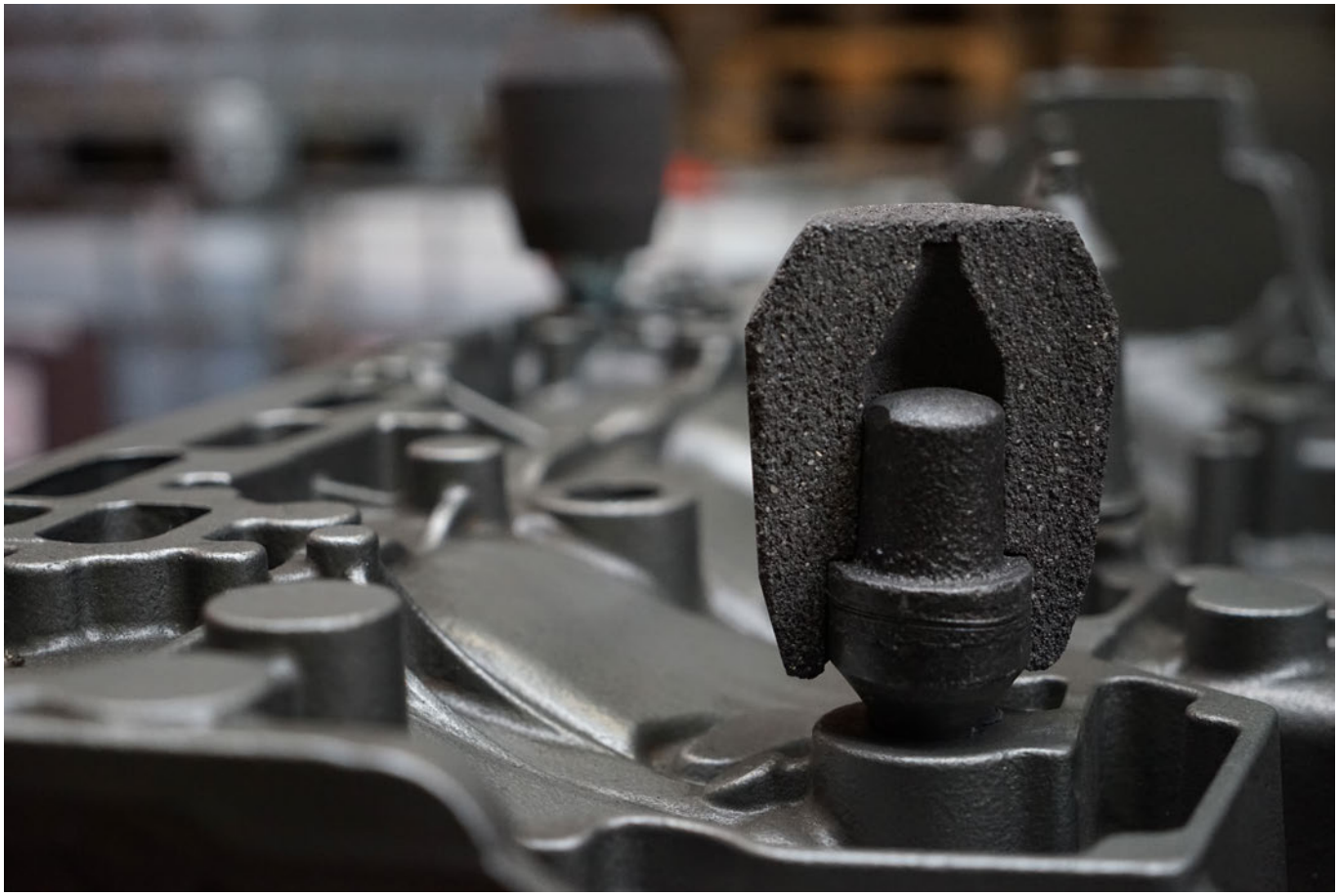
- Engage in the circular economy by reducing the amount of waste we generate, recovering more of our products after they have been used, and increasing the usage of recycled materials.
- Extend our sustainability commitment to our suppliers and encourage them to progress.
- Improve safety and wellbeing at work both for our employees in our facilities and for our customers.

Economics and the environment are often played off against each other. But as we have seen throughout this white paper, this is a false dichotomy. Indeed, the two often accompany each other in technologies and solutions that reduce the consumption of energy, that optimise yields, that improve the longevity of foundry equipment and ensure the quality of castings, and that reduce the production of harmful pollutants. Achieving sustainability is not however the outcome of one company's efforts. It is a collective approach to the way we act and operate as an industry. Only together, we can forge the future of the foundry industry, today.

For more information contact Foseco South Africa on TEL: 011 903 9500 or visit www.foseco.com ■

***FEEDEX NF1 sleeves from Foseco eliminate the need for exothermic riser powders. With the new FEEDEX NF1 range of exothermic feeders for aluminium, the application of exothermic powders to boost the feeding effect in the riser is unnecessary***

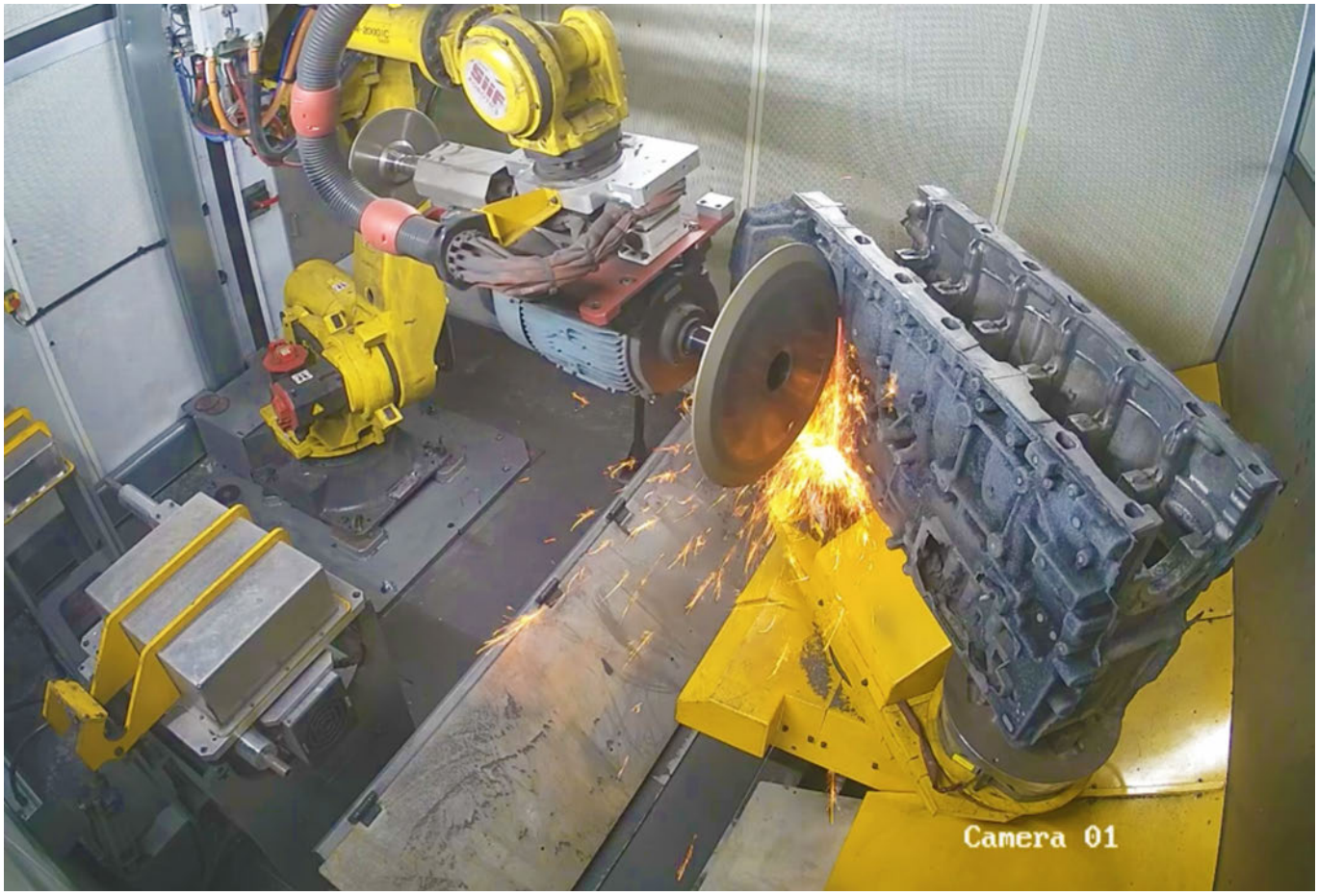
***Application at customer Baumgarte***



***FEEDEX VAK self-centring feeder sleeves offer minimum footprint and contact area, optimum mould sand compaction, and constant feeder volume for improved yield, easy knock-off, and minimum fettling work***

# More automation and upgrades at Atlantis Foundries bring environmental enhancements

Three robotic cells setup to remove excess flash on engine blocks.

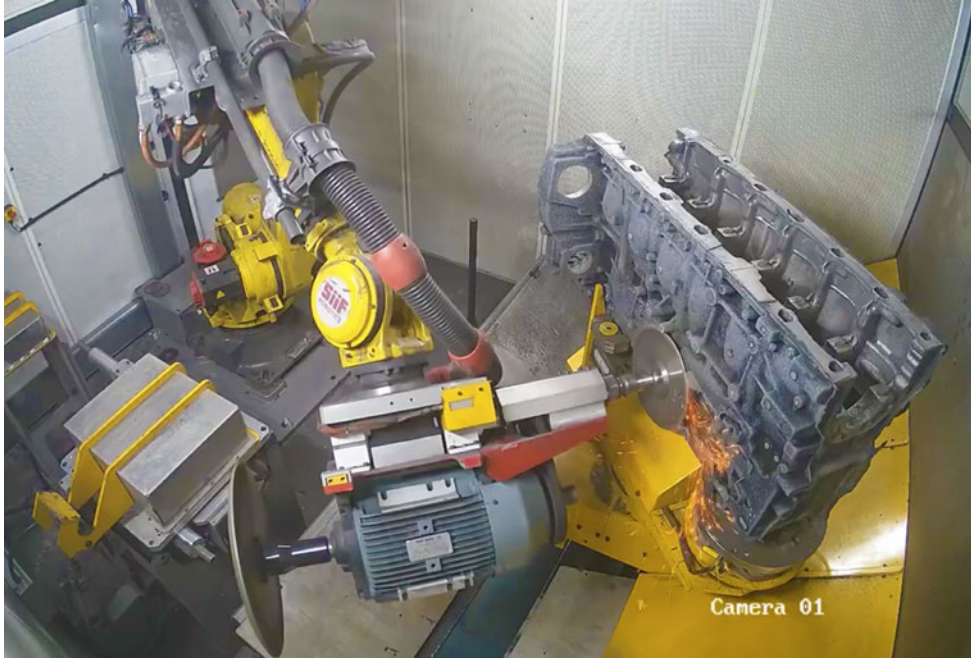



***Atlantis Foundries has automated fettling of excess flashing of engine blocks. Supplied: Atlantis Foundries***

For nearly a decade, Atlantis Foundries has been a world-leader in implementing process improvements to their foundry operations, largely driven by the adoption of Industry 4.0 technologies and smart manufacturing processes.

This includes the adoption of automated moulding lines and the deployment of robots right through to artificial intelligence software to aid in the monitoring of casting defects. Over and above this, the foundry's drive to go "green" will see it operating virtually off-grid via renewable resources very soon.

During this period environmental and workplace safety requirements have also been high on the agenda at Atlantis Foundries. And it is not just for the regulatory requirements and management that are easily identifiable. Back in 2019 Atlantis Foundries installed the company's first Nederman MikroPul FS type filter for dust extraction and at the beginning of 2025 a second Nederman MikroPul FS type filter was




***"A block exits the decoring cell via a conveyor system and is then handled by a Fanuc robot that can rotate the block 360 degrees. The block is then placed on a rotating fixture on top of a turntable which is located at the entrance/exit point of one of the stations in the three-station cell." Supplied: Atlantis Foundries***

commissioned, thus enhancing the air quality in the foundry and surrounds, while having the satisfaction that the working environment will not be compromised for staff. Management knew they had to be more proactive and go beyond these necessary solutions.

It must be remembered that the metal foundry industry is fundamentally recognised as the backbone of industrial economies, supplying essential cast metal components to critical sectors including engineering, power, transportation, mining and manufacturing. With a large percentage of manufactured goods containing metal castings, this sector provides the necessary structural components, ranging from engine blocks and railroad components to industrial machinery, that enable the modern industrial world to function. If the goods do not contain metal, it is more than likely that they have been manufactured on equipment that is largely made up of components that have emanated from a foundry. For food items the same applies. In fact, if you look around you everything you see that has been manufactured or processed has a connection to a foundry.

Foundries are also one of the largest contributors to the manufacturing recycling movement, melting and recasting millions of tons of scrap metal every year to create new durable goods. Moreover, many foundries use sand in their moulding process. These foundries often use, recondition, and reuse sand, which is another form of recycling.

However, foundry owners and management must still be cognisant of the total environment that foundries occupy and ensure that the foundry operates in a manner that's safe for the environment and protects public health, no matter how difficult the environmental regulations can be.

**Recent upgrades: Diesel storage**

"We have recently completed our two new diesel dispensing stations that will more efficiently supply our onsite diesel needs," said Atlantis Foundries' Engineering Manager Mike Hartung.

"Previously the tanks that housed the diesel fuel were set below ground. Due to the environmental risk of potential underground leaks, these tanks are now housed above ground in self bunded tanks, within a bund. Aesthetic improvements were not the motivating factor, but the environment."

"Underground fuel tanks are essential for fluid storage across various industries. However, we are aware that leaks from underground tanks can cause significant environmental damage, such as soil and groundwater contamination."

"The construction of our new gas farm is now complete. The building safely houses four large LPG gas tanks. The tanks are covered with sand within the bricked structure and the area is similarly bunded."

"Over and above this we have also constructed a specialised wash bay and spray booth for cleaning and painting our equipment such as machine parts. Here waste materials are washed off with high pressure hoses and all of the waste such as oils can be safely confined to a specific area and recycled appropriately, prior to final painting."

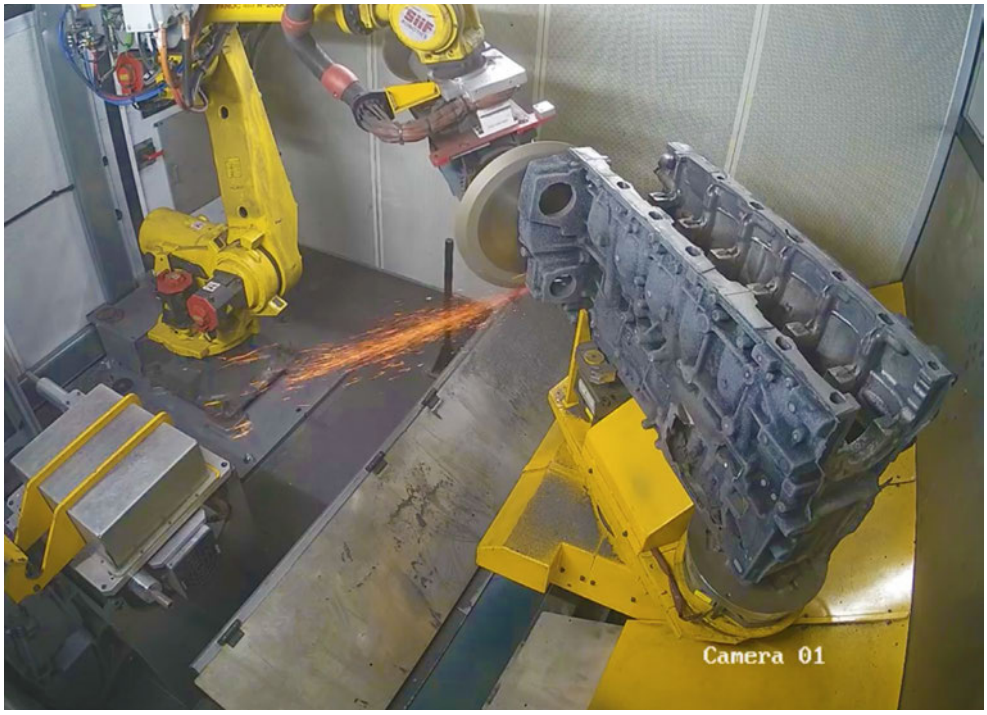
"We have constructed a new building that has been put up over a bunded area where we will be storing all of the waste and oils. This building was designed to prevent hazardous substances from escaping into the environment, protecting the soil, water as well as the employees," explained Hartung.

"We also had an area where all our steel rod, pipe and tube requirements were stored on the ground in the open. We have now constructed shelving and enclosed the area so the material is not exposed to the weather anymore."

"We have likewise enclosed the recently installed new rotary sprue cleaner drum to remove mould sand from casting

runner systems in order to minimise slag formation during re-melting. With the implementation of the new drum, the waste material will be loaded into a lifting device and enter the drum where it will be rotated to remove the sand and dust and then come out clean at the end of the process when it is discharged from the drum."

"From here it will be transferred to a bunker before being transported via the charging process to be re-melted and repoured. The new process also offers significant overall environmental benefits through the containment of the cleaning process."




***"The engine block is then rotated into the cell, and positioned so that the smaller robot, that holds the diamond coated fettling tools, can orientate the casting to the programme plane via a laser system prior to starting the fettling programme. The tooling also includes quick-change connectors for other necessary tooling." Supplied: Atlantis Foundries***

**Coreshop resin transfer facility**

"We have now built an offline and enclosed Part 1 and Part 2 pumping facility away from the factory floor in order to segregate and control these flammable and hazardous materials. This facility accommodates the resin in intermediate bulk containers, and both Parts 1 and 2 have a backup system. The resin is pumped to the coreshop mixers via stainless steel pipes, that are anti-corrosive and wrapped with insulated materials to keep temperatures even when transferring the chemicals, and are installed in existing overhead trays before entering the foundry facility."

**Automated fettling of excess flashing of engine blocks**

"This is an area of processing and finishing that we have been looking at seriously and it has now come to fruition. Previously we lacked the consistency and productivity with manual deburring, not because of the employee capabilities, but rather the process they had to perform and the size of the casting – an engine block that weighs 450kg and more. Human intervention will never give you the same result."

"We already started working on this project early in 2023. As part of the future project, Atlantis Foundries invested in fettling training and an R&D robot system that makes use of a Fanuc M900iC 700kg capacity robot to load blocks onto jigs using a Fanuc part identification and positioning camera. A smaller Fanuc R2000iC 210kg robot, equipped with a Fanuc spindle motor, is then used to fettle/trim the blocks of excess flash."


***"This process is carried out on three sides of the block, each of them with a 75 second cycle time – 225 seconds in total. You cannot compare it to a manual operation. The time savings and productivity enhancements are enormous. All operations are monitored with cameras." Supplied: Atlantis Foundries***

"The R&D performed within this cell equipped us with the knowledge of what cutting tools and fettling accessories could be used on which portions of the block, in order to get the best results when we finally commissioned the automated fettling robot systems in the fettling department."

"We engaged one of the leading developers and system designers of foundry finishing, fettling, deburring and grinding (Siif), who also supplied the original decoring cell. The French company has now installed three cells directly after the decoring cell."

"A block exits the decoring cell via a conveyor system and is then handled by a Fanuc

robot that can rotate the block 360 degrees. The block is then placed on a rotating fixture on top of a turntable which is located at the entrance/exit point of one of the stations in the three-station cell."

"The engine block is then rotated into the cell, and positioned so that the smaller robot, that holds the diamond coated fettling tools, can orientate the casting to the programme plane via a laser system prior to starting the fettling programme. The tooling also includes quick-change connectors for other necessary tooling."

"This process is carried out on three sides of the block, each of them with a 75 second cycle time – 225 seconds in total. You cannot compare it to a manual operation. The time savings and productivity enhancements are enormous."

"All operations are monitored with cameras."

"After this fettling process the block is then transferred to inspection and powder coating, before transferring to machining, where a number of CNC machining operations take place on the blocks, then on to packing."

"In the machining department three Heller CNC machines have been strategically placed to allow a 12m long robotic linear rail carrying a Fanuc M900iC 700kg capacity robot to run to each machine's loading/unloading section. Two block infeed conveyors transport the blocks into the cell from where the robot collects them and places them into the correct CNC machine for machining. The same robot collects the machined blocks out of each CNC machine and places them onto an outfeed conveyor. This process was previously performed manually with blocks swinging from KBK overhead cranes. The robot has removed the danger of the operation and implemented control with predictability. Efficiencies have also rocketed and cycle times have been reduced to 90 seconds."

"The new fettling cell also contributes to the environmental and health and safety aspects of the employees as there is less noise because the stations are enclosed and there are dust extractors, and the possibility of carpal tunnel is eliminated." concluded Hartung.

Contact Atlantis Foundries on TEL: 021 573 7200 for further details. ■

# Umgeni Iron and Steel Foundry invests in Inductotherm VIP Power-Trak induction power supply system

## Also acquires Endeco Omega Sinto cooler, pressure vessel and dust extractor and 10-ton an hour continuous mixer.

Just over 10 years ago, Umgeni Iron and Steel Foundry was acquired by Malvern Engineering Works, a South African general engineering company servicing the mining industry and Minco Tech, an Australian based mineral processing and mining equipment manufacturing company based in Cardiff NSW, in a 50/50 joint venture.

The foundry, which is one of the oldest foundries in South Africa, produces castings for a number of industries and has a production capacity of 3 600 tons per year, made up of cast iron, steel, high-chrome iron, manganese steel and stainless steel.

Umgeni Iron Works, which is located in Sea Cow Lake Road, Umgeni, KwaZulu-Natal, was established in the late 1890s as Umgeni Engine Works, Foundry and Forge and operated in the premises of an old cotton mill on the southern bank of the Umgeni River, some half a kilometre from the present site. In January 1919, Umgeni Iron Works was established under the 'Old Firms Act' and took over the assets of the original company.

Manufacturing at this time consisted of grey iron castings for farming, ship repair, brick making and general engineering applications. The need for development capital resulted in Umgeni Iron Works becoming a limited liability company in 1938, with a number of new shareholders.

To represent the market that the company was servicing the company name would subsequently change to Umgeni Iron and Steel Foundry. The company now serves the mining industry, sugar mills, shipping, brick works, smelters, general engineering and other metallurgical industries with a full range of 89 different specifications. The foundry can cast ferrous castings up to 5.5 to 6 tons in grey iron, SG iron and steel. Small amounts of stainless steel are also cast. In total the company casts on average 300 tons gross a month.

Facilities include patternmaking, and machining is undertaken by subcontracting to appropriately equipped companies in the greater Durban area. In accordance with industrial developments the formal quality management system ISO 9001 was first achieved in 1998 and has subsequently been upgraded to the various listings with the current one being ISO 9001:2015.

The foundry is also able to cast various grades of both bronze and aluminium and the company averages about 2 tons a month although currently they are experiencing a surge in bronze orders and are already up to 4 tons for the month of march 2026.

All materials are manufactured using virgin ingots and are all supplied with material certificates.

Regular castings made by Umgeni Iron and Steel Foundry include gear boxes, coupling boxes, ladle lids, slag launders, chrome cyclones, amongst others.

***Umgeni Iron and Steel Foundry's new Inductotherm VIP Power-Trak induction power supply system***

***Another recent investment at Umgeni Iron and Steel Foundry was the installation of an Endeco Omega Sinto cooler, pressure vessel and dust extractor in the company's sand department***

Prior to the acquisition in 2015 the company was owned by the Rice family for 40 years with Gavin Rice being at the helm for the last 28 years. When Gavin decided to retire both his sons had already established successful careers and preferred not to continue the family interest in the business. Rice therefore decided to sell.

The acquisition by Malvern Engineering Works and Minco Tech was a strategic decision by the two companies, both of which have extensive exposure to the mining industry, to guarantee a continued supply of quality castings.

**New equipment: New Inductotherm's VIP Power-Trak induction power supply system**

Cerefco has recently completed the commissioning and start-up of a 1 250kW Inductotherm VIP Power-Trak Power induction power supply system for Umgeni Iron and Steel Foundry's two 3.5 ton furnaces.

"The Inductotherm VIP Power-Trak induction power supply system that provides the power for the melting furnaces can be switched between either of the two furnaces that it is connected to," said Umgeni Iron and Steel Foundry's Foundry Manager Audy Bekker.

"The new Inductotherm system has replaced our original power system that was installed in 1983. It had served us well but eventually it becomes very expensive to maintain the system because of the inherent inefficiencies. Cerefco came and did a test in our foundry and showed us the significant gains that we could make in melt times and reliability, so much so that we had no choice but to invest. They installed the new Inductotherm VIP Power-Trak induction power supply system in December 2025 and we can now melt more metal in less time, with less power."

"The Inductotherm VIP Power-Trak induction power supply units have one of the fastest melt rates from cold charge to pour, and melt more per kWh and kVA for lower melting costs and greater productivity," said Bekker.

"We do have a number of other furnaces in the foundry which gives us the opportunity to cast our bronzes and aluminium requirements as well as the smaller castings in different materials."

**Cost savings in the sand department: Endeco Omega Sinto cooler, pressure vessel and dust extractor and 10-ton an hour continuous mixer**

Another recent investment at Umgeni Iron and Steel Foundry was the installation of an Endeco Omega Sinto cooler, pressure vessel and dust extractor in the company's sand department.

"Today's chemically-bonded sand metalcasting facilities are under increasing pressure to reduce costs and their impact on the environment, while improving and maintaining casting quality. One of the ways to meet these requirements is to invest in sand reclamation."

"Cost reductions after installing sand reclamation equipment are made by reusing the sand after casting, buying less new sand and, with some systems, actually reducing the binder content at the mixer."

"Three main options for sand reclamation include primary attrition, secondary attrition and thermal."

"In order to reclaim the sand, the equipment must first reduce the lumps back to grain size, then remove all the coarse/agglomerated sand grains, dust and fines. The sand must be cooled before reuse, and a portion of the binder removed to stabilise the LOI."


***"Just over a year ago we modernised our sand mixing equipment with the installation of an Endeco Omega Sinto continuous mixer. Our chemical supplier supported us in acquiring the 10-ton an hour continuous mixer."***

***The foundry can cast ferrous castings up to 5.5 to 6 tons in grey iron, SG iron and steel. Small amounts of stainless steel are also cast. In total the company casts on average 300 tons gross a month***

"Often overlooked, the sand cooler/classifier is equally as important as the attrition unit because unless we remove all of the dust and fine particles from the sand, we will not see a reduction in loss on ignition (LOI) at the mixer."

"Typically, a cooler/classifier would be a fluidised bed type with a copper tube heat exchanger for sand cooling. The fluidising air and the extracted air must be finely balanced to provide a negative pressure inside the fluidising chamber. This pressure can be adjusted according to the amount of fines in the sand."

"Fluidised sand is not abrasive; therefor copper tubes can be employed as the heat transfer medium. Using copper, the cooling system can cool the sand from 300C to within 6C of the water supply temperature."

"While no two metalcasting facilities are the same and all have different sand systems and requirements, many variations of sand reclamation plants are available. All that has to be determined is the amount of binder removal required and the level of investment."

**Endeco Omega Sinto 10-ton an hour continuous mixer**

"Just over a year ago we modernised our sand mixing equipment with the installation of Endeco Omega Sinto continuous mixer. Our chemical supplier supported us in acquiring the 10-ton an hour continuous mixer."

"A sand mixer is a critical piece of equipment used in foundries and metalcasting operations to ensure a consistent and homogeneous mixture of sand and binders. This equipment plays a vital role in producing high-quality moulds and cores for casting processes by evenly blending the raw materials, thereby improving the strength, surface finish, and dimensional accuracy of the final castings."

"Our investors – both Malvern Engineering Works and Minco Tech – have been very supportive on improving all the departments in the foundry with ready capital being provided for new equipment but also as clients with high demand for our castings," concluded Bekker.

**Malvern Engineering Works**

Malvern Engineering Works was established in June 1947, as a general engineering business, servicing the mining industry. Over the years the company expanded, manufacturing a wide range of products such as sheave wheels, heavy media drum separators, medium and low intensity magnetic separators (for ore concentration), suspended electro and permanent magnets, cyclones, sieve bends and sampling systems. In-house designing of equipment started in 1980. The company entered into strategic alliances with Ludowici (later acquired by FLSmidth) in 1996 for licensed manufacturing of fine and coarse coal centrifuges and with Minco Tech, Australia for heavy media and classifying cyclones in 2007. Malvern has sales agreements with Phoenix Process Equipment Co, Huzhou Hehui Machinery Co. Ltd and Shandong Haute Magnet Technology Co.

Malvern Engineering has seven group companies under its umbrella including Ingwenya Mineral Processing, Wedge Wire Industries, Schumar Engineering, Minco Malvern Process Equipment Company, Malvern Mozambique and Umgeni Iron and Steel Works.

**Minco Tech**

Minco Tech, a 100% Australian owned and operated company, have been designing and manufacturing mineral processing and mining equipment since 1978 and have been supplying their products into the Australian, South African, Indian and US markets.

For further details contact Umgeni Iron and Steel Foundry on TEL: 031 579 1361 or visit www.uiw.co.za ■

# Potential buyer of Cast Products

## South Africa in talks with IDC and business rescue practitioners

According to a report sent out in January 2026 to creditors and other interested parties by the joint business rescue practitioners Refilwe Ndlovu and Johan du Toit, an optimistic view has been given that there is a possibility that Cast Products South Africa could be operational again by the end of March 2026, past the publishing date of Castings SA.

The report gives no clue or indication as to who the potential investor is. There are speculation and rumours in the market place but no announcement has been made or an indication of when this will happen.

**Post commencement funding (PCF)**

In the report the joint business rescue practitioners state that and we quote: "The Practitioners have been in talks with the potential purchaser in order to raise PCF to aid with the continued trading of the Company whilst the parties continue to finalise the terms of the offer."

"The potential purchaser is considering advancing R60 million of PCF to pay the critical operational expenses of the Company until March 2026, which is when the sale process is likely to be concluded."

"The parties are considering the PCF request as part of the overall sales offer to the Company and would require security for the PCF in the event that the sales process does not conclude. The PCF funding is required to pay all arrear debt of the Company as of date of this report."

"As at date of this report, the PCF request had not been approved."

"The Company is also at an advanced stage of finalising the new investors programme with the potential purchaser to recapitalise the business and invest in upgrading the plant to allow for the business to operate more efficiently and ensure the long-term sustainability of the Company."

"The Company has started to prepare for the revamp and upgrade programme, based on the new investors programme. The months of December 2025 and January 2026 have been used to clear all unused products and patterns in the foundries. All personnel have been allocated to the clearing and revamp project to ensure when funding becomes available, that the foundries can start operations and implement the revamp and upgrade programme."

"The foundries did not produce any products in the month of December 2025 and January 2026 due to the aforesaid clean up. The Practitioners believe the implementation of the new investors programme will start on the 1 March 2026, subject to finalisation of all agreements and approvals of the new investors programme."

"Without the proof of clearing and cleaning the factories, the revamp and upgrade programme cannot be implemented. This programme has been implemented for the first time in the last 10 years to ensure the upgrade programme can be effectively implemented."

"The Practitioners engaged employees of the Company in terms of which the employees were advised that the Company has interested parties to co-invest with the IDC in CPSA. The negotiations and approvals are in process, and the parties are committed to finalise all, relevant approvals and documentation before the end of March 2026. However, the new investors programme is subject to several board and committee approval of all parties involved in the project."

**Sale process**

"The Practitioners are implementing phase three of the Plan being a sale process for the business and/or assets of the Company."

"On 12 December 2025, a potential purchaser submitted a final offer which contemplated a hybrid structure which included inter alia the acquisition of a majority equity stake or the conversion of existing loans into equity."

"The terms of the final offer are being discussed by the Practitioners, the potential purchaser and the IDC as the security holder. These discussions were initially projected to be finalised at the end of January 2026 but are likely to be finalised by the end of February 2026. A term sheet is being prepared."

"The Practitioners remain optimistic that the company will service the orders from Transnet whilst engaging the interested parties regarding their offers for the business and/or assets of CPSA."

Creditors are encouraged to direct any queries to BRCREDITORS@castproducts.co.za. ■

# Weir HBF's big win with the closure of Weir's Todmorden site

In February 2025 Castings SA reported the Weir Minerals announcement of the closing of its historic manufacturing site in Todmorden, England. The specialist mining equipment producer said it was planning to relocate production to other Group foundries, including Gqeberha and Johannesburg in South Africa.

According to a BBC News report at the time, if approved, Weir's facility in Todmorden, West Yorkshire, England was due to close by the end of 2025. The statement said employees in unaffected roles would transfer to a new engineering and technology centre which was set to open nearby, according to Weir. The specialist mining equipment producer said it was planning to relocate Todmorden's production to other foundries within the Group. A big beneficiary would be the Weir Heavy Bay Foundry (HBF) in Gqeberha in the Eastern Cape. The Weir Group's Todmorden site had been an ironworks since the late 1800s.

***Picture for illustration purposes only. Weir HBF have purchased an Inductotherm VIP Dual-Trak furnace system, two Inductotherm furnace bodies – 4 ton and 6 ton – both fitted with Inductotherm Vortex fume hoods***

Following the announcement on 23 January 2025 regarding Weir's proposed plans to optimise capacity across its Minerals Division's Europe, Middle East, and Africa (EMEA) region, and the subsequent update on 8 April 2025 regarding completion of Weir's collective consultation with employees, an announcement was made by the Group in June 2025 to say that work was underway to transfer production from Todmorden to other facilities in the EMEA region to bring the business closer to their key customers and enhance efficiency. As a result, manufacturing operations at the Todmorden site would cease by the end of 2025, the statement said.

In March 2025 Weir Heavy Bay Foundry applied for an Environmental Authorisation in terms of the Environmental Impact Assessment (EIA) Regulations, 2014 as amended, and also applied for an amendment to the foundry's Atmospheric Emissions Licence (AEL), for proposed expansion activities. And in August 2025 a draft basic assessment report was issued with public participation open until 19 September 2025.

In terms of Section 24(5) of the National Environmental Management Act, 1998, as amended, proposed activities such as the addition of new equipment being installed at Weir Heavy Bay Foundry and the resultant increase in production require that a Basic Assessment process be undertaken for the EIA and the relevant authority is the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT). This proposed expansion would also require the application for amendment to the AEL, which would be submitted to the Nelson Mandela Bay Municipality.

Once all reports had been submitted and approved, Weir Heavy Bay Foundry could continue with its expansion plans and these began towards the end of 2025. Weir Heavy Bay Foundry said the changes to its operations to increase production capacity were due to industry demand and to meet market needs.

It is believed that the majority of Todmorden's production was transferred to Weir Heavy Bay Foundry, thus the need for new and additional equipment to cater for the increased production requirements.

**Inductotherm furnaces**

In order to cope with the extra production figures, which have been reported as targeting 1 000 tons per year although the EIA application says 1 200 tons, Weir Heavy Bay Foundry have installed an Inductotherm 2 000kW/200 Hz VIP Dual-Trak furnace system, one Inductotherm 4 ton furnace and one Inductotherm 6 ton furnace, with both furnaces fitted with a Inductotherm Vortex fume hood, a high-velocity extraction system designed to capture intense fumes, dust, and heat during metal melting, pouring, charging and slagging and Inductotherm's Melt-Manager® Plus, a touch-screen control system designed to automate, monitor, and optimise induction melting furnaces.

A fume extraction system has also been installed and linked to the furnaces to remove the fumes and dust by Endeco Omega Sinto. This same company upgraded the reclamation plant and replaced the mixing head on the 20 ton an hour continuous mixer last year and was involved in the installation and fabrication of the Mikropul Nederman filtration system that has been purchased.

Although I have not been invited to visit the foundry it has

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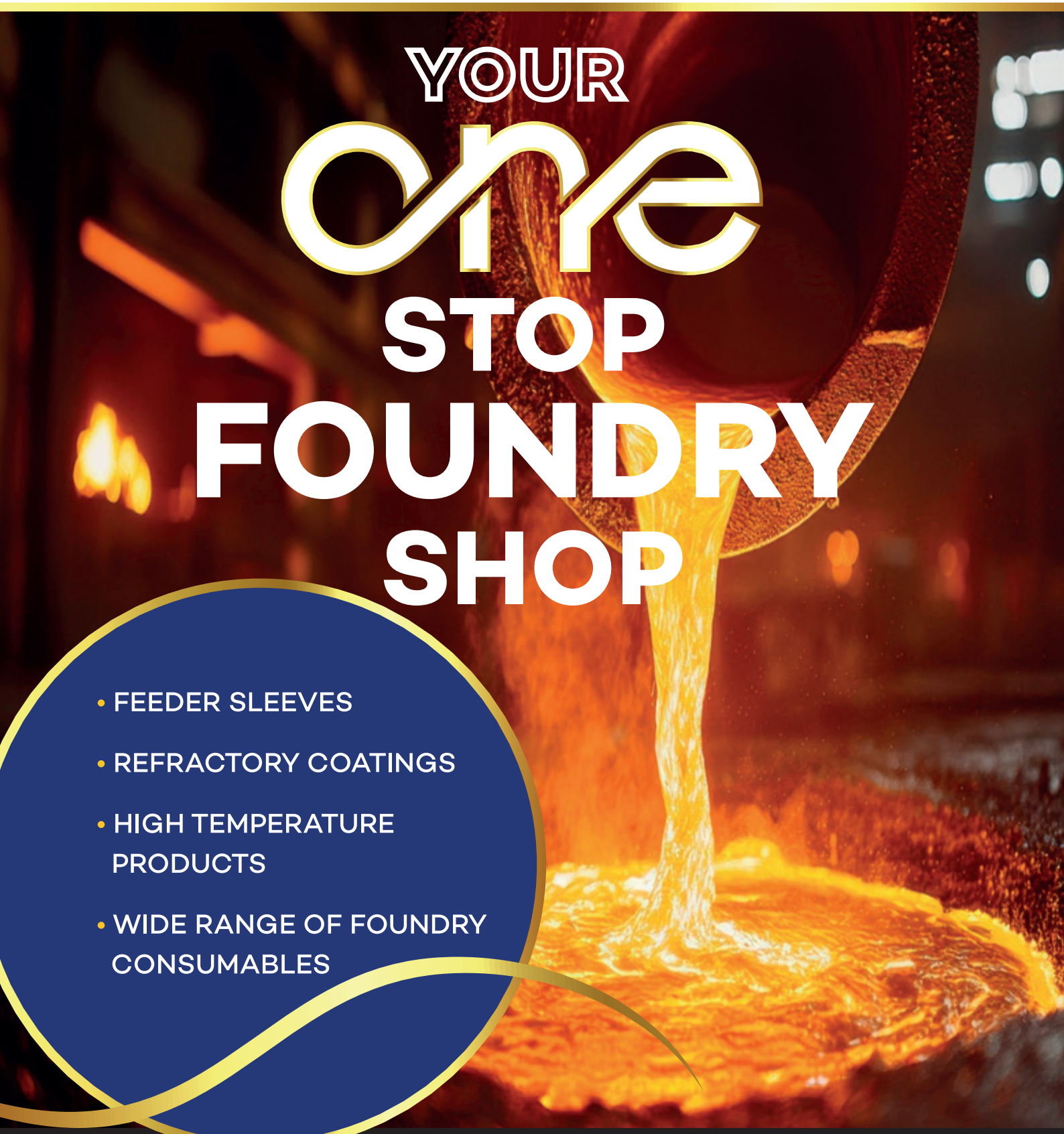

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been reported that a new top hat heat treatment furnace has been installed, the fettling booths and painting booths have been upgraded and new automated grinders have been purchased. Infrastructure upgrades include pit extensions and the company has integrated an advanced pattern development system.

Moving production figures to 1 000 tons per year still represents a doubling of current production levels of 500 tons per year it has been said in a YouTube clip.

**Acquisition of Xmeco Heavy Engineering**

Weir Heavy Bay Foundry emerged out of the acquisition of Xmeco Foundry by Weir Minerals in 2013. At the time Xmeco

***Moving production figures to 1 000 tons per year still represents a doubling of current production levels of 500 tons per year it has been said in a YouTube clip***

***Xmeco Heavy Engineering has now been acquired by Weir Heavy Bay Foundry***

Foundry was a company within the Xmeco Group. Also in the Group was Xmeco Heavy Engineering, which is situated next door to Weir Heavy Bay Foundry. Xmeco Heavy Engineering has been the external machining source for Weir Heavy Bay Foundry because of location and its capacity of 18 tons whereas Weir Heavy Bay Foundry's largest casting is less than that.

Xmeco Heavy Engineering has now been acquired by Weir Heavy Bay Foundry and continues to be the machining department of the company. Machining equipment has been supplemented with 11 machines that have been sent to South Africa from Todmorden. Weir Heavy Bay Foundry's in-house capabilities now include design, research and development, foundry and machining. ■

# AFSA International Aluminium Conference 2026 concludes with ground-breaking insights and global collaboration


***Noel Pillay, Chief Operating Officer of South32, emphasised the importance of sustainability and collaboration in his keynote address***

The Aluminium Federation of South Africa (AFSA) proudly announces the successful conclusion of the AFSA International Aluminium Conference 2026, held on 25 – 26 February at The Maslow Hotel, Sandton. Over two days, the event brought together leading voices from industry, government, academia, and science councils to explore the future of aluminium in South Africa and beyond.

**Conference Highlights:**

- **Market Trends & Global Outlook:** Delegates gained critical insights into local and international aluminium market dynamics, with discussions on border carbon adjustments and renewable energy's role in reshaping the industry.
- **Sustainability & Innovation:** Experts highlighted pathways to increase localisation in automotive manufacturing, the use of post-consumer scrap, and the environmental impact of aluminium production. ▶

- **Research & Development:** Cutting-edge presentations showcased alloy design, additive manufacturing, industry-academia collaborations, and advanced fabrication techniques such as friction stir welding.
- **Networking & Collaboration:** Exhibitors and delegates benefited from meaningful connections, knowledge exchange, and opportunities to position South Africa as a premier supplier to the continent and the world.


***AFSA Chairman, Sudesh Singh of Zimco Metals, reflected on the conference's impact: "Aluminium is increasingly seen as a strategic material globally. It's lightweight but durable, and infinitely recyclable. It is a vital part of the future of energy, infrastructure growth, transportation, packaging, and advanced manufacturing."***

**Voices from Industry Leaders**

Mr. Noel Pillay, Chief Operating Officer of South32, emphasised the importance of sustainability and collaboration in his keynote address: "Aluminium provides innovative solutions and competitive advantages for businesses and consumers. It remains one of the world's most critical industrial metals – essential for transport, construction, packaging, consumer goods and increasingly, to the global energy transition."

AFSA Chairman, Mr. Sudesh Singh of Zimco Metals, reflected on the conference's impact: "Aluminium is increasingly seen as a strategic material globally. It's lightweight but durable, and infinitely recyclable. It is a vital part of the future of energy, infrastructure growth, transportation, packaging, and advanced manufacturing."

Delegates left with actionable insights into market trends, sustainability strategies, and technological innovations.

Exhibitors showcased their solutions to a global audience, gaining visibility and building partnerships that will drive growth in the aluminium value chain.

The conference was made possible through the support of the conference partners (South32, Hulamin, and RBIDZ) and exhibitors (Wispeco, Bingelela Alloys, Anton Paar, CSIR, and MTT), including leading producers, fabricators, technology providers, and research institutions. Their participation showcased solutions, strengthened networks, and positioned South Africa as a premier supplier to the continent and the world.

About AFSA: The Aluminium Federation of South Africa is the leading body representing the aluminium industry in South Africa, through advocacy, collaboration, and knowledge sharing, AFSA promotes sustainable development and global competitiveness. ■

***Delegates left with actionable insights into market trends, sustainability strategies, and technological innovations***

# Hollywood's golden prize:
# What an Oscar would be worth if it were solid gold

After another glittering night at the Academy Awards, Hollywood's biggest winners headed home with the most recognisable trophy in entertainment: The iconic Oscar statuette. As actors, directors and filmmakers lifted the famous golden figure on stage, one intriguing question comes to mind.

What would that celebrated statue actually be worth if it were made from solid gold?

Standing about 34 centimetres tall and weighing roughly 3.8 kilograms, an Oscar cast entirely from pure gold could have a metal value exceeding $250 000 (around R4.5 million) at current global gold prices.

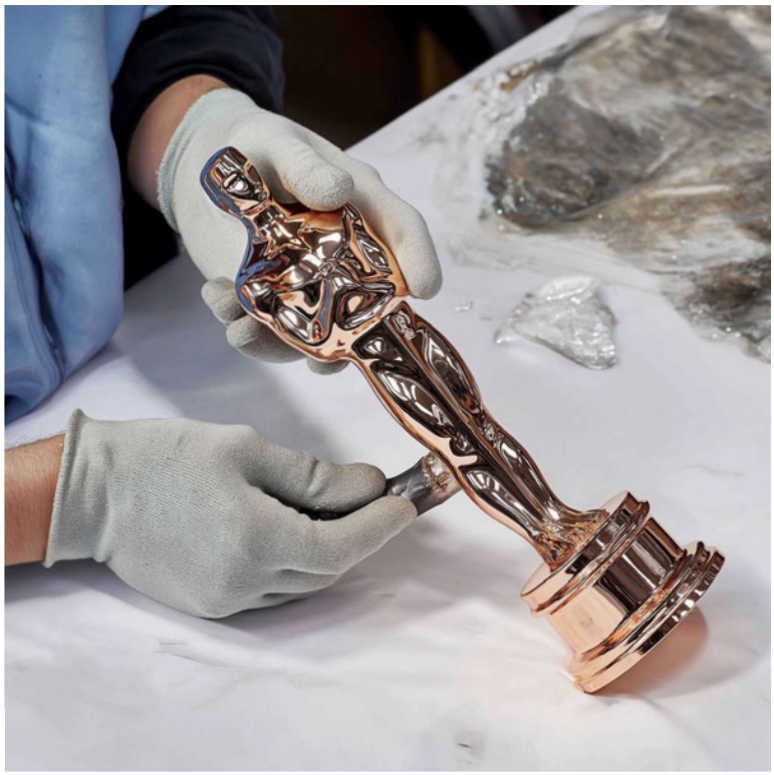
In reality, the famous statuette only appears to be solid gold. The trophy is cast from Britannium – a metal alloy primarily composed of tin – before being finished with a layer of 24-carat gold plating.

The Oscar itself has a history almost as storied as the films it celebrates. The statuette was designed in 1928 by art director Cedric Gibbons and sculpted by George Stanley. The figure depicts a knight holding a crusader's sword while standing atop a reel of film – a symbolic tribute to the motion picture industry.

Since the first ceremony in 1929, the gold-plated statue has become the ultimate recognition of cinematic excellence, instantly recognisable around the world.

The average person might assume that Oscars are mass-produced and camera-ready as soon as they roll off an assembly line. But every statue is handmade by a group of more than a dozen artisans, with production lasting roughly six months from start to finish for each year's batch.

***Each year approximately 50 Oscar awards are presented***



***The Oscar statuette is manufactured through a meticulous, lost-wax casting process that blends traditional artistry with modern technology, with each trophy handmade in New York***

"A solid gold Oscar would roughly equate to 122 one-ounce Krugerrands," says Rael Demby, CEO of The South African Gold Coin Exchange & The Scoin Shop. "It's a striking way to understand just how valuable gold is – and why the metal has symbolised excellence from ancient crowns to modern awards."

The Oscar statuette is manufactured through a meticulous, lost-wax casting process that blends traditional artistry with modern technology, with each trophy handmade in New York.

Since 2016, the Academy has commissioned UAP Polich Tallix fine art foundry in Rock Tavern, New York, to produce the trophies, returning the design to its original bronze casting. UAP were engaged to create a new version of the sculpture that had attributes of both the original and the more modern representation. UAP was asked to return the statuette to its original splendour and celebrate its history.

The Academy supplied UAP with an original 1928 statue and a more modern version. The company 3D-scanned both, and then their digital artists worked with the Academy to celebrate the desired attributes of both statues.

It is now closer to Stanley's original Art Deco sculpture, including being cast solid in gold-plated bronze. Each statuette is 13.5 inches tall, and it weighs 8.5 pounds – about the same as a gallon of milk. ■

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# Accelerating South Africa's steel decarbonisation

South Africa is the second largest steel producer in Africa, and the sector plays a foundational role in the national economy – supporting automotive manufacturing, construction, mining and thousands of jobs. However, the industry faces significant challenges, including high carbon intensity, ageing infrastructure and increasing pressure to comply with international climate policy instruments such as the European Union Carbon Border Adjustment Mechanism (CBAM). With the EU serving as South Africa's second-largest steel export market, the sector's ability to meet emerging low-carbon requirements is becoming increasingly important.

To address these systemic challenges, the United Nations Industrial Development Organisation (UNIDO), jointly with the Industrial Development Corporation (IDC) and Guidehouse Germany, successfully submitted a Project Concept to the Mitigation Action Facility and has entered the Detailed Preparation Phase (DPP). Developed under guidance of the Department of Trade, Industry and Competition (the dtic), the Department of Forestry, Fisheries and the Environment (DFFE) and the Department of Electricity and Energy (DEE), the project "Accelerating South Africa's Steel Decarbonisation" is one of seven selected from more than 500 global submissions to advance to the DPP, also funded by the Mitigation Action Facility.

**Unlocking investment, technology and policy support for green steel**

The proposed project combines several measures designed to unlock investment, strengthen the policy environment and accelerate the decarbonisation of South Africa's steel industry.

A dedicated financing mechanism will help lower the cost of capital for steel decarbonisation projects by blending grant funding with concessional and commercial finance. Catalytic funding from the Mitigation Action Facility aims to mobilise investment in innovative low-emission technologies and support the transition toward near-zero emission steel production.

The project will also support the deployment of breakthrough technologies, including a hydrogen-based direct reduced iron ($H_2$-DRI) pilot plant and the integration of renewable energy into steelmaking operations. Lessons from these demonstrations will help inform wider adoption across the sector.

To create an enabling environment, technical assistance will support the development of the Steel Decarbonisation Roadmap, demand creation through green steel lead markets, assessment of the potential for carbon tax revenue recycling and related options. The project will also review and suggest refinement options for Measuring Reporting Verification systems.

Furthermore, the proposed project includes capacity development and just transition support, with knowledge products on circularity and low-carbon technologies, as well as gender-responsive training programmes aimed at upskilling and reskilling workers across the steel value chain.

Together, these measures aim to strengthen the competitiveness of South Africa's steel sector and position the country as a regional leader in low-emission steel production. The initiative will also support South Africa's transition toward near-zero emission steel, contributing to the country's Nationally Determined Contributions, the Just Energy Transition and broader industrial policy goals, while delivering emissions reductions and long-term environmental and socio-economic benefits for workers and communities.

For further details visit:

https://southafrica.un.org/en/312324-accelerating-south-africa's-steel-decarbonisation ■

# ITAC imposes definitive duties on certain steel imports from China, Japan and Taiwan

International Trade, Industry and Competition Minister Parks Tau has gazetted recommendations by the International Trade Administration Commission of South Africa (ITAC) on new import taxes for steel from China, Japan and Taiwan. ArcelorMittal South Africa (AMSA) made an application to ITAC, alleging that certain flat-rolled products of iron, non-alloy or other alloy steel were being imported into SACU at dumped prices. The company is the major producer of the subject product in the Southern African Customs Union (SACU). Columbus Stainless Steel (Pty) Ltd supported the application.

Structural steel imports from China face tariff rates of 74.98%, while a 20.32% duty would be applied to similar ▸

products from Thailand, according to a government notice dated March 19. In 2024 ITAC imposed provisional anti-dumping duties of 52.81% and 9.12% on structural steel imports from China and Thailand, respectively.

In mid-2025 ITAC launched an investigation into the alleged dumping of certain steel products from China and surrounding countries. The products included thin, flat-rolled steel sheets that are commonly used in construction, roofing and manufacturing.

Having brought the application for an investigation to ITAC, AMSA alleged that a surge of these cheap imports was causing material injury to the steel industry across the Southern African Customs Union (SACU) by undercutting prices and threatening jobs and production.

With imports of steel products from China having surged 19-fold in the 2023/24 financial year, ITAC introduced temporary safeguards in June 2025 to help curb these imports.

However, ITAC felt it prudent to further curb "below fair value" prices and protect industrialisation in the region, particularly as AMSA has retrenched thousands of workers and idled some operations as a result of high electricity costs and an inability to compete with imports from China.

The new duties specifically apply to flat-rolled products or iron, non-alloy or other alloy steels of a width of 600mm or more, whether in coils or not, including products cut-to-length and not further worked than hot-rolled.

The duties also apply to U-sections, I-sections and H-sections of iron or non-alloy steel, not further worked than hot-rolled, hot-drawn or extruded of a height of 80mm or more – excluding H-sections of a height greater than 200mm and equal angles of iron or non-alloy steel not further worked than hot-rolled, hot-drawn or extruded.

As traditional markets started closing or restricting access, excess steel was being diverted to more open markets such as SACU, particularly South Africa, which only had a 10% duty historically and no additional trade remedies on the subject product, making it among the least protected markets globally.

It is reported that China's coated steel production in 2021 exceeded 65 million tons, which is more than 350 times the yearly demand in the whole SACU region. ■

# AfCFTA rules of origin for the automotive sector approved

The African Association of Automotive Manufacturers (AAAM) recently facilitated a discussion session between its members and the African Continental Free Trade Area (AfCFTA) Secretariat on the implementation of the recently approved AfCFTA Rules of Origin for the automotive sector.

The Rules of Origin were endorsed by the Assembly of African Union Heads of State and Government at its 39th Ordinary Session, held in February in Addis Ababa.

Under the new framework, vehicles and components must now contain a minimum of 40% African (originating) content, allowing up to 60% imported (non-originating) materials to qualify as Made in Africa for AfCFTA trade preferences. The Council adopted this 60% Value of Non-Originating Materials (VNOM) ceiling subject to review after five years, recognising it as an interim measure to stimulate localisation and build industrial capacity across Africa.

AAAM encourages stakeholders across the automotive industry to familiarise themselves with the Origin and Market Access Provisions for the Automotive Sector, including the AfCFTA Rules of Origin Manual and Summary of the Agreed Rules of Origin as well as Market Access Provisions.

"This achievement is a testament to collaboration between public and private sectors," adds Martina Biene, President of AAAM. "It creates the framework for African countries to trade vehicles and components with each other more competitively, and to position Africa as a meaningful player in the global automotive industry."

**These documents are available on the AfCFTA website:**

1. e-Tariff Book: etariff.au-afcfta.org
2. Rules of Origin Manual: https://etariff.au-afcfta.org/rulesoforigin

The approved AfCFTA Rules of Origin establish an important framework for African countries to trade vehicles and components more competitively with one another, while positioning Africa as a stronger participant in the global automotive industry.

Through collaboration across governments, industry and institutions, we have an opportunity to drive inclusive growth and sustainable development of Africa's automotive sector. ■

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# Mercedes investigates sharing its South African factory with China's GWM

## The German automaker is in discussions with GWM over potential co-manufacturing at its facility in the port city of East London.


Mercedes-Benz is investigating allowing China's Great Wall Motor (GWM) to use its South African factory as US trade tariffs cloud the site's long-term viability. The German automaker is in discussions with GWM over potential co-manufacturing at its facility in the port city of East London.

According to a Bloomberg report, representatives from GWM have presented a proposal to senior officials at South Africa's Department of Trade, Industry and Competition outlining the Chinese company's interest in manufacturing vehicles at the plant.

In an emailed statement to Just Auto, a company spokesperson said: "Mercedes-Benz strives to ensure that all its production sites remain globally competitive, are at an optimal operating point and are adapted to new requirements whenever necessary."

The spokesperson added that the company does not comment on speculations about future product portfolio and production planning process.

GWM South Africa said it continues to evaluate opportunities to expand its presence in the country but did not provide further details. Talks between the two companies are ongoing with no agreement finalised, though alternative forms of cooperation remain under consideration.

Allowing another manufacturer to produce vehicles at the plant could help address unused capacity, lower operating costs and support jobs as global carmakers face growing competition from lower-cost imports from China and India.

Mercedes is simultaneously assessing whether the East London plant could be repurposed as a global centre for processing end-of-life batteries from passenger vehicles. The facility has produced the C-Class sedan for export to the US since 1997.

Previously, the plant benefited from the African Growth and Opportunity Act, which allowed vehicles exported from South Africa to enter the US duty-free. However, the plant's outlook changed after President Donald Trump imposed a 30% tariff on South African goods entering the US in August last year. Although the US Supreme Court suspended the measure in February, the administration is preparing to introduce a 15% global levy on imports into the US starting this month.

Mercedes invested around €600m ($694m) in 2022 to upgrade the East London manufacturing facility. A deal to share the factory that employs about 2 400 people could reduce overcapacity, lower operating costs and preserve jobs as established manufacturers from Europe, the US and Japan lose market share to cheaper imports from China and India.

Just one in three cars sold in South Africa are made locally, down from 56% two decades ago. Automakers, including a local unit of Volkswagen AG, have called on the government to safeguard the industry against a flood of shipments, partly through improved tax breaks.

Even before the threat of tariffs, Mercedes in 2024 cut a shift at its plant and shed about 700 jobs.

Chinese automobile brands are rapidly becoming a prominent force in the African automotive market, driven by competitive pricing, modern technology, and vehicles specifically designed for local conditions. In South Africa, their rise has been particularly striking. Chinese brands recorded a roughly 19% increase in sales in 2024, capturing 11.8% of the new vehicle market – up sharply from just 2.8% in 2020.

Even more telling is the pace of entry. Nearly half of the 14 Chinese automotive brands now operating in the country launched only within the past year. As these automakers accelerate their global expansion, many are turning to overseas production to cushion against potential trade barriers targeting imports of Chinese-made vehicles. ■

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# Energy price volatility may push commodity prices higher, warns manganese producer UMK

Volatility in global oil markets and the potential long-tail effects on shipping and energy pricing could have far-reaching consequences for commodity markets and South Africa's mineral export sector, United Manganese of Kalahari (UMK) chief executive Malcolm Curror said recently.

Oil prices have surged sharply in recent weeks amid supply uncertainty linked to instability in parts of the Middle East. The movements in energy markets have already raised concerns across several commodity-dependent sectors where fuel costs account for a significant share of operating and logistics expenses.

Curror stated that the mining sector is especially vulnerable to sudden fluctuations in energy prices and maritime transport costs. "Energy is embedded in nearly every stage of the mining value chain," he said. "It runs from operating heavy equipment through to transporting ore by rail, road, and ship. When fuel prices rise sharply, the cost pressures ripple through logistics networks, freight rates and ultimately pricing," he said. "Mining operates within highly interconnected global supply chains, so movement in one part of the system tends to influence the entire value chain."

Shipping markets are also responding to increased global uncertainty. Industry analysts have reported vessels being rerouted in certain regions, while freight insurance premiums and transport costs have started to rise. "Adjustments in global shipping patterns can tighten available capacity and raise costs for exporters, in addition to higher fuel input expenses," Curror said. "For a commodity exporter such as South Africa, logistics efficiency and energy pricing are crucial factors in maintaining competitiveness."

The past week has seen significant market volatility and concomitant to that increases in jet fuel pricing of up to 70% in some geographic areas in South Africa along with already reported shortages of Diesel in the agriculture production sector.

South Africa is the world's largest producer of manganese ore; a mineral widely used in steelmaking and industrial manufacturing. Much of the country's production is exported to steel producers in Asia and Europe, making the sector dependent on affected global shipping routes and stable freight costs.

While commodity markets can sometimes withstand input cost increases during periods of disruption, Curror warned that prolonged volatility is not ideal for either producers or consumers of South African exports. "Commodity producers prefer stable operating environments where energy costs and shipping routes remain predictable," he said.

Curror added that the company will continue closely monitoring developments in global oil markets and maritime logistics. "UMK will continue operating as a responsible manganese producer while limiting ore transportation by road where possible to reduce diesel exposure, despite placing pressure on export volumes."

■

# Restructuring of Denel shows encouraging results

Denel is emerging from a challenging period in its history but is quite confident that it is well on its way to recovery, according to a media release that Denel has distributed.

"The restructuring process continues and will enable Denel to optimise operations, bolster delivery capacity and rebuild trust among industry partners, suppliers and end-users within the defence sector," said Group CEO Tsepo Monaheng.

"In this we are receiving significant support from our new Shareholder Representative and the Department of Defence, which enables Denel to integrate more fully into the broader defence community and benefit from stronger backing to better support the SANDF and grow our footprint internationally."

"The 2025 Annual Report reflects the progress we are making on our journey to full recovery. We are establishing the foundation for sustainable growth and operational excellence. We are ensuring that all business areas are sustainable on their own for the group to be successful. We are stabilising our core business strengths and repositioning Denel as a trusted provider of vital defence capabilities," continued Monaheng.

"Together with the Board of Directors we identified ▸

several strategic success factors, which are vital to secure the company's future sustainability."

In recent years the Auditor General has expressed significant disclaimers about the company's internal controls. Much of this can be attributed to a deficient internal control environment and a number of factors including the exodus of skilled employees and inefficient business processes, coupled with lack of integrated ERP system.

The Board and management introduced a robust remedial plan, which includes the re-establishment of strong internal control governance structures that drive implementation of the plan.

"We are confident it will lead to a culture shift that embeds good corporate governance and good internal control systems," said Monaheng.

Denel also introduced a wide-ranging fraud and corruption prevention strategy which meets international standards, including lifestyle audits for staff, senior management and executives. All senior management positions have now been filled. Denel were able to attract some of the top minds in specialised fields such as leadership, auditing, financial management and business development to lead the company through the final stages of restructuring, and beyond.

Monaheng said "These strategic initiatives have fortified Denel's position, ensuring its relevance and sustainability in a competitive and rapidly changing global defence and technology environment. Denel's vital role in the safeguarding of South Africa's sovereign defence capabilities cannot be overstated. It remains a cornerstone of national security, providing the country with control over advanced technologies, systems and platforms necessary for operational readiness and strategic independence." ■

# Glencore could walk away from South Africa smelter rescue talks over conditions

It has been reported that in the interim Glencore has made a counter offer but there is no official statement at the time of going to press.

Glencore's South African ferrochrome unit could walk away from talks with the government over a discounted electricity package due to what it sees as unfavourable conditions, an executive said recently in a Reuters report.

Glencore has said it requires reduced tariffs to keep its loss-making smelters open and avert job cuts. The government is keen to save the smelters, which employ thousands and are major customers of the state-owned electricity supplier Eskom.

Eskom on February 27 offered the country's two biggest ferrochrome firms, including the Glencore unit, heavily discounted electricity in a bid to rescue their troubled operations. The offer, to reduce electricity tariffs from R1.36 to 62c per kilowatt hour, is subject to approval by South Africa's energy regulator under conditions that are yet to be made public.

But Glencore Ferroalloys CEO Japie Fullard warned the company could walk away from the talks, saying some conditions of the package deal were not acceptable to the company.

"The terms and conditions, the way that it is now, I unfortunately will not be in a position to sign," Fullard said at a mining conference in Johannesburg.

"So that means, if they do not come to the party, we are going to walk away from the 62 cents (deal)," he added.

Fullard said representatives of the ferrochrome firms were meeting government representatives.

**South African smelters battling high costs**

Glencore on March 2 deferred lay-off procedures at its ferrochrome smelters until March 31 to allow ongoing negotiations. As many as 1 500 jobs would be cut if no agreement is reached on the electricity tariff package, Fullard added.

Samancor Chrome, the other ferrochrome producer, which was offered discounted electricity, has said it is going ahead with plans to lay off workers. The firm said while the reduced tariff addressed electricity cost pressures, the terms and conditions attached to the offer posed a threat to the long-term viability of the ferrochrome industry.

Neither Glencore nor Samancor have disclosed the conditions as negotiations are ongoing.

South African smelters are battling high electricity costs, which have risen tenfold since 2008, amid growing competition from Chinese producers. Only 11 out of a possible 66 smelters are still operational in the country. ■

# Mintek spearheads national critical minerals strategy through rare earth recovery

In a global landscape defined by the relentless race for green energy and high-tech sovereignty, Rare Earth Elements (REEs) remain the quiet, fundamental engines of the modern world. These elements are essential to the manufacturing of high-efficiency wind turbines, high-performance magnets, and the sophisticated microelectronics that power our daily lives. As the global economy shifts toward renewable energy and aggressive decarbonisation, the demand for these minerals has reached an all-time high, creating a strategic imperative for nations to secure their own supply chains.

Currently, China dominates the global landscape, yet industry analysts project a vital window for emerging producers to establish alternative hubs. South Africa is now positioning itself to seize this moment through the National Critical Minerals and Metals Strategy. This ambitious framework aims to transform the country from a traditional raw material exporter into a sophisticated global leader in mineral beneficiation and advanced manufacturing. At the heart of this national mission is Mintek, South Africa's national mineral research organisation, which is currently spearheading breakthrough research to recover REEs from a remarkably unconventional source: the country's vast and historically ignored reserves of discard coal and coal fly ash (CFA).

Coal waste and fly ash contain a treasure trove of critical minerals, including rare earth elements, vanadium, titanium, silica, alumina, gallium, and germanium. Despite their name, these elements are relatively abundant in nature, though they are rarely found in the concentrated, easy-to-mine deposits that industry prefers. They are the hidden architects of the digital age, found in the vibrant red phosphors of smartphone screens, the tiny haptic motors that provide tactile feedback in handheld devices, and the massive, high-performance magnets required to generate power in offshore wind farms. Even the precision glass used in high-end camera lenses and the fibre-optic cables that carry the world's data rely on Lanthanum to transmit light without distortion.

Historically, the dream of extracting these vital materials from coal waste was stifled by a significant technical hurdle involving silica dissolution. During traditional processing of discard coal, silica often leaches into the solution, causing significant losses of REEs and creating a thick, gelatinous substance that clogs downstream machinery and halts production. To bypass this obstacle, Mintek's Hydrometallurgy division has turned its focus toward Coal Fly Ash, the fine powder left over after coal combustion. By applying the sophisticated principles of the circular economy, Mintek aims to extract a diverse "basket" of critical mineral value that includes REEs for high-tech applications alongside silica, iron, and mullite for broader industrial use. This integrated approach directly supports the South African Government's strategy by fostering local beneficiation, ensuring that the nation does not simply extract resources but processes them into high-value components.

Dr Molefi Motuku, CEO of Mintek, describes this venture not as a simple extraction project, but as a fundamental reimagining of a key national mineral: "At Mintek, we are fundamentally reimagining the role of coal in the modern era by looking far beyond its traditional use as a primary energy source. We no longer see coal and its by-products as mere fuel or waste, but rather as a strategic reservoir of the very minerals that will power the global high-tech future. By pioneering the extraction of Rare Earth Elements and other critical metals from coal fly ash, we are unlocking a hidden treasure trove that has the potential to anchor a new era of industrial growth."

This vision recently earned the critical backing of Coaltech, which approved a compelling funding proposal from the Mintek Hydrometallurgy team. Dr Elmar Muller, Executive Manager of Hydrometallurgy, noted that securing this funding serves as a profound testament to the industry's trust in Mintek's ability to solve complex, real-world challenges. He believes this partnership reinforces a national commitment to critical materials recovery and showcases how cross-sector collaboration can drive the South African minerals sector into a more competitive and resilient global position.

For Engineer and Project Lead Agnes Modiga, the stakes of this research are as much about people as they are about pixels and magnets. She emphasises that the project possesses the unique power to transform environmental liabilities into invaluable products while simultaneously reducing dust emissions and land contamination for local communities living near coal sites. Beyond the immediate benefits of environmental stewardship, the initiative is designed to not only create new, specialised jobs and bridge a critical skills gap in the engineering sector, but also to stimulate local manufacturing, drive industrial diversification, and create sustainable jobs across multiple sectors – turning what was once seen as waste into an enabler of economic growth. Ultimately, this work is about more than just chemistry; it is about positioning South Africa as a global pioneer in the sustainable utilisation of coal-related materials, proving that the waste of the past can indeed power the innovations of the future. ■

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# BMW Group continues to invest in Additive Manufacturing and elevates the technology to the next industrial level with humanoid robotics complementing existing automation

The BMW Group Additive Manufacturing Campus (AMC) is setting the course for the next stage of industrialisation. Under the new leadership of Timo Göbel, additive manufacturing will be further integrated across all phases of the vehicle life cycle, with open-material and highly automated systems and a clear focus on quality.

***Additive Manufacturing (AM) is firmly embedded throughout the entire product life cycle of the BMW Group***

**Additive Manufacturing at the BMW Group**

Additive Manufacturing (AM) is firmly embedded throughout the entire product life cycle of the BMW Group. From conceptual ideas and prototype production to series production and aftersales applications, additive manufacturing components are used across all stages. The technology is also an integral part of the BMW Group production system.

AM components are now used in series production vehicles across all BMW Group brands – from MINI to BMW and Rolls-Royce all the way to BMW Motorrad.

***3D printed components are used from early development and prototype production all the way to series production and to support the global production network***

"Additive manufacturing is now fully integrated across all phases of the product life cycle," Timo Gobel, head of additive manufacturing for BMW Group, said in a statement. "3D printed components are used from early development and prototype production all the way to series production and to support the global production network."

The company currently uses AM prototyping in the development and validation of its fully electric Neue Klasse vehicles, among others. And when it comes to production, "AM is present in every BMW Group plant worldwide" to streamline the manufacture of components, Gobel noted.

To scale its AM applications, the company is investing in 3D printing technology with greater build volumes and is using "automated, digitally networked process chains" to facilitate integration into

production systems.

"The next step is the introduction of an entirely new generation of metal 3D printers, followed by the integration of new manufacturing technologies, such as wire arc additive manufacturing, into the BMW Group production network," Gobel said.

BMW Group commissioned its first AM equipment development in 1990 and opened its Additive Manufacturing Campus in Oberschleissheim, Germany, in 2020. Since then, the site has manufactured more than 1.6 million components for the company's brands, in addition to more than 100 000 components produced each year at its global vehicle plants, BMW Group said.

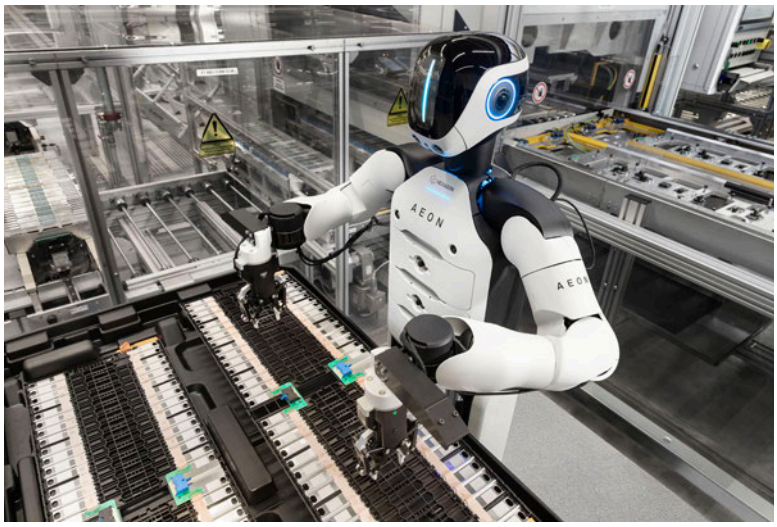
**Humanoid robotics complements existing automation**

The BMW Group is strategically expanding its automation portfolio to include Physical AI and humanoid robotics. Humanoid robots are viewed as a value-adding complement to existing automation. Particularly, they demonstrate potential in monotonous, ergonomically demanding, or safety-critical tasks. The goal is to relieve employees and further improve working conditions.

In collaboration with Hexagon, a long-standing, established partner of the BMW Group in the field of sensor technology and software, the first pilot project in Europe is now underway. The deployment in Leipzig is focusing on testing a multifunctional application of the robot. It is based on AEON's design, whose human-like body allows a wide range of hand and gripper elements or scanning tools to be flexibly attached and enables dynamic use on wheels. During testing and later in the pilot phase, the robot will be used in the assembly of high-voltage batteries and in component manufacturing.

The world's first deployment of humanoid robots at a BMW Group plant took place at the Spartanburg plant in the United States in 2025, in collaboration with the technology company Figure AI.

***The BMW Group is strategically expanding its automation portfolio to include Physical AI and humanoid robotics. Humanoid robots are viewed as a value-adding complement to existing automation***



***In total, the robot Figure 02 moved more than 90 000 components and covered approximately 1.2 million steps in around 1 250 operating hours***

***The world's first deployment of humanoid robots at a BMW Group plant took place at the Spartanburg plant in the United States in 2025. Within ten months, the robot Figure 02 supported the production of more than 30 000 BMW X3's, working ten-hour shifts daily from Monday to Friday***

The results demonstrated that Physical AI can deliver measurable added value under real-world conditions. Within ten months, the robot Figure 02 supported the production of more than 30 000 BMW X3's, working ten-hour shifts daily from Monday to Friday. Figure 02 handled the precise removal and positioning of sheet metal parts for the welding process – a task that is particularly demanding in terms of speed and accuracy while also being physically exhausting. In total, it moved more than 90 000 components and covered approximately 1.2 million steps in around 1 250 operating hours. ■

# New executive committee for the World Foundry Organisation

WFO will celebrate its centenary this year.

The World Foundry Organisation (WFO) has announced the new composition of its Executive Committee for 2026, following the new appointments decided at last year's General Assembly. In addition to the new Polish presidency and British vice-presidency, executive members from China, Germany, Spain and Japan will be joined by new executive members from Turkey and France, as well as those from South Korea, the United States, and the Czech Republic, who have joined the group at various times over the past year.

"These new executives will undoubtedly usher in a new era for the Board in a context where global cooperation is crucial, I am very excited about the new ideas they are introducing. Their impressive professional background helps to get an idea of the impact they can have on the global foundry community," stated WFO Secretary General José Javier González.

**Meet the new WFO executives**

The executive committee for 2026 include Ali Esat Kutmangil of Turkey, Guillaume Allart of France, Seung Mok Yoo of South Korea, Bradford D. Muller of United States and Vladimír Krutiš of Czech Republic.

**Celebrates its centenary year**

Founded in 1926, the WFO has played a pivotal role in uniting foundry associations, research institutions, and industry leaders from around the world. Over the past century, WFO has fostered international cooperation, promoted technical excellence, and contributed significantly to the development of casting technologies that underpin modern infrastructure, transportation, energy, and manufacturing.

The Centenary celebrations will highlight a century of achievement while setting the stage for the future of the foundry industry. The World Foundry Congress in October in Istanbul will be the main event for this year's celebrations and past and present WFO stakeholders will be part of it. ■

# Dr Katarzyna Liszka takes up post of Executive Secretary for the World Foundry Organisation

Dr Katarzyna Liszka has been active in the foundry industry for nearly 20 years, combining technical expertise with strategic and organisational leadership. Since 2005, she has been professionally associated with the Polish Foundrymen's Association (STOP), where she has served as General Secretary since 2014, responsible for the organisation's overall management, oversight of financial and human resources, and the implementation of national and international projects.

For many years, she has been actively involved in the World Foundry Organisation (WFO), representing Stowarzyszenie Techniczne Odlewników Polskich (STOP) as a member organisation. She is also involved in the WFO Management Working Group and, since 2025, has served as a member of the WFO Strategy Group, co-creating the organisation's strategic development directions at the global level. In 2018, she coordinated the organisation of the 73rd WFO World Foundry Congress in Krakow, Poland. She serves on numerous organising committees of World Foundry Congresses and national and international technical and scientific conferences, actively building relationships between industry, academia, and public institutions. She is the initiator of the "The FemPower in Metalcasting – Passion and Success" competition, which aims to increase the visibility of Polish women in the sector and foster a more inclusive professional environment.

***Dr Katarzyna Liszka***

In the words of the WFO General Secretary José Javier González Estévez, "There is no doubt that Katarzyna's joining the Secretariat Team is great news; her excellent work throughout her career as our WFO representative in Poland and her passion for the people who make up our industry point to an exciting future for the team and the WFO. ■

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# Scientists turn scrap car aluminium into high-performance metal for new vehicles

Over the next decade, a large amount of aluminium from vehicle body panels is expected to enter recycling and salvage systems. Much of this material cannot currently be reused in critical automotive components because contamination makes it too impure. That limitation has reduced its value.

Researchers at the Department of Energy's (DOE) Oak Ridge National Laboratory (ORNL) are working to change that. The team created a new aluminium alloy called RidgeAlloy that can convert low value recycled aluminium into a reliable source of material for manufacturing structural automotive parts in the United States.

Aluminium appears on DOE's critical materials list because it plays an important role in many energy technologies, including systems used to generate, transmit, store and conserve energy.

RidgeAlloy is made by remelting aluminium recovered from used products and recasting it into a new alloy designed to meet the strength, ductility and crash safety requirements of structural vehicle components. ORNL researchers developed a targeted alloy design approach that speeds up the development of new materials.

"The team advanced from a paper concept to a successful, full-scale part demonstration of a new alloy in only 15 months," said Allen Haynes, director of ORNL's Light Metals Core Program. "That's an unheard-of pace of innovation in developing complex structural alloys."

value cast products or exported abroad. That represents a missed opportunity to reuse the metal as a domestic source of high-quality aluminium.

"You can repurpose post-consumer aluminium into something non-structural like engine blocks," said Alex Plotkowski, ORNL group leader of Computational Coupled Physics. "But it won't have the properties needed for higher value, structurally sound body applications."

The main challenge comes from contamination introduced during the vehicle shredding process. Small amounts of iron from parts such as rivets and other fasteners mix into the recycled metal. These impurities make the chemical composition unpredictable and reduce performance, which prevents the material from meeting the strict standards required for structural automotive alloys.

Because of this, most lightweight vehicle parts are still made from primary aluminium produced from mined ore. That process requires significant amounts of energy.

Turning scrap aluminium into a domestic resource

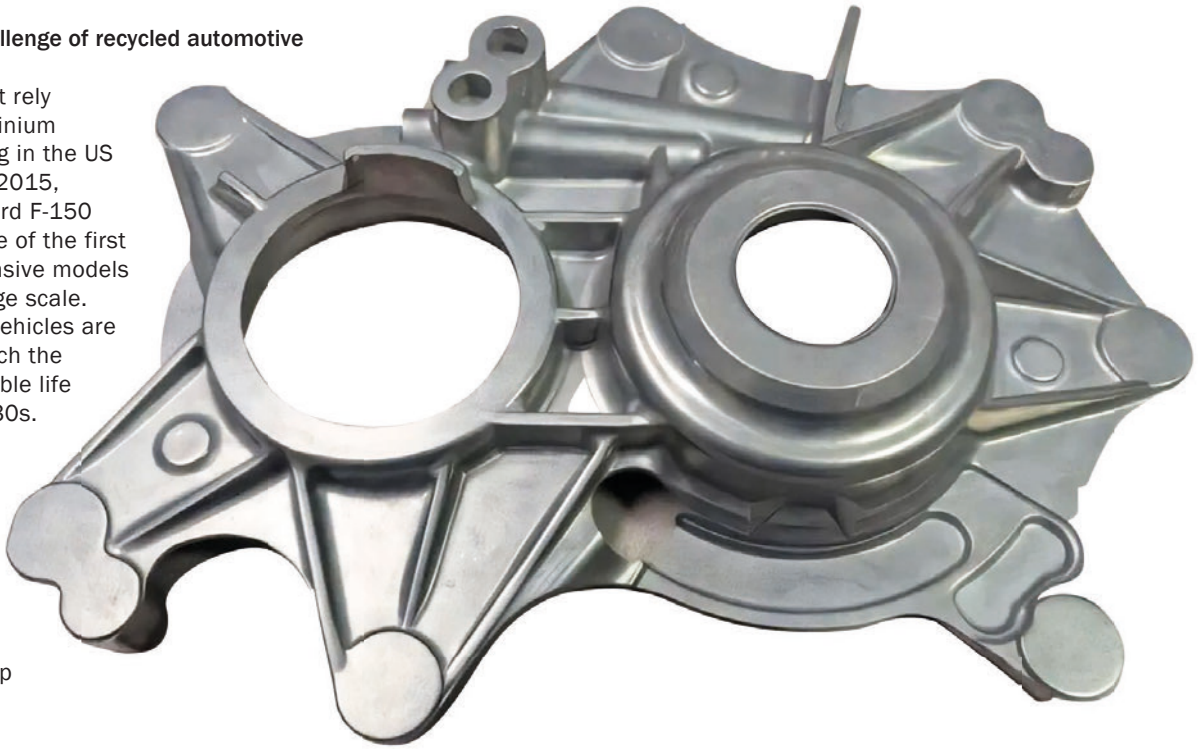
Although the United States imports most of its primary aluminium, the country has a well-developed network for shredding vehicles and recovering aluminium scrap.

"Using remelted scrap instead of primary aluminium is estimated to result in up to 95% reduction in the energy

**The growing challenge of recycled automotive aluminium**

Vehicles that rely heavily on aluminium began appearing in the US market around 2015, including the Ford F-150 truck series, one of the first aluminium intensive models produced at large scale. Many of those vehicles are expected to reach the end of their usable life by the early 2030s. When that happens, recycling systems could receive as much as 350 000 tons of aluminium body sheet scrap every year in North America.

A large portion of this material may end up being used in lower



***Scientists at Oak Ridge National Laboratory have created a new aluminium alloy called RidgeAlloy that can turn contaminated car-body scrap into strong structural vehicle parts. Normally, impurities introduced during recycling make this scrap unsuitable for high-performance applications. RidgeAlloy overcomes that challenge, enabling recycled aluminium to meet the strength and durability standards required for modern vehicles. The technology could slash energy use, reduce imports, and unlock a huge new supply of domestic aluminium***

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needed for processing a part," said Amit Shyam, leader of ORNL's Alloy Behaviour and Design Group.

To create RidgeAlloy, researchers used advanced scientific tools to design the alloy composition. High throughput computing was used to perform more than two million calculations that predicted which combinations of elements would deliver the desired mechanical properties. The team also conducted detailed materials analysis and neutron diffraction experiments at ORNL's Spallation Neutron Source, a DOE Office of Science user facility.

These experiments helped scientists understand how different impurities influence alloy performance. Neutrons are especially useful for studying metals because they can pass through dense materials without causing damage, allowing researchers to observe internal structures and changes at the atomic scale.

**From computer models to real automotive parts**

After identifying the optimal alloy formula through simulations and laboratory testing, the researchers evaluated RidgeAlloy under real manufacturing conditions.

PSW Group's Trialco Aluminum in Chicago produced recycled aluminium ingots made from mixed automotive body sheet scrap that matched the RidgeAlloy design. These ingots were then sent to Falcon Lakeside Manufacturing in Michigan, where they were melted and cast into automotive components using high pressure die casting.

"The part we chose was medium-sized and moderately complex," Plotkowski said. "The ultimate goal is to eventually cast larger parts, perhaps even automotive gigacastings, but this is the first step."

Testing confirmed that RidgeAlloy contains the combination of aluminium, magnesium, silicon, iron and manganese needed for structural vehicle castings, even when the recycled metal includes higher levels of iron and silicon. The material provides the strength, corrosion resistance and ductility required for demanding applications such as vehicle underbodies, frame elements and other key structural parts.

This capability could significantly change how automotive aluminium scrap is sorted, valued and reused across North America.

**Expanding the impact beyond the lab**

"This team figured out how to take full advantage of a national lab's world-class suite of capabilities to rapidly fill a huge gap in our understanding of lightweight automotive materials," Haynes said. ■

# New opportunities for magnesium applications

Magnesium is one of the lightest structural metals, offers excellent recyclability, and holds strong potential for a wide range of industrial uses. Despite these advantages, its application has remained limited so far. The main reason lies in its restricted formability, which causes conventional manufacturing processes – especially in wire production – to reach their limits quickly.

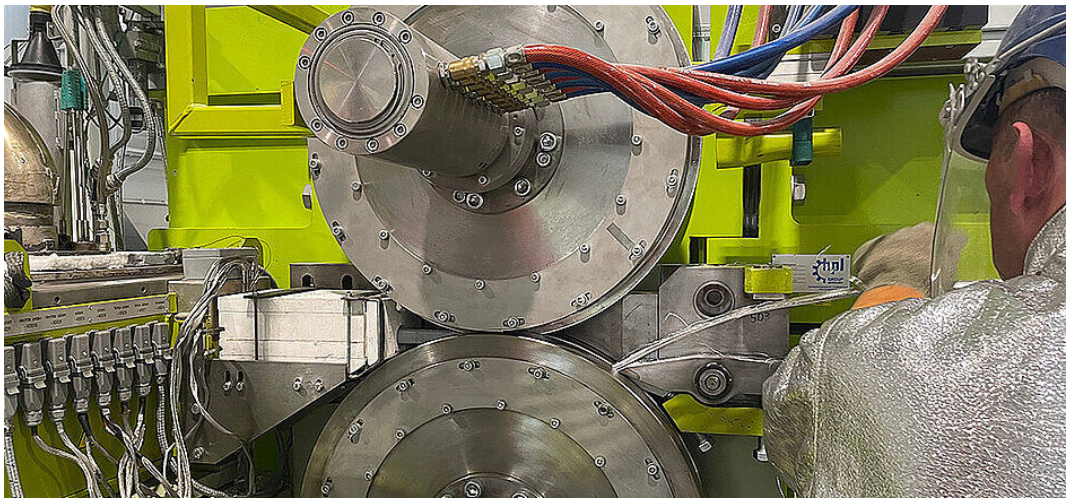
An international research project is addressing this challenge. Its goal is to gain a deeper understanding of the material behaviour of the calcium-containing magnesium alloy ZAX210 across the entire process chain and based on this knowledge, to develop more efficient processing strategies. At the LKR Light Metal Competence Centre Ranshofen, part of the AIT Austrian Institute of Technology, simulation-based methods are used to analyse how microstructure and texture evolve from casting to wire drawing.

In recent years, notable progress has been made through the development of new alloy concepts. In particular, the addition of calcium has been shown to enhance both formability and texture development. The Mg-Zn-Al-Ca alloy ZAX210 demonstrates significantly improved formability compared to conventional magnesium alloys, due to the targeted control of microstructure and recrystallisation. Nevertheless, a comprehensive understanding of its behaviour under real industrial conditions is still lacking.

**Developing an innovative process chain for ZAX210**

The project 'Material behaviour along the process chain of ZAX210 wire' is the first to systematically investigate the production of magnesium wire based on the ZAX210 alloy. The focus is on a novel process chain that combines twin-roll casting (TRC), continuous rotary extrusion (CRE), and subsequent wire drawing.

TRC integrates casting and hot forming into a single step, enabling the production of a homogeneous starting material with an optimised microstructure. CRE, in turn, is a resource-efficient continuous forming process whose effects on microstructure and texture have not yet been fully explored. ▸



By promoting dynamic recrystallisation in a targeted manner and controlling texture development, the project aims to achieve improved formability alongside high mechanical performance. This opens up new application areas for magnesium wire, including medical technology and wire-based additive manufacturing.

**LKR's contribution: Simulation across the process chain in its entirety**

LKR contributes its extensive expertise in forming technologies as well as microstructure and texture simulation to the project. On the macroscopic level, individual process steps are modelled using adapted forming and extrusion simulations to systematically assess the influence of key process parameters.

At the same time, the LKR examines microstructure evolution along selected flow lines. This includes the analysis of grain morphology, phase proportions, texture changes, and recrystallisation mechanisms. The Visco-Plastic Self-Consistent approach is applied, providing an efficient framework for describing anisotropic material behaviour. This makes it possible to realistically capture complex phenomena such as dynamic recrystallisation and twin-induced recrystallisation.

By combining macroscopic process simulation with microscopic material modelling, a comprehensive understanding of the interactions between process control, microstructure, and resulting material properties is achieved.

Aluminium and magnesium also play a key role as recyclable materials, offering significant potential for a sustainable circular economy. Accordingly, research activities focus on these two light metals in order to enable efficient, safe, and environmentally friendly mobility solutions.

**Main project partners and funding**

The project partner is the Institute of Metal Forming (IMF) at TU Bergakademie Freiberg. Funding is provided by the FWF WEAVE programme, with a main submission to the German Research Foundation (DFG) and co-financing from the Austrian Research Promotion Agency (FFG).

# It's not just oil: Aluminium prices have surged as Iran conflict chokes supply

***Picture: International Aluminium Organisation***

The US and Israel's war with Iran has upended the supply of aluminium in the Middle East, sending prices of the base metal skyrocketing.

While aluminium may be the most abundant metal on earth, it is crucial to the function of the world economy. It is an essential material across electronics, transport, and construction, as well as other industries such as solar panels and packaging.

At the outbreak of the Iran conflict on 28 February, 3-month LME aluminium futures initially jumped by as much as 10% by 12 March before paring some gains to land around 8% higher, as the effective closure of the Strait of Hormuz has caused a significant disruption to supply.

It's been the best-performing industrial metal over the past two weeks, and prices are now hovering just below 4-year highs at $3 370 recently in London.

Bahrain's Alba, which hosts the world's largest smelter, has also cut production by 19% of its 1.6 million tons of annual output, only adding to fears of a global shortage. Lower stock levels and the potential for further supply disruption in the Middle East could push prices towards $4 000 per ton, according to metals intelligence provider CRU Group.

CRU principal analyst Guillaume Osouf wrote in a recent article that the LME price would likely be much higher now if it wasn't for weak global demand for the metal.

"A prolonged conflict will likely drastically change our market outlook for the rest of the year due to the lasting impact this will have on global supply, and the potential negative effects on demand," he added.

The answer as to where the price could be headed next lies with China, according to other analysts. China is the biggest producer of aluminium and tends to keep production constrained at 45.5 million tons per year to reduce emissions and prevent overcapacity issues.

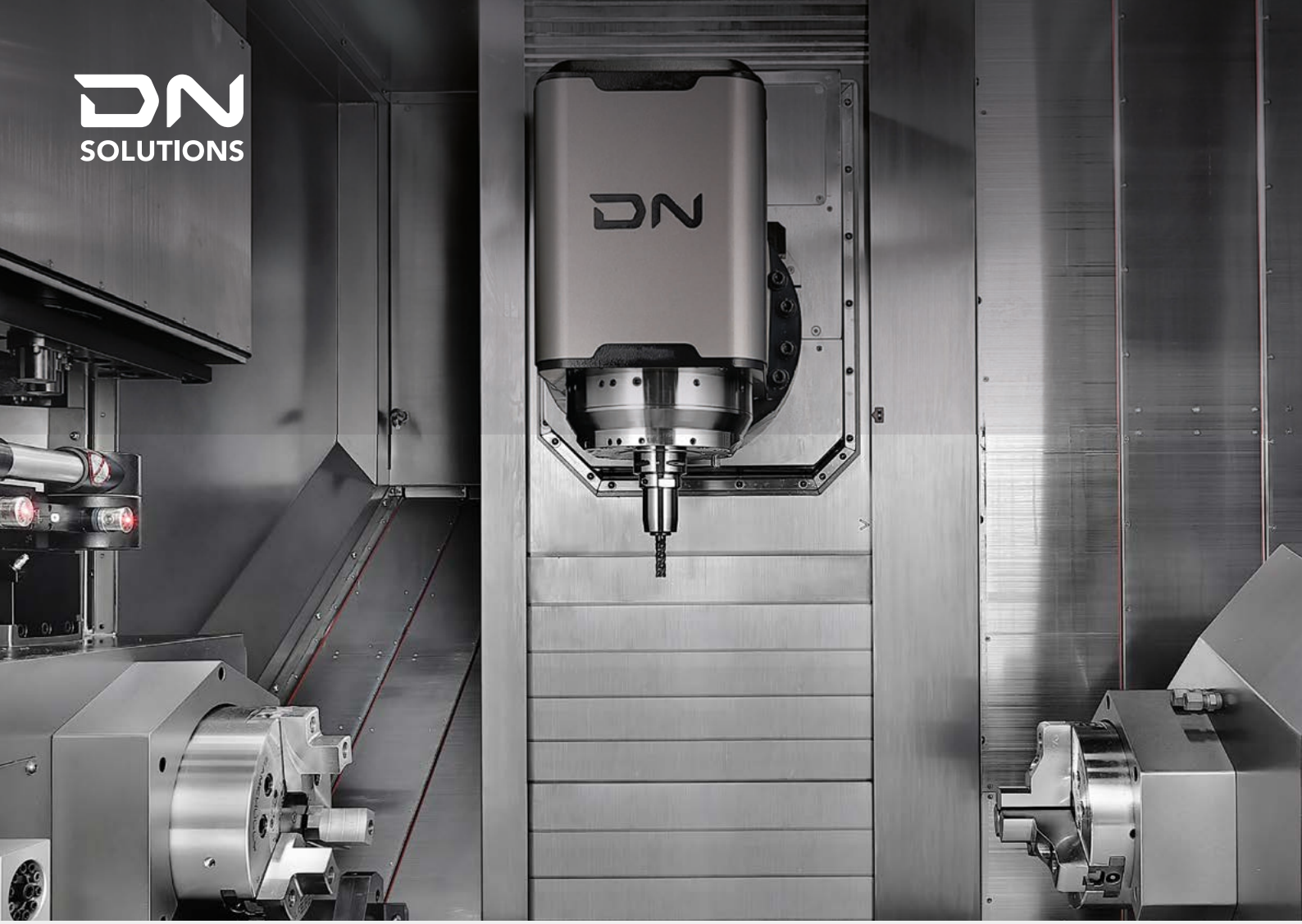
"If the Chinese government decides that the prices are too high, they can restart a number of idle smelters in the country and the world will be full of aluminium," Artem Volynets, CEO of miner ACG Metals, told CNBC's Europe Early Edition.

Despite the recent rise in price on the LME, neither analyst sees aluminium becoming a significant trade for retail investors, as is the case with silver and copper.

Volynets added that he would be "surprised" to see retail investors involved in such an industrial element, while Osouf told CNBC that the gross long position is only marginally smaller than what it was at the end of January, so involvement from funds has been limited since the start of the conflict.

"Interestingly, the shorts have increased their exposure by 15k lots, suggesting a larger portion of investors believe in lower prices from now," he added. ■

DN SOLUTIONS

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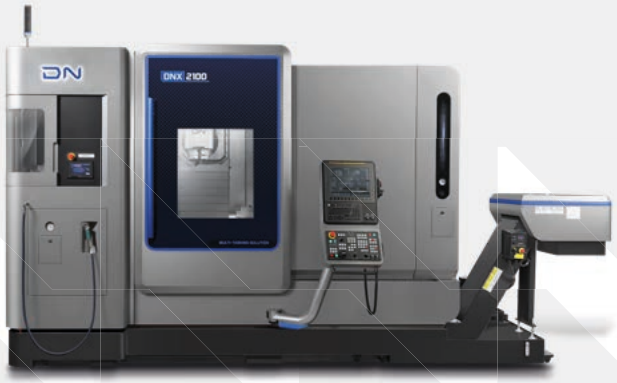


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# Real-time X-rays reveal how a ‘flash-freezing’ alloy evades the stress of 3D printing

For all the futuristic promise of additive manufacturing, the industry has faced a mundane but stubborn problem: 21st-century printers are often forced to run on 20th-century “ink”. Most aluminium alloys used in 3D printing today were originally designed for traditional casting methods, where metal cools slowly in a mould. When these standard materials are subjected to the turbulence of Directed Energy Deposition (DED), a printing technique involving intense heat and rapid cooling, they frequently develop microscopic cracks or structural weaknesses.

But Prof. Peter. D. Lee, Prof. Chu Lun Alex Leung, Dr. Da Guo and their co-workers in University College London (UCL), Brunel University of London and elsewhere have now developed a bespoke aluminium alloy specifically tailored to survive and thrive in the harsh environment of a 3D printer. Published in International Journal of Extreme Manufacturing, the researchers report that their new material, a mix of aluminium, nickel, cerium, manganese, and iron, produces components with significantly higher strength and lower internal stress than the current industry standard.

The challenge with DED printing is the thermal shock. The process is akin to high-tech welding, where a laser melts metal powder as it is deposited layer by layer. This results in cooling rates thousands of times faster than traditional casting. Standard alloys, such as the widely used AlSi10Mg, and other high-strength alloys often suffer from weak performance or poor processability in 3D printing. “The current development of 3D printing focused mostly on printing process; high-quality printing part should start from the materials,” said the authors.

To solve this, the researchers designed a “hypereutectic” alloy, essentially a metal recipe optimised to freeze in a specific and uniform way. By adding transition metals and rare earth elements, they created a material that solidifies with an incredibly fine microstructure matrix with uniform distribution of high-strength intermetallic particles. The grains within the metal are less than five micrometres across, with each grain containing an ultra-fine eutectic lattice structure less than 200 nanometres.

The results of this chemical tuning were dramatic. When compared to the standard AlSi10Mg alloy printed under identical conditions, the additive manufactured new material proved to be 70% stronger in yield strength and 50% stronger in ultimate tensile strength. Because the metal transitions from liquid to solid almost instantly (with a freezing range of just 2.8 °C), it leaves little time for the detrimental shrinking that causes cracks in other high-strength materials.

Crucially, the new alloy builds up very little internal tension as it hardens. Residual stress, the “ghost” forces trapped inside a printed part that can warp or crack it later, was measured at less than 32 megapascals, a figure the authors note is negligible compared to the material’s overall strength. ■

# A streamlined way to make steel could reduce America’s reliance on imports

America has been making steel from iron ore the same way for hundreds of years. Unfortunately, it hasn’t been making enough of it. Today the US is the world’s largest steel importer, relying on other countries to produce a material that serves as the backbone of our society, according to a MIT release.

That’s not to say the US is alone: Globally, most steel today is made in enormous, multi-billion-dollar plants using a multi-step, coal-based process that hasn’t changed much in 300 years.

Now Hertha Metals, founded by CEO Laureen Meroueh, is scaling up a steel production system that uses a continuous electric arc furnace to produce molten steel from iron ore of any grade in a single step. The process, which does away with coal, is powered by natural gas and electricity and can also run on clean hydrogen. It also eliminates the need for coking and sintering plants, along with other dangerous and expensive components of traditional systems. As a result, the company says its process uses 30 per cent less energy and costs less to ▸

operate than conventional steel mills in America.

"The real headline is the fact that we can make steel from iron ore more cost-competitive by 25 per cent in the United States, while also reducing emissions." Meroueh says. "The United States hasn't been competitive in steelmaking in decades. Now we're enabling that."

Since late 2024, Hertha has been operating a 1-metric-ton-per-day pilot plant at its first production facility outside Houston, Texas. The company calls it the world's largest demonstration of a single-step steelmaking process. This year, the company will begin construction of a plant that will be able to produce 10 000 tons of steel each year. That plant, which Hertha expects to reach full production capacity at the end 2027, will also produce high-purity iron for the magnet industry, helping America onshore another critical material.

"By importing so much of our pig iron and steel, we are completely reliant on global trade mechanisms and geopolitics remaining the way they are today for us to continue making the materials that are critical for our infrastructure, our defence systems, and our energy systems," Meroueh says. "Steel is the most foundational material to our society. It is simply irreplaceable."

Globally, most steel today is made by combining iron ore with coke (from coal) and limestone in a blast furnace to make molten iron. That pig iron is then sent to another furnace to burn off excess carbon and impurities. Alloying elements are then added, and the steel is sent for casting and finishing, requiring additional machinery.

The US makes most of its steel from recycled scrap metal, but it still must import iron made from a blast furnace to reach useful grades of steel.

"The United States has a massive need to make steel from iron ore, not just scrap, so we can stop relying on importing so much," Meroueh explains. "We only have about 11 operational blast furnaces in the US, so we end up importing about 90 per cent of the pig iron needed to feed into domestic scrap steel furnaces."

For further details visit:

https://news.mit.edu/2026/new-way-make-steel-could-reduce-americas-reliance-imports-0213 ■

# The TITAN XRF gun
## for positive material identification


The TITAN XRF gun for positive material identification (PMI) is an advanced solution for fast and accurate alloy identification, housed in a robust shell built to withstand all-day use in industrial environments.

**Fast non-destructive alloy identification**

TITAN supports fast, non-destructive alloy analysis directly at the point of inspection, enabling reliable verification of metal components without cutting, grinding, or laboratory testing.

**Reliable PMI for every operator**

Designed for routine industrial use, TITAN combines intuitive, guided workflows with accurate, matrix-matched calibrations to support confident identification of alloy grades, including light and trace elements, even when operated by non-specialists.

Integrated documentation and camera-assisted sample recording streamline workflows in large-scale PMI operations.

**Engineered for the factory floor**

A robust, water and dust-resistant housing and detector shield enables the TITAN to perform consistently in harsh environments, helping maximise machine uptime and maintain efficient PMI workflows.

**Alloy verification using a PMI gun**

During maintenance activities technicians must verify the alloy grades of piping, flanges, and welds to ensure compliance with material specifications.

The use of a PMI gun like TITAN facilitates on-site alloy verification without the need for cutting, grinding, or removing components from service. TITAN rapidly identifies alloy grades and reports key elemental concentrations, including chromium, nickel, and molybdenum, enabling direct verification against specifications for corrosion resistance and high-temperature performance.

This immediate, non-destructive alloy analysis helps prevent the installation or reuse of incorrect or mixed materials, such as the use of low-alloy steels in high-temperature zones, reducing the risk of premature failure, unplanned downtime, and rework.

With its robust design, intuitive operation, and alloy-specific calibrations, TITAN is an excellent PMI gun for routine inspections in production, maintenance, and quality control environments, even under demanding industrial conditions.

For more information contact SPS – Scientific & Precision Solutions on TEL: 011 916 5000 or email info@spsrsa.co.za or visit website www.spsrsa.co.za ■

# HA launches HA Pure Cold-Box systems

With the introduction of HA Pure Cold-Box systems, the HA Group has set a new standard for sustainable, low-emission foundry processes. The combination of innovative technology, resource efficiency, and practical implementation makes this product line an essential building block for the future viability of the foundry industry.

**HA Pure Systems: Innovation for greater sustainability**

The new HA Pure product line supports the 3R principle through its low-monomer technology, featuring a free monomer content of less than 1.0% (phenol/formaldehyde). Designed as a technology platform, HA Pure enables targeted technical solutions within the Cold-Box product family to reduce emissions of phenol, BTEX, and formaldehyde. In particular, the reduced free phenol content significantly lowers phenol emissions and improves the suitability of waste sand for disposal.

To further reduce VOC and formaldehyde emissions during the production process, the HA Pure system incorporates specialised “emission catchers.” The systems are compatible with all common Cold-Box solvent types and offer excellent storage stability as well as low odour during core production and casting.

This technology represents a significant step forward in environmentally focused product development. Developed in response to the latest European regulations, HA Pure delivers a low free phenol level below 1% and reduced formaldehyde content, supported by design principles aligned with evolving environmental best practices.

**Key advantages of HA Pure Cold-Box systems**

- Free phenol content < 1.0%
- Reduced pollutant emissions (phenol, BTEX, formaldehyde)
- Lower phenol content in used sand
- Carbon- and VOC-reduced systems
- High strengths and excellent bench life
- Low odour emissions
- Compatible with all Cold-Box solvent types

For further details contact DZanetech for Johannesburg on 082 809 7380 (Paul Malone) or Cape Town on 083 454 5465 (Johan Jooste) or for National 066 010 0999 (Zaid Syed) or Technical Support on 083 274 1657 (Koketso Mamogale) or visit www.dzanetech.co.za ■

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# Foundry alloys from Elkem

A challenge for any iron foundry in sourcing foundry alloys is in selecting a product that meets the metallurgical and quality requirements of the cast iron, at the same time as providing consistently high performance.

"That's where you'll find Elkem to be different from other suppliers and distributors. Because we maintain tight control over our production processes, our foundry alloys lead the field when it comes to quality and consistency. And we're constantly improving too, talking to our customers to understand their needs and refine our product offering so it stays ahead of the field."

Foundry alloys are a vital aspect of all iron foundry processes for the production of cast iron, and quality and consistency are key to the performance of all of them. With precision-formulated products ranging from preconditioners through to inoculants, along with a global presence, Elkem is the only foundry alloy supplier you'll ever need.

**The role of foundry alloys**

'Foundry alloys' is a wide-ranging term that encompasses a variety of products used to treat the molten metal during the production of various types of cast iron.

Foundry alloys are needed for a variety of reasons, including maintaining or increasing nucleation potential, and initiating and controlling the formation of graphite flakes, nodules and compacts.

**Our product range includes:**

Recarburisers: When producing cast iron, recarburisers are used at the early and late stages of the melting process to accurately adjust carbon content in the molten iron.

Preconditioners: Preconditioners are a valuable way of enhancing and stabilising the nucleation potential of the base iron during cast iron manufacture.

Conditioners: Conditioners (or cover alloys) are used in ductile iron manufacture, with benefits including better magnesium recovery and simplified slag removal.

Nodularisers: Nodularisers are magnesium ferrosilicon alloys that are essential in the production of ductile iron, to promote the formation of graphite nodules.

Inoculants: Ferrosilicon-based inoculants promote the formation of evenly-distributed graphite particles with the desired structure, in various types of cast irons.

Inserts: Because they are used directly in the mould, inserts are a highly efficient way of achieving effective inoculation for cast irons. ■

# Why Extending Your Brand Online Matters

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Online research is a key part of the industrial buying cycle, particularly during the consideration and selection stages. castings sa online is where buyers search, research and learn about new product technology and new process innovations. Aligning your message with the areas where prospects are likely to look for technical solutions is the essence of contextual advertising and brand development.

## Online Advertising Opportunities

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