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castings sa

A specialised journal covering the technology, processors and materials field for castings

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South Africa should be encouraging development and trade with favourable countries

In a recent interview, Hüttenes-Albertus' CEO Christoph Koch gives his views on the many current challenges such as high energy costs, overwhelming bureaucracy and production migration in Germany. Despite one in four medium-sized companies in Germany currently thinking about relocating production abroad, Hüttenes-Albertus is not planning to do so. However, Koch was also keen to point out that the current German government is not making it easy for industry and others.

"We have far too many regulations. Germany will only remain viable for the future if the government finally stops this bureaucratic madness."

His statement is backed up by a recent study conducted by the Institut für Mittelstandsforschung (IfM) in Bonn on behalf of the New Social Market Economy Initiative (INSM) which shows that the burden of bureaucracy has now become a key obstacle to investment. Most companies are investing less in Germany because of bureaucracy two-thirds of companies in Germany feel disproportionately burdened by government bureaucracy. The study says the overwhelming majority of companies (80%) feel controlled by the state, with only 9% having the impression that the state trusts them. As a result, 58% of all companies surveyed plan to avoid investing in Germany in the future. 18% are considering investing more abroad due to the bureaucracy.

Germany has always been a great friend of South Africa, trying to advance all aspects of life, for many years now. We only have to look at the foundry industry and see how they have funded many different initiatives in South Africa as well as addressing human capital and skills development by training students at universities in Germany through bursaries. Technology and innovation transfer from Germany is vindicated by the number of German businesses (major international companies) with established offices and manufacturing facilities operating in South Africa, none more so than the automotive OEMs BMW and Mercedes-Benz South Africa.

In short Germany has fostered a development partnership between itself and South Africa - even more so now - aimed at helping the country overcome the development challenges that persist, especially in the areas of good governance, energy, health, vocational education, and prevention of violence.

Many millions of euros have poured into South Africa for the various projects that Germany has initiated. This trade between the two countries has been South Africa's second largest trading partner and also a major investor. In 2021, South Africa exported $10.4 billion worth of goods to Germany. The main products exported from South Africa to Germany were cars ($2.86 billion), platinum ($1.9 billion), and precious metal ore ($1.5 billion). In the same period Germany exported $8.89 billion worth of product to South Africa, which gives South Africa a trade surplus of $1.5 billion.

This is a healthy number in South African terms but is quickly put into perspective when comparing Germany's trade with other countries. Nevertheless, the trade between the two countries should be encouraged and increased. If you compare, for example, South Africa's exports to Russia of $282.85 billion during 2022, according to the United Nations COMTRADE database. Russia's exports to South Africa were $342.22 million during 2021. This is a $60 million deficit. And yes, we are talking millions - not billions - as is the case with Germany - but to our advantage.

South Africa should be encouraging development and trade with favourable countries like Germany. There are many more morally correct countries that want to be involved with South Africa but currently there is no objective to do so. I don't think I am wrong in saying self-indulgence is high on the agenda rather than having a happy population.

South African Institute of Foundrymen

The aim of the SAIF is to promote and develop within Southern Africa the science, technology and application of founding for individuals and involved industries.

Office bearers elected at 2022 AGM

Chairperson/ President: Nigel Pardoe
Vice President: Andrea Moz
Treasurer – To be announced
Member: Clive Jones
Member: Kasongo (Didier) Nyembwe

Upcoming SAIF Events for 2024

SAIF Annual Golf Day: November 2024 at Reading Country Club, Alberton

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Endeco Omega Sinto invest in material processing equipment

Accredited with ISO 45001, ISO 14001 and ISO 9001:2015 certification.

Having just completed one of the most successful years in the company's history, local fabricating and foundry equipment manufacturer Endeco Omega Sinto have now invested in metal processing equipment. The equipment – a 6kW fibre laser and a 165 ton press brake – will be used to cut and bend material to fabricate assemblies used in the manufacture of foundry related equipment for clients in South Africa, as well as for UK parent Omega Sinto Foundry Machinery UK and other subsidiary companies within the group, including the USA.

"Our fabrication shop is going to be very busy in 2024, as it was last year. After assessing our plate and sheet requirements, which have always been outsourced, we found that it made economical sense to invest in our own sheet and plate processing equipment, which we have done," said Roy Dias, Managing Director of Endeco Omega Sinto.

"The seed was sown in 2020 when we secured our first international order to supply equipment to a foundry that manufactures a range of small to large castings that meets the needs of companies in the mining, minerals, oil, gas, power and industrial markets. We shipped over 90 tons of fabricated steel to the foundry."

"The equipment was manufactured locally and was assembled at the foundry site once it arrived in Australia and was incorporated into a very large project that the foundry was installing. Endeco Omega Sinto's contribution to the project, which was project managed by UK parent Omega Sinto Foundry Machinery UK, included the manufacture of two large compaction tables and the powered roller sections to move the moulding boxes. Omega Sinto Foundry Machinery UK and other subsidiary companies supplied the balance of the equipment for the project."

"We were contracted to manufacture four aspects of the overall project. All the equipment manufactured was custom designed by Omega Sinto Foundry Machinery UK and manufactured in South Africa. The scope of supply was to fabricate two compaction tables to handle moulds sized at 4 000mm by 4 000mm with capacity of 45 tons, as well as two powered roller conveyors to handle the same mould sizes."

"The other table can accommodate a box with a weight of up to 20 tons."

"With just that order, even if we realised a saving of R10.00 a kilogram, we could have made a saving of close to R1 million on material processing costs if we had had the equipment to process the material, which mainly consists of plate. That amount goes a long way towards the purchase price of a new fibre laser, for example," explained Dias.

"We are not complaining about any of our suppliers' service except delivery times were a bit tardy at stages. But they are also in business to make money. However, it is when you start to get the volumes like we are doing currently that you do your homework and you realise things can be done differently."

In-house laser cutting platforms bring a change in modern manufacturing

"Interest in laser-based technologies have increased.

Last year Endeco Omega Sinto purchased a 6kW fibre laser so as to develop its in-house laser cutting and bending platform

Endeco Omega Sinto also acquired a 165 ton press brake

Endeco Omega Sinto are manufacturers of commercial foundry equipment such as this no-bake (air-set) sand casting line, for moulds up to 1 000mm by 1 000mm in size, comprising hopper, sand mixer, vibratory compaction and a roll-over

"All our equipment is tested with foundry sand prior to despatch to ensure that the equipment performs on-site."

Falling costs associated with the enabling technology has helped to fuel the growth of laser-based machine tools. In-house laser cutting platforms are bringing a change in modern manufacturing. For small to mid-sized companies, purchasing laser systems and bringing cutting in-house can be a game changer."

"In the past economic realities made it difficult to justify purchasing a fibre laser machine and small to medium-sized companies increasingly were reaching out for help. These manufacturing companies faced real issues with being able to fabricate metal parts and assemblies. Traditional laser-based equipment had been geared around high production. The equipment is very expensive, which makes it difficult to near impossible for smaller companies to justify let alone afford. Additionally, it requires highly skilled labour to operate and to find these types of operators is not easy."

Developing an affordable laser platform without sacrificing quality

"Fortunately, manufacturers have realised that a new generation of laser platforms was needed to help these manufacturing companies take control of their future. These ▸

Endeco Omega Sinto are currently manufacturing a gamma vator sand reclamation plant for a client

With its capital equipment investments over the last year, the company won't have to worry about laser cutting or bending being its bottleneck

companies found that bringing a laser system in house offered one of the greatest values in controlling manufacturing costs, while solving supplier delivery issues and offsetting the rise in material cost. In-house laser cutting capability also allowed for much faster product development, resulting in new products getting to market that much faster."

Developing new business

"Last year we purchased a 6kW fibre laser and a 165 ton press brake. They were affordable, but not cheap or lacking in performance. They fit our profile of working a few hours a day. Of course that gives us spare capacity so we can develop new business but we certainly do not want to be a high-volume service centre."

"We have developed a good relationship with our UK parent Omega Sinto Foundry Machinery UK wherein we now cut, bend and fabricate material according to their drawings so as to develop assemblies and then ship them back to the UK."

"They then do final fabrication and assembly either in the UK or in the country where it has been sold to. Different countries have different standards and requirements for the motors and electronics so it makes sense to buy local. This is good business for us in South Africa – it helps to make our new equipment cost effective – and good business for our parent in the UK."

With its capital equipment investments over the last year, the company won't have to worry about laser cutting or bending being its bottleneck. "We are at the beginning of this journey and we still have plenty to learn. What we have found out was that in the past we paid for the whole sheet or plate. Now with the nesting software that we have we virtually use the whole sheet or plate. There is very little wastage and of course this is a cost benefit."

ISO certification

"When our UK parent company Omega Foundry Machinery was acquired by Sintokogio, Ltd (Sinto), located in Nagoya, Japan, in 2018 it opened up doors for us here in South Africa. We changed the company name to Endeco Omega Sinto Pty Ltd so that we had the association of both the Omega and Sinto names."

"In addition to the range of foundry sand plant and equipment that we have become known as the benchmark for in South Africa, we are able to market the vast range of Sinto equipment that the company manufactures for the whole foundry process, from sand treatment to surface treatment finishing, which includes shot blasting equipment, blasting abrasives and peening media," said Dias.

"The joining of Sinto, one of the world's largest foundry machinery manufacturing groups and Omega not only expanded existing capabilities beyond equipment to foundry systems and processes, but also increased our exposure to the new foundry technologies such as 3D printing. This is made possible through Sinto's majority acquisition in 2017 of French ceramic 3D printing company 3DCeram."

"The association also brought other positives with it such as corporate governance, system enhancement in the manufacturing and financial areas and many other business developments, all of which we have been grateful to experience."

"However, one of the biggest influences has been the strict quality policy. The Japanese influence of quality control has permeated down the line and has led us to explore various certification options."

"We are now proud to say that 2023 culminated in Endeco Omega Sinto being awarded the certification of ISO 45001:2018 which is for occupational health and safety, ISO 14001:2015 which is for environmental management and ISO 9001:2015 which is defined as the international standard that specifies requirements for a quality management system (QMS). It is no mean feat to be awarded certification for all three of them, let alone at the same time."

"Organisations use the standards to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements. They are also globally recognised standards and implementing the ISO standards means your organisation has put in place effective processes and trained staff to deliver flawless products or services time after time."

"We must be the first and only foundry and related equipment manufacturer in South Africa to be awarded these certificates."

"Going forward the company will continue to drive its moulding and reclamation equipment. Today's modern foundry is under increasing pressure not only to reduce costs but to reduce its impact on the environment, whilst at the same time improve and maintain its casting quality."

For further information contact Roy Dias of Endeco Omega Sinto on TEL: 011 907 1785 or email roy@endeco-omega.co.za or visit www.endeco-omega.co.za ■

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Semi-automatic monorail system at Atlantis Foundries eliminates the use of forklifts, reduces the risk of spillage, as well as ensuring a much safer work environment in the molten metal department

ITACA LTS ladle transport system, designed and installed by ProService Srl.

A semi-automatic monorail system at Atlantis Foundries eliminates the use of forklifts, reduces the risk of spillage, as well as ensures a much safer work environment in the molten metal department. The metal is collected from the four ABP Induction Furnaces and transported to the holding furnace department

"While many foundries are looking at processes in their foundry to reduce costs and increase productivity and quality, few realise that a fresh approach to their materials handling equipment could help to keep the company competitive."

These are the words of Atlantis Foundries' Engineering Manager Mike Hartung, who has been at the forefront of implementing the ambitions of the company to become a Smart Foundry by embracing the Fourth Industrial Revolution. The project, which is continuous, aims to combine various

A semi-automatic monorail system, designed and installed by ProService Srl, then collects metal from the three holding furnaces capable of holding 50 tons and delivers the metal to the pressure pour furnace at the rate of 6 tons every 10 minutes

Before pouring into the pressure pour furnace the ladle is docked at a de-slag station where the slag is removed, inclusions added and normal temperature measurement is done

technologies available to gather and analyse process data, with the purpose of improving product quality and cost efficiency.

"The basic building blocks for such a concept are robotics, process instrumentation, and the tracking of components using RFID and other software applications. With all the data available and it being traceable to individual castings, the door has opened to enable the use of Artificial Intelligence for process control and inspection of components."

"As our CEO Pieter du Plessis said and I quote: 'The corner stone of the project is the programme of automation in the foundry. You can predict quality defects by looking at process variables and then you implement the corrective measures. But the key is innovation in foundry process.'"

"We have demonstrated in a number of areas in the foundry where the Fanuc robots have been installed by Robotic Innovations, that they have become the workhorses to carry instruments that acquire data while handling or performing their operations. All the data collected throughout the process by the robots and the variety of inline instruments will be linked to specific castings. At the end of the process, the entire set of process parameters, including operator information, will be available for each casting."

"This data has given us the necessary information to make a process change, where necessary. Further, it allows the shift from reactive decision-making (focused on correctly addressing the situation that has already occurred) to proactive decision-making (based on expected future events). Additionally, the Fanuc robots have given us the reassurance of safety, efficiency and repeatability with lower human intervention and the possible risks associated."

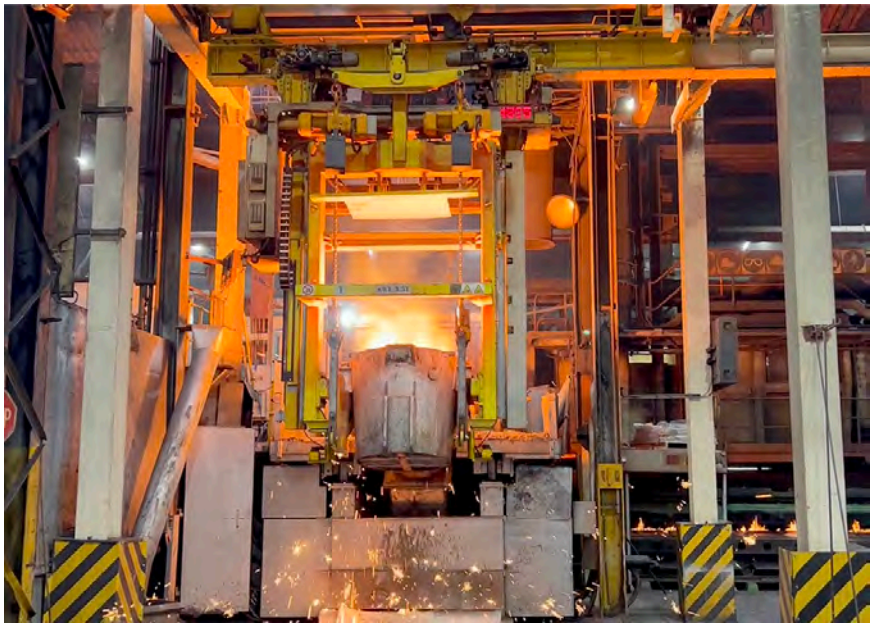
"The system uses two carriers, each equipped with a 3.4 ton ladle, which gives us great flexibility in terms of upscaling or downscaling according to our requirements."

Installation of a safe liquid metal transport system

"High process reliability and occupational safety are two important pillars of optimum day-to-day foundry work. At the same time molten metal transport has always been one of the trickiest and most hazardous operations of the process."

"Despite this we had a vision to improve the operational aspects of our melt department. The main objective of the project was to eliminate the need of forklifts with rotating fixtures to transport molten metal, thus minimising the risk of spillage, as well as ensuring a much safer working environment."

"There is a relatively large amount of metal that goes into each product that we manufacture – on average 430 kilograms per engine block. Amongst the heap of considerations to take into account in foundry safety is by far the most important thing to keep in mind and moving molten metal in the melting and pouring departments offers many chances for



ProService has installed their ITACA Hybrid software package for the complete metallurgical control of the molten metal from melting to the pouring area

things to go wrong. Molten metal can drip from furnaces or ladles during pouring, and when these drips hit the floor, the splash (sparks) can travel some distance."

ProService monorail system

"Traditionally forklifts or overhead cranes have been used to transport the ladle with the molten metal inside. These molten metal conveying systems will consist of manual loading and unloading from the melting area to the holding area and then onto the pouring area. All risk attracting operations."

"However, there is a distinct movement towards a monorail system. An automatic or semi-automatic ladle transportation system not only offers an improvement of the traditional methods, but at the same time they are also a means to optimise the foundry logistics, as the overall process can be integrated into your process control systems."

"Efficient, economical and safe, the monorail system is one of the best ways to ensure the transportation of people, material and other loads - molten metal in our case. Transporting molten metals between furnaces is a critical step in the casting process. Our products for molten metal transport are all specially designed to reduce the energy loss and maximise the efficiency, whilst minimising the maintenance cost."

"We have four ABP Induction Furnaces melting metal continuously. The metal is transported to the holding furnace department. A semi-automatic monorail system then collects metal from the three holding furnaces capable of holding 50 tons and delivers the metal to our pressure pour furnace at the rate of 6 tons every 10 minutes. Before pouring into the pressure pour furnace the ladle is docked at a de-slag station where the slag is removed, inclusions added and normal temperature measurement is done."

"The system uses two carriers, each equipped with a 3.4 ton ladle, which gives us great flexibility in terms of upscaling or downscaling according to our requirements."

"We wanted a system that is capable of connecting all melting processes and moving equipment to synchronise operations and improve production efficiencies, toward autonomous operations."

"Based on advanced digital algorithms, the new solution offers not only real-time ladle tracking but also automated scheduling and a predictive thermal modelling engine. The tracking engine follows ladle movement in real time. Radar and laser positioning technologies provide accurate visualisation while reducing the hardware footprint and maintenance needs. The automated scheduling includes job forecasting, route planning and automatic acknowledgement of jobs besides many other data requirements, all recoded on the SCADA system."

"Previously we had an automated coating preparation plant that was designed and installed by Italian company ProService. They customise and manufacture automatic handling systems with unique solutions for customers. They supplied the initial concept designs and thereafter completed the design to our specs, manufactured the monorail, installed and commissioned the complete installation."

New melting area control room

"Although we have a central control room where engineers can monitor all aspects of the plant, we also built a new control room, which is elevated, in the melting department. This allows engineers to monitor all the data electronically and the operational aspects physically."

Better metal quality and constant temperature

"The new monorail system ensures that the metal quality is preserved until the casting process begins, which is what all foundrymen want. The system is custom-designed and typically automation has been used to increase the speed of getting metal to pour, improve productivity and make the operation safer."

ProService has installed their ITACA Hybrid software package for the complete metallurgical control of the molten metal from melting to the pouring area. ITACA was developed 20 years ago as a thermal analysis software and has evolved continuously over time. ITACA today is an open 4.0 project that brings together machines and systems, new sensors, management software, latest generation algorithms and, from 2021, also consumables.

For further details contact Atlantis Foundries on TEL: 021 573 7200 or visit www.atlantisfoundries.com ■

Atlantis Foundries has a central control room where engineers can monitor all aspects of the plant. However, they also built a new control room, which is elevated, in the melting department. This allows engineers to monitor all the data electronically and the operational aspects physically

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Special Steels acquires Harchris Heat Treatment

Special Steels has acquired Harchris Heat Treatment, a reliable service provider in the ferrous and non-ferrous sectors. The company's services include stress relieving by heating to a suitable temperature and maintaining the targeted temperature by reducing the residual stresses. They also offer comprehensive services such as annealing, spherodising, sub-critical annealing, normalising as well as hardening and tempering the metals

Engineering steel merchant and value-added processing company Special Steels has announced that it has acquired Harchris Heat Treatment so as to increase its range of value-added services for existing and new clients.

"Heat treatment is one of our facilitated offsite services that we have always offered, as we do for testing and certification and other lab services. The two businesses are highly complementary and with this acquisition Special Steels will be able to expand its geographic footprint in South Africa and provide additional customer reach for Harchris Heat Treatment," explained Byron Ferguson, MD of Special Steels.

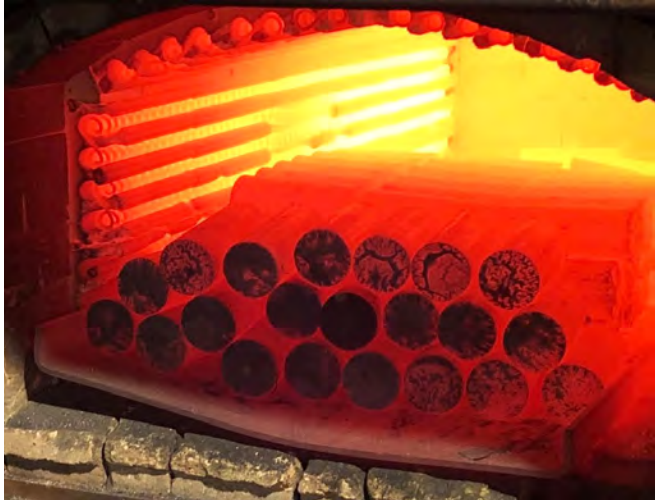
"Special Steels has been a client of Harchris Heat Treatment for many years, not only for our own projects but also for many of our clients that buy into our philosophy to transcend the essential 'buy-cut-sell' process, offered by many, when we decided to rather explore the possibility of offering value-added services and minimising downtime over and above the required cut-to-size requirements. These benefits include machining preparation work to be done on the steel, reducing machine setup times, minimising material wastage and offering consistent dimensional tolerances for high-volume production. These processes would ultimately free up valuable time on our clients' high-end machinery and allow them to perform the more complex machining operations that would add value to their manufacturing capabilities."

The process of improving the characteristics of various metals such as steel or aluminium includes techniques by heating the metal to a high temperature, which then drops to below melting point and then cooling the material. A few distinctive advantages include reducing the brittleness and internal stresses of the metal

"The acquisition of Harchris Heat Treatment is an important milestone for the company and provides significant end market diversification and additional reach, both of which are key strategic drivers for our business. The businesses are customer-focused organisations that provide high levels of service to their customers and are well positioned in their key end markets. We are very happy with the addition of our new team members who have shown they are dedicated and driven by customer service. We are pleased with this recent development and look forward to furthering our core values of customer service, quality, technical expertise, and providing solutions to our customers."

"The services that Harchris Heat Treatment, one of South Africa's oldest heat treatment companies, offers includes stress relieving, annealing, spherodising, sub-critical annealing, solution heat treatment, normalising,

The primary reason why tempered metal alloys are more malleable than other materials is attributed to the energy transferred to the moving electrons. Metals can be described as malleable because of the metal's ability to be beaten into smaller components of sheets as well as the characteristics of the metal being ductile



The ductile characteristic implies that the metal can be pulled out into wires. The ability of the atoms to be transferred to an alternative structure without breaking the metallic bond also contributes to the alloys being more malleable than the conventional techniques

quenching and they also specialise in annealing and hardening of chrome iron. The service includes both the non-ferrous and ferrous sectors."

Harchris was established by Harry Preston, father of the current MD Errol Preston, in 1950 as Central Welding Works – a general engineering company. In 1951 the company moved to New Era, Springs, Gauteng and still occupy the original premises. Heat treatment became more popular in the 1960's as a concept to reduce stress originating from welding. As stress relieving became more common, so did hardening and tempering and a host of other processes.

Harchris has regularly upgraded the ageing equipment and as a result implemented firsts in the local industry and the African continent. The rationale behind the move was to not only reduce the carbon footprint of the older technology, but also to keep abreast of changing technologies in the industry, while keeping up with customer demands for better quality products.

When South Africa started experiencing an energy shortage, management decided to upgrade its furnaces to be more energy efficient. For example, the recuperative burners that the company has have the ability to recover part of the energy, which would otherwise be lost in the emission of flue gases. This heat recovery significantly reduces the amount of fuel required for the process. This is achieved by the use of an eductor fan which pulls waste products through an internal heat exchanger within the burner.

The combustion equipment is designed to satisfy the European Standard EN 746-2.

Harchris is now able to take advantage of benefits such as excess air control in low-temperature cycles, modulation of the gas flow and modulating control for high-temperature cycles and pulse-firing control for high-temperature cycles. The additional benefit of pulse firing is that the burners are either operating at their maximum or minimum rate, therefore maximising efficiency of the combustion system.

One of the primary functions of any combustion control system is to vary the heat input required by individual processes. In pulse firing mode, the heat input is controlled by modulating the frequency of operating the combustion burner or burners. With the burners Harchris can fire them at high fire for controlled times and then cycle them back to a lower fire or simply turn them off, all of which they are able to control through the new process controller.

Harchris also have a number of environmental considerations to take into account, and they know, they have to remain on the path towards the reduction of their carbon footprint. Already in 2018 the company installed a 80KWP Solar PV rooftop mounted grid tied system with generator startup.

The company now has 30 furnaces of various sizes, shapes and methods of heating. The majority of the furnaces are gas-fired top-hat type furnaces, and the balance electronically heated.

"Heat treatment is a thermal process that accomplishes three primary improvements to the material properties of metal castings, namely improving mechanical properties, enhancing corrosion resistance and reducing residual stresses. The heat treatment process begins with heating the metal casting to the desired temperature before cooling the metal in a controlled way to achieve the desired improvements. This heating and cooling process 'locks in' the final metal microstructure and the improved material properties," said Ferguson.

"Ferrous heat-treated metals often include cast iron, alloys, stainless steel and tool steel, whereas some heat-treated non-ferrous metals include aluminium, copper, brass and titanium."

"All shapes and sizes of materials can be heat treated – it just depends on the capacity of the service provider. The services offered by Harchris can take vessels, fabrications, castings, bars, billets, plates, pipes and wire rod up to 16 metres in length, five metres in width and 45 tons in lifting capacity, depending on what a client wants done."

"Clients have heat treatment done for various reasons. For example, the heat treatment of bars can be performed to improve machinability, increase toughness, improve cold forming characteristics, alter hardness and tensile strength up or down, to relieve residual stress, and to improve shearability."

"From refrigerator components to screwdrivers to air conditioner parts, all rely on heat treatments for optimum performance. Ice-maker blades for instance, must be hard wearing, impact resistant, strong and have a good finish."

"We decided to develop and invest in the tailor-made solutions and this has now resulted in Special Steels offering CNC machining services such as normal and deep-hole drilling, facing and centring, normal and robotic welding, laser, plasma and oxy-fuel cutting, tapping and bevelling, as well as hardness testing, ultrasonic testing, heat treatment, lab services and logistics."

"We recently acquired Micron Technologies' gun-drilling division. The two machines we acquired allowed us to increase our capacity for deep hole drilling."

"We are operating in a very niche area of the market and offer our clients the benefit of reduced setup time, better inventory management and fewer bottlenecks."

For further details contact Special Steels on TEL: 011 865 4939 or visit www.specialsteels.co.za

■

The dtic calls for comments on the extension of the ban on scrap metal exports

Calls for the ban to be scrapped grow.

The Department of Trade, Industry and Competition (the dtic) has published a request for comments from interested parties on key aspects of the Scrap Metals Policy.

These aspects include:

- The proposal to extend the temporary prohibition of the export of certain ferrous and non-ferrous waste and scrap metal;
- The extension of the temporary suspension of the Price Preference System insofar as it relates to certain ferrous and non-ferrous waste and scrap Metal;
- A further restriction on the export of copper semi-finished products, and
- Temporary prohibition of the export of used or second-hand rails and subject rails to Export Control.

On 15 June 2023, a trade policy directive and notice were published that ferrous and non-ferrous waste and scrap metal may not be exported from South Africa for six months from June to December 2023.

In addition, the International Trade Administration Commission of South Africa (ITAC) suspended the operation of the Price Preference System for the exportation of ferrous and non-ferrous waste and scrap metal for the same period.

The trade directive and notice forms part of Phase 1 of the Policy Implementation Actions on Measures to Restrict and Regulate Trade in Ferrous and Non-Ferrous Metals Waste, Scrap and Semi-Finished Ferrous and Non-Ferrous Metal Products to Limit Damage to Infrastructure and the Economy published in Government Gazette No. 47627.

Last year Cabinet considered and approved a comprehensive package of measures to address damage to public infrastructure and the economy by restricting the trade of waste scrap and semi processed metals.

RASA says ban will kill business

Meanwhile South African recyclers are complaining that the Government could extend its ban on the export of scrap metal and introduce other measures which they claim 'will kill business and the livelihoods of millions of South Africans.'

The Recycling Association of South Africa (RASA) has submitted its response to a consultation, noting 'a huge outcry from the business sector, including the manufacturing and steel sectors, who have shown that the consequences on the ban have led to the creation of a distorted local market.'

RASA CEO Nancy Strachan adds: "The ban has also been an attributing factor in the closure and imminent closure of businesses in South Africa."

Below is the link to the new gazette:

http://www.thedtic.gov.za/wp-content/uploads/Scrap-Metals-Gazette-49765.pdf

Comments can be hand delivered to the Director General of the dtic at 77 Meintjies Street, BlockA, 1st floor, Sunnyside, Pretoria or via email on scrapmetalpolicy2023@thedtic.gov.za. ■

Innov-X-Africa showcasing products at African Mining Indaba

International elemental analysis company Innov-X-Africa will once again exhibit at this year's Investing in African Mining Indaba which will be held at the Cape Town International Convention Centre from 5 to 8 February 2024.

"Mining Indaba is the pinnacle event for promoting long-term investment in African mining. Attracting a broad and prominent speaker line-up, including industry professionals, policymakers, and stakeholders from around the country and beyond in order to promote economic growth and foster positive changes in the mining industry," said Stuart Bateman, Innov-X-Africa's Sales Director.

"This will be the 15th time that we have participated at the Mining Indaba."

"The 2024 conference aims to celebrate Mining Indaba's 30th anniversary by taking a new direction and purpose. The theme, "Embracing the power of positive disruption: A bold new future for African mining," reflects the objective of finding solutions and paths towards positive change in the mining industry."

Innov-X-Africa represents technology solutions providers including Evident (formerly known as Olympus), Belec, a manufacturer of optical emission spectrometers for metal ▸

analysis and Geotek Ltd. (UK), a company that specialises in high-resolution, non-destructive analysis of geological cores.

"With an increasing demand for portable X-ray fluorescent (XRF) instruments, owing to more multi-analysis being conducted in mining, we will showcase the Vanta XRF, BoxScan and detectORE products on our exhibition stand."

The BoxScan was launched in 2020 by UK-based core analysis service provider Geotek, and is used to conduct core analyses, with five built-in sensors that allow for data collection.

The company will also showcase the detectORE – launched in July 2022 – from Australia-based technology company Portable PPB.

The detectORE comprises a technology system used to analyse low-level gold using proprietary software and the Vanta portable XRF from Evident.

"The detectORE makes analysing samples in remote areas easier, owing to its being able to yield results within eight hours."

"Evident have recently released updated Vanta model analysers. The updated Vanta Max and Vanta Core portable XRF analysers combine the "exceptional accuracy, speed and durability of the Vanta series with improved ergonomics, a refreshed interface and enhanced connectivity for greater comfort and productivity," said Bateman.

"We expect the exposure at the Mining Indaba will increase demand for our products."

"Innov-X-Africa, as part of an international company, markets its products to global mining majors, minors, mid-tiers and juniors, which often look to African prospects to enhance their asset portfolios. This, in turn, enables the company in South Africa to create more local employment opportunities, establish new training initiatives and contribute to the local supply chain."

Innov-X-Africa's partners – Evident, Portable PPB and Geotek – are expected to exhibit alongside the company at this year's Mining Indaba.

For further details contact Innov-X Africa on TEL: 010 006 0430 or visit www.innovxafrica.com ■

Cape Town calls for deadline on private sector port involvement

The City of Cape Town says it wants a "clear deadline" from Transnet and national government on private sector involvement in the Port of Cape Town.

With a private sector partner set to start operations at the Port of Durban in April, Cape Town Economic Growth MMC James Vos notes that "there is continued silence from national government on a timeline for a sorely-needed private sector partner boost for Cape Town."

"Amid ongoing reports of extreme inefficiencies at the Port of Cape Town, the city calls for a clear deadline on introducing a private sector partner here, as will be the case at the Durban port."

"The urgency of reform is underscored by a major shipping company recently announcing plans to bypass Cape Town's port in certain respects."

"We are still awaiting the publication of the Freight Logistics Roadmap, which is being kept under wraps by national government, despite our repeated requests for transparency from Public Enterprises Minister Pravin Gordhan," adds Vos.

"The city will continue to actively mobilise stakeholders, including the private sector, to pressure government into clear timeframes and deadlines for a private partner for the Port of Cape Town."

Vos says: "The World Bank's recent disappointing global ranking of the Cape Town port underscores a pressing concern for our trade capability. This should be a stark wake-up call for national government to take urgent and decisive action to ensure a thriving trade environment for our city."

According to the World Bank's container port performance index 2022, Cape Town ranked 344 out of the 348 ports surveyed.

Research presented by the Western Cape's Department of Economic Development and Tourism shows that private sector participation at the Cape Town harbour has the potential to contribute an additional R6 billion in exports, roughly 20 000 direct and indirect jobs, as well as more than R1.6 billion in additional taxes over a five-year period.

"While we welcome the proactive steps taken by Port of Cape Town manager Rajesh Dana to address the persistent technical challenges hampering port deliveries, we will only properly solve these inefficiencies when the private sector has a direct stake in managing port operations," noted Vos.

"This monumental task necessitates collaboration and interdependence, tapping into the expertise, knowledge, strategies and innovation of various stakeholders. Logistical obstacles at the port cast a ripple effect on the city's overall economy, and require urgency from the State." ■

Machine Tools Africa 2024 set to take place in May 2024

Machine Tools Africa 2024, Africa's only machine tools exhibition showcasing cutting edge developments across the machine tools and related industries is set to take place in May 2024. A Machine Tools Merchants' Association of South Africa (MTMA) event, Machine Tools Africa will be taking place at the Expo Centre in Nasrec, Johannesburg, from 21 to 24 May 2024.

Speaking about the industry and the launch of the show, Joanne Canossa, MTMA Chairperson, says that over the 2020-2022 trading period, South African manufacturers and metal fabricators have had to endure more than one blow: Covid-19, KZN unrest and rioting, port congestion and sabotage resulting in shipping delays, flooding on our East Coast, a steel industry's strike and to top it off the Russian-Ukrainian war impacting on material and component supply globally.

However, with all this said, she says that "statistics show a large increase in revenue of industrial machinery in 2021/2022. This confirms that even though South Africa has been hit negatively for the past two years, businesses are investing in machinery and upgrades."

There has been keen interest in automation, smart factories, and Industry 5.0 and how it will affect the manufacturing sector in the coming years, and according to Canossa, the "timing for the Machine Tools Africa exhibition in 2024 is perfect."

"It will be very exciting to see how suppliers utilise this platform to target the manufacturing industry and display technological advances. The previous show in 2017 was a standout success, attracting high quality visitors to watch live demonstrations on machinery and equipment over four days. The 2024 show will be a great step towards the recovery and upgrading of local manufacturing businesses in South Africa."

"As an association, it is imperative the MTMA looks to the broader industrial sector. Only with investment in the manufacturing sector can the industry, and our economy benefit. South Africa has a well-established manufacturing sector that offers various opportunities for investors to diversify their portfolios, and the exhibition will provide a platform for industry stakeholders to work collaboratively to take advantage of the current environment," she says.

Machine Tools Africa 2024 will be all about machinery and tooling, control systems, robotics, design and accessories used in converting raw materials and metal castings into components and end-products that affect our everyday lives. This event is designed to showcase the very latest global machine tool technology and to highlight the importance of local suppliers and their international manufacturing partners.

All those involved in machine tools across mining, manufacturing, automotive, metallurgy, paper and pulp, aeronautics, aerospace, railways, energy, electronic and IT, and research and engineering should plan to visit Machine Tools Africa 2024. A series of free-to-attend technical seminars taking place at the show will enhance the visitor experience and add value to the programme.

For more information, contact Keraysha Pillay at Specialised Exhibitions a division of the Montgomery Group and organisers of Machine Tools Africa 2024 in partnership with MTMA. Email Keraysha at Keraysha.Pillay@montgomerygroup.com ■

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Grinding Techniques

Andrew Kirby on the 'Year that Was'

TSAM's (Toyota South Africa Motors) President and CEO sketches his view on the state of the motor industry.

Citing monetary and structural challenges such as an elevated repo rate (8,5% in 2023), depreciating Rand (13% down on the dollar last year), a record-breaking 332 days with load shedding, and up to a five-week backlog at the country's ports, Kirby made clear that this negatively impacted GDP and therefore concomitantly business confidence as well.

"This was reflected in the automotive sales for the year – the first quarter started off really positively and the industry was on track to achieve the 570 000 prediction made by Toyota at last year's SOMI (State of the Motor Industry). However, sales started to stagnate, especially after the second half of the year and this means that the final tally for the year was 532 098 – just 0,5% up on 22's numbers."

"Nevertheless, there are still some positives – South Africa is seen as a very competitive car market as evidenced by the number of new entrants that entered the market last year. There were two all-new passenger brands, three in LCV and two in commercial that established themselves in SA in this period. Even more compelling was the number of new individual models that were added – the big increases coming in the most popular segments namely B and Sub-B which saw an additional 12 new variants (an indicator of the appetite for vehicles at the affordable end of the market), five in Double Cab and a staggering 29 in the Extra Heavy Commercial Vehicle space. The latter is directly attributable to the logistical issues facing South Africa, particularly in rail transport."

The other interesting content shared by Kirby related to the source countries for imported models. Not surprisingly the big winners here are India and China, with India accounting for 42% of all the passenger cars sold in this country. This is up from 28% in 2022. China has also experienced a big growth spurt – going from a 3% share of the imported market to 9%. There has also been a corresponding rise in the number of models from these countries – India going from 34 models to 44 and China upping its model quota from 10 to 15.

In line with global trends, South Africa experienced heightened demand for New Energy Vehicles with a 65% volume increase in 2023, but this is off a relatively small base – total number of NEVs sold totalled 7 693. As expected, by far the biggest volume contributors coming from hybrid variants (84%). ■

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Urgent appeal to stop closure of ArcelorMittal's long steel business

South African steel buyers expect the planned closure of the country's only iron ore-based long products mill to result in rising prices.

The closure of the AMSA's long steel products operation in Newcastle, KwaZulu-Natal, is likely to cause considerable turbulence within the local steel sector, with potential projected knock-on effects including product shortages, quality issues and even price increases

"This is not a steel industry problem, this is a South African problem. The domino effect we expect will cost jobs into the hundreds of thousands and destroy trust in our steel market," said Neels van Niekerk, CEO, International Steel Fabricators of South Africa in a Moneyweb interview.

He is not the only one concerned. The South African downstream steel industry has urgently appealed to both steel producer ArcelorMittal South Africa (AMSA) and the government to find immediate solutions that will allow the continued operation of the three AMSA plants that make up the company's long steel business in South Africa.

More than 20 industry associations, including three scrap recycling associations, and industry experts came together in a crisis summit in Johannesburg on January 17 to determine an urgent plan of action to prevent the imminent closure of the AMSA plants.

The industries represented at the summit included construction, automotive, mining, electro-technical, electricity transmission, aerospace and defence, rail, wire, fasteners, concrete reinforcing, cladding and roofing, and rail, most of them dependent on AMSA as the only local producer capable of supplying the bulk of their required long product steel input.

The closure of the AMSA's long steel products operation in Newcastle, KwaZulu-Natal, is likely to cause considerable turbulence within the local steel sector, with potential projected knock-on effects including product shortages, quality issues and even price increases, according to the Southern African Institute of Steel Construction (SAISC) Chief Executive Officer, Amanuel Gebremeskel.

The production and supply of all long products will be affected, including UB, UC, IPE, angles, channels and rods. This will no doubt affect the local and regional market considerably, especially for those products such as UB and UC profiles where AMSA is the sole remaining local producer.

Mini mills are likely to play a crucial role in making up the shortfall that will be left by the mill closure, having to expand and ramp up their production accordingly to procure new sources of structural steel in the case of merchants and

service centres, and billets or scrap metal in the case of the mini-mills. However, this will inevitably take time.

In addition, while we have several mini-mills producing good quality long steel products, their range may be limited. The mill closure may also have an adverse effect on the price of steel. In turn, various projects which are in the planning stages may be adversely affected both in terms of cost and scheduling.

AMSA's 1.7 million tons a year Newcastle blast furnace is currently the only local mill capable of producing long steel from iron-ore. The company's Vereeniging electric arc furnace has further capacity of 250 000 tons per year, producing high-quality and speciality steels from scrap

In his address to the summit, AMSA CEO Kobus Verster repeated previous assertions that the company's main request was a level playing field. He also requested that AMSA be afforded the same tariffs on energy and transport as other producers, and that existing policy interventions on scrap metal, which give an unfair advantage to local scrap-based mini mill competitors, be removed.

The mini mills exclusively use scrap steel for their iron content. Owing to the capacity, capability and quality constraints of the mini mills, the formal downstream industries can only use a very limited quantity of the mini mills' output, making the general and informal industries the main clients of the mini mills.

AMSA's 1.7 million tons a year Newcastle blast furnace is currently the only local mill capable of producing long steel from iron-ore. The company's Vereeniging electric arc furnace has further capacity of 250 000 tons per year, producing high-quality and speciality steels from scrap.

The Vereeniging operation is currently idled, meaning that the bulk of the long steel demand is met by the Newcastle

furnace, which cannot be switched on and off like a mini mill.

The long steel requirements of the formal downstream, which only the AMSA mills can supply, equates to about 35% of current local demand, being about 400 000 tons to 450 000 tons per year.

In an interview towards the end of last year Verster said: "We've been contemplating this for more than a few years now. Over the past years we've done some restructuring, we did footprint changes and we shut some of our plants. We've implemented a lot of actions to try and get the place to a breakeven, but the external and structural impediments are just too difficult to overcome."

"If you look at steel demand that has reduced by 20% over the last seven years. So we are consuming in South Africa a mere four million tons. We've got capacity of probably a bit over eight to nine million tons in the country. How do those things change?"

"Our remaining business is a flat products business, high-value products, a strong business. But one should be careful that the same impediments are not impacting that business long term."

Specific shortages

Respondents to research conducted for the December edition of MEPS International's Developing Markets Steel Review said that domestic mini mills produce commodity grades of long products. The loss of ArcelorMittal's Newcastle output means that specialised grades and long products of certain dimensions will no longer be produced in the country.

Consequently, the closure of the longs mills in Newcastle and Vereeniging is expected to increase South Africa's reliance on imports. The country's steel imports grew by almost 55%, to 1.43 million tons, in the four years to 2022. By the end of October 2023, 1.25 million tons of steel had been imported into the country. This is despite the decline in consumption noted by AMSA, which said that South African steel demand had now fallen to four million tons per year.

In its announcement in November 2024 AMSA cited a 20% fall in demand over the last seven years to four million tons, rising energy prices and supply disruption, and a prevailing scrap advantage over iron ore-based production due to government policies.

A 20% export duty and the recently imposed ban on scrap exports have brought domestic scrap prices down to R4 780 per ton for grade 201. This is equivalent to $260 per ton, well below the current global scrap price of $430 per ton. As such, the policy has benefited South Africa's EAF-based mini mills.

Nonetheless, high transport costs and South Africa's electricity load curtailment – prompting regular power outages – undermine domestic steelmaking in general, according to ArcelorMittal South Africa.

The steelmaker is responsible for around half of the country's crude steel production. It currently produces flat products at its operations in Vanderbijlpark and Saldanha and longs in Newcastle and Vereeniging. The planned closure of the long products operations will affect approximately 3 500 employees.

Respondents to MEPS International's December research revealed that AMSA has now asked for its final long product orders. The business plans to wind down the Newcastle operation by the end of quarter one 2024.

Some long product customers expressed hope that the move may not go ahead, however. They said that the move may be intended to stimulate support from the South African government.

Wider economic concerns

Despite concerns about domestic steel production, South Africa's Department of Trade, Industry and Competition were among the authorities to question the European Commission's CBAM regulations earlier this year.

In its response to the European Commission's consultation over the emission-based import measures it suggested that the regulations conflicted with the Paris Agreement and breached World Trade Organisation (WTO) rules. It also said CBAM risked "exacerbating inequality, poverty and unemployment" in developing nations.

Economic circumstances closer to home may now exert a greater influence on South Africa's steel industry. Buyers are likely to experience the constrained supply of certain products and rising prices as a result. ■

Port congestion and incompetence taking its toll on exports

Port congestion is quite common in container terminals around the world and many are attributing it to the increase of container ships which has grown 1 452.68 % in the last 50 years. To avoid a long port stay, terminals were pressed to use more gantry cranes and labour to complete the loading and discharging operations quicker.

However, the increase in containers coming off a ship also requires the container yard (CY) to be able to clear the containers with the same speed. If the CY is unable to handle this influx due to slow productivity or insufficient chassis, then the movement of containers out of the yard will be slow which means that the container yard will reach capacity quickly.

Added to this, when truckers come to pick up import containers when the container yard is full to capacity, there could be multiple movements/shuffles within the terminal to get to the containers, the truckers want.

Recent congestion experienced across South Africa's major ports has severely impacted the country's imports and exports operations, with large local retailers such as Pepkor Holdings reportedly having up to 700 million rands worth of stock stuck at sea during November and December.

Backlogs outside the Port of Durban reached a crisis point between the 23rd and 30th November 2023 when an estimated 79 vessels and more than 61 000 containers were forced to remain at outer anchorage due to operational challenges, equipment failures, and bad weather at the port.

The Port of Cape Town has also had its fair share of recent logistical woes, experiencing similar delays at its Container Terminal. This, in turn, led to significant congestion ▸

along the Eastern Cape coastline, with an estimated 4,000 containers said to have been stuck outside the Ports of Ngqura and Gqeberha in late November. While the congestion has begun to ease at our ports, reports indicate that it will take until mid-2025 for the Port Terminals to regain optimum functionality.

SOUTH32 second quarter and half year production report

SOUTH32 said port congestion at Richards Bay port had contributed towards a $275 million working capital build up at the midpoint of its 2024 financial year.

Commenting in its second quarter and half year production report, South32 said the port congestion was due to the timing of shipments from Hillside Aluminium. "We expect to complete additional shipments from Hillside Aluminium and drawdown our aluminium inventory to normalised levels during the March 2024 quarter," the group said.

Aluminium sales decreased by 8% in the December quarter as three shipments totalling approximately 40 000 tons were delayed to January 2024, the group said. At 327 000 tons, half year sales from Hillside were three percent lower year-on-year.

The Richards Bay port has long struggled with capacity problems, largely owing to difficulties at the state-owned Transnet, a rail and ports company. In December, Transnet stopped trucks carrying coal to its Richards Bay terminal after reporting unprecedented traffic. By January, the situation was known to have eased.

South32 described its second production quarter as "mixed". Zinc and nickel output increased a fifth, and silver production was higher, but production guidance was reduced at Brazil Alumina, Mozal Aluminium and at Sierra Gorda where molybdenum output was also reduced.

The outcome as a whole was a 3% reduction in group copper equivalent production guidance for the 2024 financial year ended June 30. Shares in South32 were 2% lower in Johannesburg on Monday and fell 2.75% on the Australian Securities Exchange. On a one year basis, the share is 32% lower.

Graham Kerr, CEO of South32 forecast a 7% improvement in production and cost controls that would "capture higher margins" in the second half of the year. Critically, he said some commodity prices would strengthen.

Aluminium prices ex-Hillside have fallen 9% in the last year while manganese prices from South32's Northern Cape operations are 15% lower. Prices from metal produced by South32's Mozal Aluminium in Mozambique is also lower, compounded by below specification production for 60% of metal in the second quarter, attracting lower prices.

South32 said that metal quality was expected to "progressively improve to LME-grade quality during the June 2024 half year."

Mozal Aluminium is rebuilding production in terms of a recovery plan after a fatal injury. Crane availability was reduced as part of this work which resulted in some 73 pots being taken offline. As a result production guidance from Mozal Aluminium was reduced 12% to 320 000 tons for the year.

Manganese ore guidance has been maintained subject to continued trucking of material from its operations to Richards Bay. Trucking ore is more expensive than rail but South Africa's Transnet is struggling to provide sufficient wagons. ■

Competition Commission approves Alfeco Holdings acquisition of Pro Roof Industrial

Veer Steel Mills and SA Steel Mills will now fall under one roof.

The Competition Commission has approved the proposed transaction whereby Alfeco Holdings intends to acquire Pro Roof, with conditions. The primary acquiring firm Alfeco, is owned and controlled by a family trust and an individual. Relevant to the proposed transaction, Alfeco owns Veer Steel Mills (Pty) Ltd.

Alfeco is active in the manufacture and sale of steel, aluminium, copper, copper alloys and other related products. Alfeco also operates in the energy sector. Veer Steel Mills is a manufacturer and supplier of long steel products. Veer Steel Mills manufactures a variety of light section steel products, designed and formed in accordance with customer needs to satisfy various small construction and fabrication needs. Products range from light bars, ultra-light angles, light channels to window sections. Veer Steel Mills also manufactures ultra-light and light long steel products as well as converting scrap metal into numerous types of steel sections.

The primary target firm is Pro Roof. Pro Roof is wholly owned and controlled by Coin Wise Trading 42 (Pty) Ltd. Pro Roof is an investment holding company which owns SA Steel Mills (Pty) Ltd.

SA Steel Mills is a manufacturer and supplier of long steel products. SA Steel Mills' products are sold to the structural and construction sectors. The product range comprises heavy sections, angle iron, channels, structural beams and columns, IPE sections, reinforcing rebars, billets, and blooms.

The Commission is of the view that the proposed transaction is unlikely to substantially lessen or prevent competition in any market. To address a greater spread of ownership, the acquiring firm shall establish an Employee Share Ownership Plan (ESOP) for qualifying workers. In addition, the proposed transaction does not raise further public interest concerns. ■

Neasa wants new steel import duties reversed

"Quite astonishingly, a whole new set of duties to protect AMSA was introduced in December 2023. These duties include certain specifications of galvanised coil, which AMSA does not even manufacture," said Gerhard Papenfus, the Chief Executive of the National Employers Association of South Africa (Neasa) in a recent newsletter of the association.

"Markets for these particular products, which were developed over many years, will simply disappear because there are no substitutes produced by AMSA - AMSA's 60-year-old antiquated mill and equipment simply cannot compete with the technology utilised by modern mills."

"However, introducing an import duty in respect of a product that AMSA does not manufacture is outrageous."

"At the time of the introduction of the initial import duties in 2015, NEASA warned that the upward pressure on prices caused by these duties would severely affect the competitiveness of the steel downstream, resulting in reduced volumes across the board. AMSA recently acknowledged that the steel industry has declined by 20% over the last few years, surely not as a result of the duties alone, but it had certainly played a dominant role."

"Since import duties negatively impact the customer of the entity benefitting from the duty, these duties trigger an evil cycle that, in the long run, proves to be unproductive for all involved. In the case of AMSA, as a result of the duties causing the decline of its customer base, AMSA will continuously be compelled to rely on sustained and even increased duty protection, which in turn will further accelerate the decline of its customer base."

"The destructive impact of the slow poison caused by the duties does not deter AMSA from selfishly squeezing all they can get out of the steel industry, and in doing so, short-sightedly, disregard the long-term impact on themselves, their customers, the steel downstream, and a century-old industry."

"Despite the negative impact, Minister Patel continuously introduces and renews these duties. This gives rise to the question: Why is he doing this? Why persist with a policy that is making the steel downstream less competitive, accelerating the worrying tendency of de-industrialisation which is a major contributor to skyrocketing unemployment and consequent socio-economic instability?"

"Stopping and reversing these illogical interventions by the Department of Trade, Industry and Competition is the only way to arrest the decline in the steel industry. Such a policy shift will cause upheaval in the short run, but in the long term, the industry will organically return to equilibrium. Persistent government interference in the steel industry will cause the inevitable slow demise of the industry and the eventual disappearance of AMSA." ■

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Developing scalable methods to produce green hydrogen in South Africa

Over the next years, South Africa could play a decisive role as a reliable producer and possible supplier of green hydrogen for countries like Germany. However, there are currently challenges pertaining to the storage and distribution of this raw material. The joint project "HySecunda" recently initiated by Fraunhofer, whose participants include nine Fraunhofer Institutes as well as the Fraunhofer Academy, aims to address these challenges.

The project focuses on developing improved methods for production, storage and certification of green hydrogen. Moreover, the consortium is involved in developing competence in the region and supports current projects involving hydrogen-based fuels in the aviation industry.

South Africa has great potential when it comes to renewable energy like solar or wind power, which can be used to produce clean and sustainable hydrogen. In this way, the country could act as an important producer of hydrogen for Germany and Europe in future. This, however, will only be possible if appropriate infrastructure for the disposition and storage of hydrogen is developed and production costs are decreased in order to remain competitive.

Experts say scale up green hydrogen production for low-cost electricity and clean water

The joint project "HySecunda", whose participants include numerous Fraunhofer Institutes like IMWS, IEE, IEG, IKTS, ISC, IST, IWES, ISI and ISE as well as the Fraunhofer Academy, aims to develop practicable and scalable solutions for producing green hydrogen in South Africa within three years.

One important part of the project is the implementation of capacity building measures, including concepts for initial and further training which are tailored to the needs of the 16 countries within the Southern African Development Community (SADC region). Another important focus of the "HySecunda" project is developing market- and system-compliant methods for the certification of green hydrogen and its derivatives. Such certification solutions are decisive for successful commercialisation and for exporting hydrogen to Germany and Europe.

On a technological level, the Fraunhofer Institutes are offering support in four main areas:

The development of innovative sensor technology for more efficient detection of leaks in tanks and pipelines, as well as early recognition of corrosion and ageing processes.

Innovative, combined barrier layers for oxygen and hydrogen. These layers serve to prevent oxygen and hydrogen from entering other parts of the electrolysis cell or escaping into the environment. Improved solutions thus increase the service life and safety of the components in use.

The consortium has plans to research a more cost-effective way of coating bipolar plates (BPP). These plates act as conductive barriers between individual cells. Due to the high requirements in terms of temperature, pressure, electric voltage and corrosive conditions, BPP are usually made from materials like titanium, graphite, steel or stainless steel, and often coated with precious metals like gold or platinum. The goal is to develop more affordable alternatives which can withstand the extreme operating conditions and guarantee the necessary stability over a long period of time.

Improved solutions for porous transport layers (PTL) are another goal. These layers are crucial for the effective transport of gases, liquids and ions within an electrolytic cell and are located between the electrode and the bipolar plate. Optimised PTL concepts can significantly increase the efficiency of the reaction.

"We want to incorporate our Fraunhofer competencies, on the one hand to contribute to a safe supply of energy in Germany and Europe, and on the other to establish a long-term cooperation with the SADC region by creating local added value", says Prof. Mario Ragwitz, co-speaker of the strategic research field hydrogen technologies at the Fraunhofer-Gesellschaft.

"For us, the HySecunda project is a very important milestone in bringing green hydrogen and its derivatives to market. We are very happy to leverage the competencies of nine different Fraunhofer Institutes in order to support the production and use of green hydrogen and synthetic energy sources in the South African region", says Dr Klemens Ilse, Group Manager "Materials Diagnostics for H2 Technologies" at the project's leading institute Fraunhofer IMWS.

The scientific endeavour totalling approxiamately 15 million euros has the funding code 03SF0734A and receives financial aid as part of the 7th energy research programme of the German Federal Ministry of Education and Research. ■

Competition Commission has approved Foxconn EV's acquisition of ZF Chassis Modules

The Commission has approved the proposed transaction whereby Foxconn EV intends to acquire ZF Chassis Modules, with conditions. The primary acquiring firm, Foxconn EV, is a company incorporated in accordance with the laws of the Republic of Singapore. The Acquiring Group only controls a single firm incorporated in South Africa, namely JUSDA South Africa Supply Chain Management Proprietary Limited.

The Acquiring Group provides electronics manufacturing services in the following product segments: Smart consumer electronics, cloud and networking, computing and electronic components, amongst others.

The primary target firm, ZF Chassis Modules, is a company incorporated in accordance with the laws of Germany. ZF Chassis Modules will comprise the axle systems assembly business unit of ZF Friedrichshafen AG, a company incorporated in accordance with the laws of Germany.

ZF Chassis Modules assembles axle systems, including corner modules, for passenger vehicles for original equipment manufacturers.

ZF Lemförder SA, a subsidiary of ZF Friedrichshafen AG, is a well-established automotive supplier in South Africa and has been supplying BMW Group South Africa with axle sets since its foundation in 1998. ZF Lemförder SA's plant in East London commenced production in 2019 of front and rear axles to supply Mercedes-Benz South Africa (MBSA).

The Auto Industrial Group, which is now owned by a private equity firm and management, was previously owned by ZF Friedrichshafen AG. The Auto Industrial Group has two large foundries within the group and is still a supplier to ZF Friedrichshafen AG's ZF Lemförder SA.

The Commission is of the view that the proposed transaction is unlikely to substantially lessen or prevent competition in any market. To address public interest concerns, the merging parties have agreed to an employment commitment and ZF SA will continue to contribute a pre-determined value amount on an annual basis to the various initiatives including contributing to skills development in the form of external bursaries to underprivileged individuals (including stipends); youth employment schemes; learnerships; disabled employee support; supplier development; enterprise development; and socio-economic development. ■

The Bright World of Metals expands global network to include ANKIROS/TURKCAST and ALUEXPO

The Messe Düsseldorf Group expands its global network in the growth market Türkiye winning over three powerful new events for its global metal trade fair portfolio with the leading Eurasian metallurgy, foundry and aluminium trade fairs – ANKIROS/TURKCAST and ALUEXPO. To this end, two of Germany's biggest trade fair companies pool their expertise in a joint venture: Messe Düsseldorf and Deutsche Messe AG will in future each hold a 50% share in "Hannover Messe Ankiros Fuarcilik A.S.". Company founder Ibrahim Anil will continue acting as General Manager of the company.

In this venture Messe Düsseldorf contributes its network and industry expertise gained through its world-leading trade fairs GIFA, METEC, THERMPROCESS and NEWCAST ("The Bright World of Metals") while Deutsche Messe AG its longstanding experience on the Turkish market. By taking this groundbreaking step towards globalisation and expansion of the thematic leadership in the metallurgy and foundry sector, Düsseldorf's No. 1 trade fairs GIFA, METEC, THERMPROCESS and NEWCAST ("The Bright World of Metals") expand their portfolio on the international growth markets of the foundry and metallurgy industries.

Wolfram N. Diener, CEO & President of Messe Düsseldorf, underlines the importance of this cooperation: "This partnership not only extends Messe Düsseldorf's international network with a new subsidiary but also reinforces our global and strategic leadership in metallurgy and foundry trade fairs."

Under the roof of "The Bright World of Metals" Düsseldorf already hosts the world's biggest trade fairs in the industry – GIFA, METEC, THERMPROCESS and NEWCAST. Add to this, a portfolio of trade fairs abroad in India, Thailand, Indonesia, Egypt and Mexico, which is now growing further with the addition of ANKIROS/TURKCAST and ALUEXPO in Istanbul.

"We are opening up the attractive Eurasian growth market for our customers and strengthening our company's international competitive position," adds Diener.

This new development, however, not only benefits the globalisation of Düsseldorf's portfolio of metal trade fairs but also strengthens important mechanical engineering segments of the quartet of world-leading trade fairs. ■

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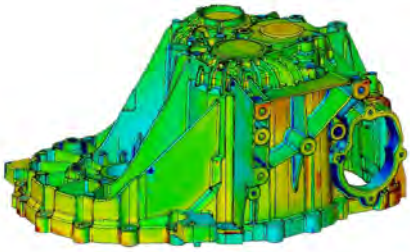
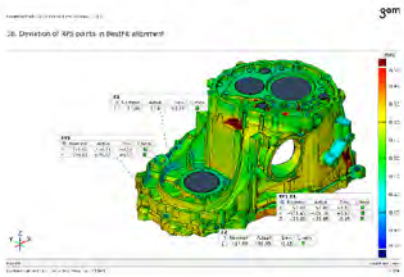


Analysis



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Otto Junker to celebrate its 100th anniversary

Otto Junker, a German company specialising in developing systems for metallurgical processes and refining metals, can reflect positively on its performance in 2023. Having made a convincing impression at trade shows, formed new partnerships and received innovative orders, the business is looking to further expand its role in the technology industry. The Otto Junker team are now casting their minds forward with confidence, especially in view of the company's upcoming 100th anniversary.

Otto Junker have been manufacturing industrial furnace equipment for 100 years

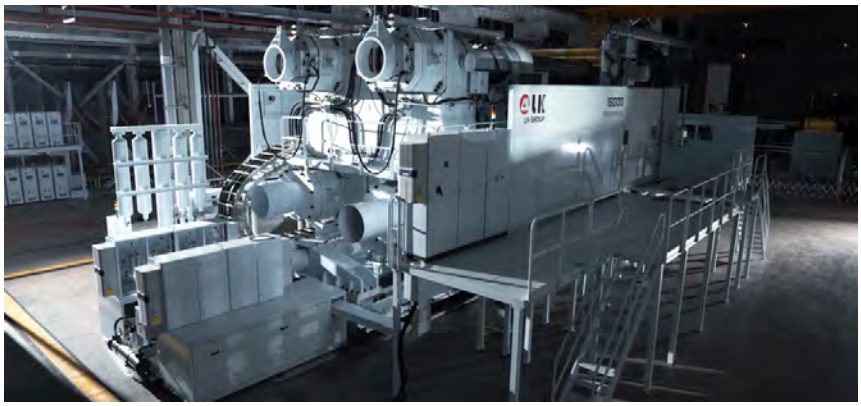
"Our primary goal is to accelerate technological progress to increase customer benefits in the castings and semi-finished product segments – but beyond our industry, too", says Erik Míček, CEO of Otto Junker GmbH.

This year, the company is looking back on a century of experience, technological developments and an unwavering commitment to delivering top quality. It remains firmly on a path of sustainability and transformation. And the business is looking to the future with a sense of confidence, especially following its clear focus on electrification in the design of new systems, modernisation of existing facilities and the positive response received from visitors at GIFA/Thermprocess 2023.

Looking ahead to the rest of 2024 and beyond, Otto Junker will be unleashing new business opportunities beyond its core businesses by expanding into fresh markets such as the recycling and power industries. In addition, the company will be targeting sectors outside its own industry, including the food, beverage, glass, ceramics, cement, chemicals and paper industries. These industries are expected to see and benefit from the existing and potential advantages of using recycling and energy storage systems from Otto Junker Solutions.

Otto Junker is celebrating its 100th anniversary, which it will be marking with a number of events in early autumn. ■

LK Dreampress 16 000 ton die-casting machine unveiled



LK has launched its Dreampress 16 000 ton die-casting machine. This unveiling marked a historic milestone in the world of die-casting and manufacturing, as the Dreampress 16 000T sets new industry standards, reaffirming LK's position as one of the global leader in the field die-casting machinery, in the wake of the successful launch of the Dreampress 12 000T in 2022.

Elevating single-piece casting to new heights

The launch of the LK Dreampress 16 000T in 2023 represents a monumental leap forward in the realm of single-piece casting technology. With its immense 16 000 ton clamping force, this machine brings forth a new era of possibilities for the automotive industry.

As the curtains were drawn, and the spotlight shone on the Dreampress 16 000T, it was evident that this machine was set to redefine die-casting. With its striking design and robust build, the 16 000 ton clamping force machine stood as a testament to LK's commitment to pushing the boundaries of what is achievable in die-casting.

The combination of single-piece casting technology and the debut of the LK Dreampress 16 000T is set to revolutionise the automotive industry. This dynamic duo promises to deliver vehicles that are not only safer and more reliable but also more efficient, cost-effective and environmentally friendly.

"As we embark on this exciting journey into the future of automotive manufacturing, it's clear that the Dreampress 16 000T will play a pivotal role in shaping the vehicles we drive and the industry itself. The era of single-piece casting has arrived, and the 16 000T is the catalyst that will drive innovation and transformation within the automotive world," said a company spokesperson. ■

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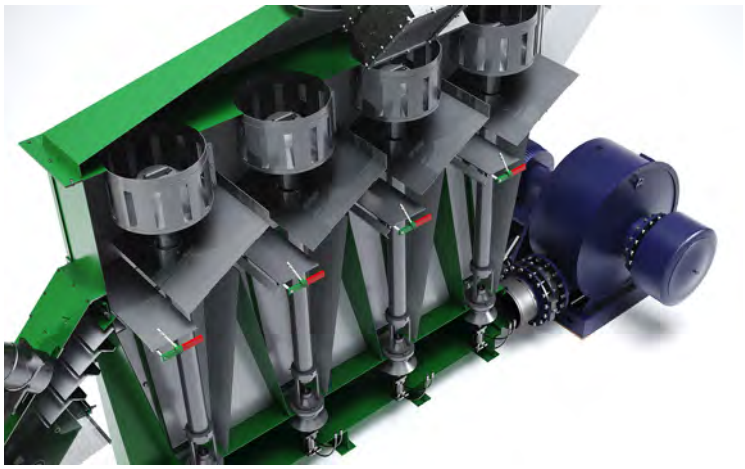
Advantages of sand reclamation

In the world of foundry operations, sand reclamation plays a pivotal role in the pursuit of cost-efficiency, environmental sustainability, and improved product quality. One critical innovation in this field is the Simpson Pro-Claim®, a cutting-edge sand reclamation system that has been making waves due to impressive fiscal impacts. Let us explore how the Simpson Pro-Claim is transforming the landscape of sand reclamation while helping foundries save money and enhance their overall operations.



Reduce operational costs

Operational costs can eat into a foundry's profits, but the Simpson Pro-Claim helps mitigate this issue in several ways. By reclaiming and reusing foundry sand, this ingenuitive system reduces the need for expensive sand purchases, saving money from the inception. Additionally, the Pro-Claim operates continuously, eliminating downtime, and reducing maintenance costs typically associated with other sand reclamation systems. The simple design of the Pro-Claim, with only a few moving parts, means less wear parts and longer-lasting performance.

Energy efficiency

Energy consumption is a significant concern for foundries. Traditional thermal sand reclamation systems can be energy hogs, consuming vast amounts of electricity or natural gas. The Simpson Pro-Claim, operates without the need for natural gas, making it a greener and more cost-effective solution. Its energy efficiency and smaller carbon footprint not only benefit the environment but also translates into substantial cost savings.

No confined space or thermal permitting

Compliance with safety regulations is a must for any foundry. The Simpson Pro-Claim provides peace of mind by eliminating the need for confined space entry, a potentially hazardous operation required for some thermal sand reclamation systems. Moreover, because it does not generate extreme heat, it does not require thermal permitting, simplifying regulatory compliance and reducing associated costs and complexities.

Reduce disposal costs

Sand disposal can be a significant financial burden for foundries. The Pro-Claim drastically reduces these sand disposal costs by reusing sand, reducing waste, and cutting down on landfill or disposal expenses by up to 70%. This not only saves money but also contributes to sustainability efforts, which can be a selling point for environmentally conscious clients.

Improve quality of castings

The quality of castings is essential for any foundry's reputation and success. The Simpson Pro-Claim not only reduces costs but also enhances the quality of castings. The reclaimed sand is cleaner and more consistent, resulting in improved surface finish and reduced defects. These quality improvements lead to fewer rejects, less rework, and ultimately higher customer satisfaction.

Small footprint

Space is a valuable resource in a foundry, and the Pro-Claim helps optimise it. With a small footprint, it allows for more operational space and versatility in your foundry layout, giving you the flexibility to expand or introduce additional processes without the need for a massive investment in space and infrastructure.

No risk to thermal events

Traditional thermal sand reclamation systems carry the risk of thermal events due to the high temperatures and natural gas involved. The Simpson Pro-Claim, in contrast, eliminates this risk, making your foundry safer and reducing potential losses from fire damage and insurance costs.

No operator required

Labour costs can be a significant part of a foundry's budget. The Pro-Claim's continuous operation eliminates the need for an operator, further reducing overhead expenses.

ROI is quick

One of the most appealing aspects of the Simpson Pro-Claim is its rapid return on investment (ROI). Foundries often recoup their investment in as little as six months to two years, making it an attractive financial choice for an operation looking to improve its bottom line.

The Simpson Pro-Claim sand reclamation system is revolutionising the foundry industry by addressing fiscal concerns and enhancing operational efficiency. It reduces operational costs, energy consumption, and disposal costs while improving the quality of castings and safety standards. With a quick ROI and a host of other advantages, the Pro-Claim is a sound investment for any foundry looking to thrive in a competitive market. By embracing this technology, foundries can secure their future and pave the way for more sustainable and cost-effective metal casting operations.

Link to article: Advantages of Sand Reclamation (simpsongroup.com)

Link to Simpson Pro-Claim: Cost-effective Sand Reclamation Solution for Foundries (simpsongroup.com)

For further details contact Mondeco Solutions on 079 448 1277 or visit www.mondeco.co.za ■

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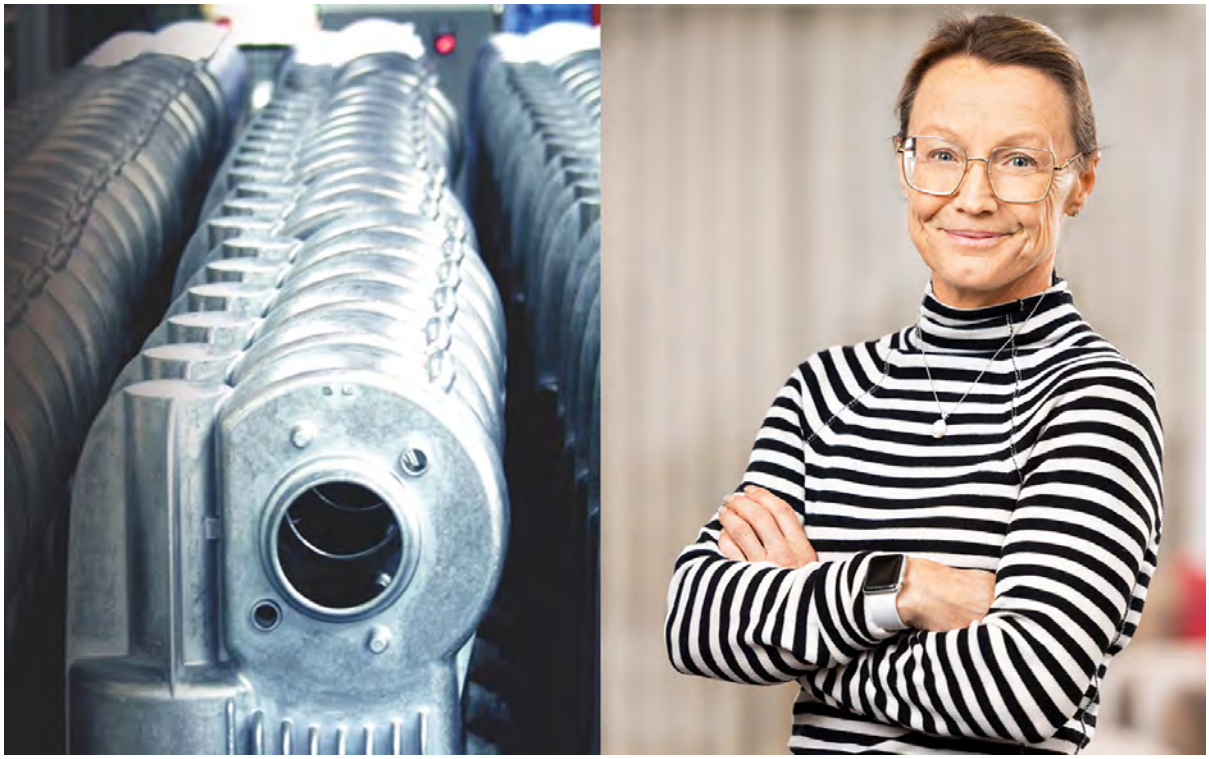
Planning begins on development centre in sustainable casting for increased competitiveness for the Swedish manufacturing industry



Example of a high-pressure die-casting component, and Pernilla Walkenström, Head of the Materials and Production Division, RISE

Through a letter of intent between RISE and Volvo Cars, the Volvo Group and Scania, work has begun on the planning of a national centre for sustainable casting for new sustainable materials, technologies and processes in the manufacturing industry. The background to the initiative is the development that is taking place in high-pressure die-casting, so called, Mega-casting, which can provide tangible benefits in, for example, vehicle manufacturing.

In 2023, RISE has led a feasibility study together with Volvo Cars, Chalmers University of Technology and the School of Engineering at Jönköping University to investigate the possibilities and conditions for establishing a national centre for sustainable casting in Jönköping.

"This investment is crucial for the Swedish manufacturing industry to maintain its leading position in the world. The fact that industry and academia join forces with us, the Swedish research institute RISE, shows the importance for the competitiveness of Swedish companies and for the development towards a more sustainable industry," said Malin Frenning, CEO, RISE.

Initially, the centre will focus on High pressure die-casting of light metals. High-pressure die-casting enables serial production of complex components and the development towards Mega-casting adds size that means that several components can be replaced by one, which can provide benefits such as increased flexibility in the design phase, a more sustainable industrial process, shorter lead times and increased opportunities for circularity on the raw material side. There are several applications in the automotive industry, but also in telecommunications, in the manufacture of handheld machines and furniture.

"The Centre for Sustainable Casting at RISE will be a national strategic resource for a number of different industries. Here, companies will get help to evaluate and verify new sustainable materials, processes and products on a scientific basis," said Pernilla Walkenström, Head of the Materials and Production Division, RISE.

"High-pressure die-casting is a crucial manufacturing method in our ongoing transformation towards becoming a fully electric car manufacturer by 2030. Car structure in cast aluminium offers both industrial gains and efficient product development. It is also a step towards offering more sustainable products through weight savings and 100 per cent recyclable materials. This initiative is an important investment for Swedish industry and a significant step towards Volvo Cars' ambition of more sustainable car manufacturing," said Ninna Aronsson, Head of Vehicle Platform, Volvo Cars. ■

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EU has extended its suspension of tariffs on US products, in the context of the steel and aluminium, as part of the Section 232 dispute

Customs duties are suspended until 31 March 2025.

The EU has suspended duties on US products until 31 March 2025, in the context of the steel and aluminium dispute. This is stated in the message of the European Commission.

First introduced during the Trump presidency, European tariffs on imports from the United States were a response to the US Section 232 duties on steel and aluminium.

The extension of the suspension is the result of an agreement reached with the United States. In exchange, the United States retains the possibility of duty-free imports from the EU under the tariff-rate quota (TRQ) system introduced in January 2022. In addition, the US side agreed to provide further exemptions for EU exporters.

This step will allow EU steel and aluminium exporters to save about €1.5 billion annually on tariffs. The United States must complete its own procedures to extend the TRQ system for exports of these products from 1 January 2024.

"This long-term suspension of tariffs gives businesses on both sides of the Atlantic confidence, facilitating the smooth flow of trade," the EC said in a statement.

The European Commission also noted that the EU will continue to engage constructively with the United States to protect its rights and ultimately eliminate Section 232 tariffs on exports from the bloc. In addition, the parties continue to work on solving the problem of global overcapacity and decarbonisation of the steel and aluminium industries in the context of discussing the Global Sustainable Steel and Aluminium Agreement (GSA).

"The mutual extension of the tariff suspension provides the necessary time and political space to reach an agreement on the remaining GSA issues," the EC noted.

In 2018, the US imposed tariffs on European steel and aluminium exports worth €6.4 billion. In response, the EU imposed import duties on US exports to its market worth €2.8 billion. In 2022, the EU suspended its measures completely until the end of 2023 to allow time to work together on a long-term solution. The US replaced Section 232 tariffs with a system of tariff quotas based on historical trade volumes. Shipments in excess of the quota are still subject to tariffs.

Last year, the EU exported 3.8 million tons of steel to the US, of which 1.7 million tons were duty-free. In addition, according to the US administration, the US granted additional exemptions to EU exporters for 1.5 million tons.

As GMK Center reported earlier, according to experts, both the USA and the EU want their economies to thrive under climate-safe trade policies like the GSA, but policymakers need more time to agree on the details. ■

Bühler to deliver four Carat 920 mega-casting cells to Duoli in China

Chinese car parts supplier Duoli Technology and Swiss technology company Bühler Group have signed a new contract for the delivery of four new Carat 920 mega-casting cells. The deal represents one of the largest single orders for Bühler Group's mega-casting business and is testament to the accelerating trend towards the production of large structural car parts for electric vehicles and an endorsement of Bühler's expertise in delivering outstanding die-casting solutions.

Duoli produces mega-casting parts for many well-known global Original Equipment Manufacturers (OEM) in the car manufacturing industry. It entered the die-casting business in December 2020 and soon after started the collaboration with Bühler in 2021 with the installation of the first Carat 610. Duoli won more contracts and needed to increase its production capacity. The acquisition of the first Carat 920 and two more Carat 610 was the next logical step. On December 18, 2023, Duoli celebrated the start-up of production on the Carat 920 in their factory in Yancheng.

The rapid rise of electric vehicles (EVs) in China is leading to an increase in demand for large structural parts, which convinced Duoli to expand its Carat portfolio with an additional four Carat 920s.

Jianqiang Jiang, General Manager and Director of Duoli, ▸

The Carat 610 (left) and Carat 920 (right) in operation in Duoli

The Carat 920 that Duoli purchased

said: "This order for four Carat 920 underlines our ambition to be a driving force in the mega-casting business. With these new capacities, we can reliably produce rear underbodies in one shot for our customers."

The latest additions will make Duoli one of the biggest suppliers of mega-casting parts in the world with operations in three foundries in China.

The Carat series is Bühler's answer to the globally accelerating trend towards larger structural castings in modern car architectures. The two-platen technology with die locking forces of 10 500 to 92 000 kilonewton (kN) is specifically designed to produce large and complex parts such as rear and front underbodies cast in a single piece.

Robin Lu, Director Die Casting Bühler Greater China Region, said: "We're working closely with our customers to deliver the technologies they need to be successful in a fast-moving and competitive market. We're honoured that Duoli puts their faith in our Carat die-casting solutions."

Cornel Mendler, Managing Director Die Casting at Bühler, said: "The latest order is evidence of our innovation power and proofs that we anticipated the trend towards large structural parts for EVs correctly years ago. This trend continues to gain pace as we witness the transition from traditional cars with internal combustion engines to electric vehicles – not only in China, but in North America and Europe as well." ■

ABK Pressenbau und Automation develops hydraulic trimming press for mega-castings

German supplier ABK Pressenbau und Automation, working with Aulbach Trimming Technology, has developed a hydraulic trimming press for 'mega-cast' parts. Mega-casting, or giga-casting, is the high-pressure die-casting process now emerging for producing large-dimension, unitary components for automotive structures. Like many die-cast parts, mega/giga-castings must be trimmed after they are released from the mould.

The concept of trimming die-castings with a press and mould is based on an established procedure that can be found in foundries worldwide. The advantages of punch trimming are well-known: short cycle times, defined contour cut with adjustable knives and high-repeat accuracy, trimming removal through the table opening, return of the trimmed material to the melting furnace, as well as a straightening effect.

The new generation of ABK hydraulic trimming presses and tools – the SP 30/23-4-300 – has a 3 000mm by 2 300mm column passage, 3 000mm by 3 000mm clamping size, and 300 metric tons of pressing force.

The four-column ABK Pressenbau mega-press is designed for trimming tools with a base plate of 3 000mm by 3 000mm and weighing approximately 30 metric tons. It is capable of 300 metric tons pressing force

The trimming tools are changed fully automatically.

The machine can be installed together with an immersion cooling basin in sizes up to 3 000mm by 3 000mm, to receive individual mega-castings after trimming.

In terms of size and geometry, the trimming presses have proven to be effective for diecast parts. ABK builds machines of this type in series production, and has logged 17 orders: Seven presses have already been delivered, and several machines are currently under construction. "There is already a high degree of standardisation and many examples of successful implementation," according to ABK.

In addition to the large machines, the company's standard program of smaller presses will continue, along with general overhauls and comprehensive service for all machine sizes. ■

New IAI study reveals environmental benefits of increased global aluminium can recycling

Recycling of aluminium beverage containers could save 60 million tons of CO2e per annum by 2030 globally. Study reaffirms aluminium can recycling rates at 71% or higher.

A new study on recycling of aluminium cans has identified that 60 million tons of CO2e per annum could be saved through effective global recycling of used beverage cans by 2030. The study was commissioned by the International Aluminium Institute and co-funded by Emirates Global Aluminium, Crown Holdings, Australian Aluminium Council and Novelis.

The result of the assessment is contained in a report produced for the IAI by global management consultants Roland Berger. It proposes 25 levers to increase recycling and a prioritised set of strategic recommendations to improve aluminium can recycling for six countries in the Middle East, Oceania and Asia.

The findings and recommendations are based on the assessment of can waste management systems in Australia, Cambodia, South Korea, Thailand, United Arab Emirates and Vietnam.

Together, these countries provide representative insights into can usage, collection, and processing across different countries and cultures. The assessment also provides insight into the regional trade flows of used beverage cans (UBC) scrap in the Gulf and Asia Pacific regions – both major trading hubs.

For each of the six countries, various aspects were analysed including waste management and regulatory schemes, collection infrastructure, recycling and landfill rates, volumes put on market, usage trends, overall performance, used beverage can trade, material flows and future targets.

South Korea had the highest recovery rate at 96%. This was followed by Vietnam 93%, Cambodia 90%, Thailand 86%, Australia 74% and UAE 33%.

The six countries fall into three broad categories

Countries dependent on informal aluminium can collection mechanisms (e.g. Thailand, Cambodia and Vietnam). They rely on a high number of informal workers. As cans generate revenue for the sector, these countries report high recovery rates. Developed systems (e.g. Australia, South Korea). These rely on complex waste management systems such as extended producer responsibility (EPR) and/or deposit return systems (DRS). Transitioning systems (e.g. UAE). Here the collection infrastructure is largely fully developed but does not include mandatory or well-functioning EPR, nor DRS systems.

The aluminium can continues to be the package of choice for the alcohol and soft drinks industries with global consumption expected to increase by 50 per cent between 2020 and 2030 (i.e., from 420 to 630 billion cans annually).

Highlights of the study include

Thailand has the best can-to-can recovery rate of those in scope, at 78% of cans put on market – but 14% of cans still go to landfill.

In the UAE, 67% of cans go to landfill. Of all cans put on market, 20% are used for can-to-can recycling.

Vietnam's informal sector generates high quality scrap but has a can-to-can recycling rate of just 1%. A further 92% of recovered cans go into "not C2C" products.

South Korea has had an EPR system for more than 20 years and has the highest recovery rate of 96% among the studied countries. Only 37% of cans put on market are recovered for can sheet production – a relatively low rate for a country with established can-recycling infrastructure and capacities.

Australia already has a voluntary EPR scheme, and a DRS scheme (currently in six states out of eight and expected in two more), which helps to reach a recovery rate of 74%. Due to lack of local recycling capacity all cans are exported, 48% for can-to-can recycling.

Cambodia reports high collection and recovery rates – collection is done by the informal sector which relies heavily on scrap for income. Cambodia has no domestic recycling capacity and its cans are mostly recycled into non-can products. ■

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Aston University receives EPSRC grant to improve liquid metal casting

The mathematical method aims to help prevent lightweight aluminium alloys corroding - or oxidating - very quickly when first exposed to air.

The researchers said that, within the transportation sector, steel is gradually being replaced by 'functionalised energy-efficient lighter alloys', with the aim of lessening the CO2 emissions of the metallurgy industry, as less fossil fuel is burnt when moving a lighter product.

However, although these replacement lighter parts do not rust like steel, they oxidise very quickly when first exposed to external ambient conditions.

A thin oxide film develops on the surface of the metal once exposed, which under regular usage conditions, ensures the metal will not corrode. However, during the casting process, when the aluminium is still in a molten state, this thin oxide film can be encapsulated into the bulk of the liquid metal flow.

It has been shown that this encapsulation process, which can happen many times over, necessarily leads to the embedding of these oxide films within the main body of the finished product, thus diminishing their quality and lifespan.

In a statement, Dr Paul Griffiths, senior lecturer in applied mathematics at Aston University, said: "The aim of this investigation is to develop a mathematical model that accurately captures the two-way coupling between a liquid metal flow and the oxide layer above, with the latter behaving as a non-Newtonian liquid/gas interface.

"The objective of this project is to describe both the surface characteristics - velocity and shear profiles - as well as the important effects of surface curvature."

"The benefit of a more appropriate mechanical model for the oxidised surface of a melted metal flow would lead to a better understanding of the encapsulation process which affects the alloy."

Aston University said the model will be validated and verified against current experimental observations, with the aim for the results to provide new insights as to how this oxidisation process can be controlled in a practical setting.

A better knowledge of this could specifically improve the emerging processes of 3D printing and additive manufacturing (AM) of lighter metals.

The research, beginning in April 2024, will be partnered by the Grenoble Institute of Technology (INP). ■

New 3D printer uses liquid metal to print furniture and other large objects

Researchers from MIT have developed a new kind of 3D printer that squirts out liquid metal to rapidly produce big objects like components for furniture. The system deposits molten aluminium through a path of tiny glass beads not unlike a mould. To demonstrate, the team created sturdy parts like chair legs.

"If we could make this machine something that people could actually use to melt down recycled aluminium and print parts, that would be a game-changer in metal manufacturing. Right now, it is not reliable enough to do that, but that's the goal," says Skylar Tibbits, associate professor in the Department of Architecture and co-director of the Self-Assembly Lab.

While the technique is apparently 10 times faster than other kinds of metal additive manufacturing processes, the resulting structures are quite rough around the edges. Still, the researchers believe it's "suitable for some applications in architecture, construction, and industrial design, where components of larger structures often don't require extremely fine details," according to MIT News. "It could also be utilised effectively for rapid prototyping with recycled or scrap metal."

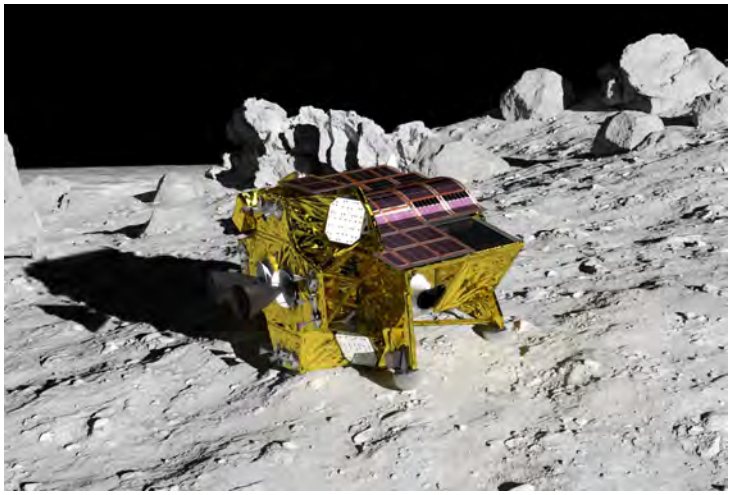
The team chose aluminium because it is commonly used in construction and can be recycled cheaply and efficiently.

Bread loaf-sized pieces of aluminium are deposited into an electric furnace, "which is basically like a scaled-up toaster," Karsan adds. Metal coils inside the furnace heat the metal to 700 degrees Celsius, slightly above aluminium's 660 degree melting point.

The aluminium is held at a high temperature in a graphite crucible, and then molten material is gravity-fed through a ceramic nozzle into a print bed along a pre-set path. They found that the larger the amount of aluminium they could melt, the faster the printer can go. ■

Japan's SLIM lands on Moon with help from metal Additive Manufacturing

The Japan Aerospace Exploration Agency (JAXA)'s Smart Lander for Investigating Moon (SLIM) has landed on the moon, making Japan only the fifth nation to successfully reach the lunar surface. Playing an essential role in protecting the spacecraft from the impact of the lunar landing, metal Additive Manufacturing was used to produce the shock absorber structures found on the tip of each leg.



Made by Japan Additive Manufacturing Co (JAMPT), based in Yamagata, the aluminium lattice, sponge-like structure has a hemispherical shape that is designed to crush on landing, thus softening the impact.

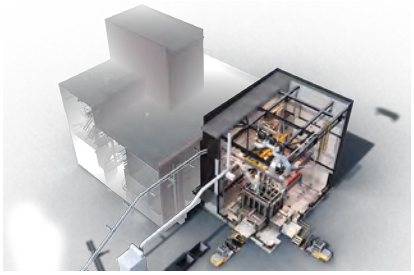
The SLIM was mounted on the H-IIA Launch Vehicle No. 47 (H-IIA-F47), which was launched from the Tanegashima Space Center on September 7, 2023. It landed on the moon on January 20, 2024, and demonstrated that its pinpoint landing technology necessary for future lunar probes was a success, with the touchdown being within 100m of its target.

"We proved that you can land wherever you want, rather than where you are able to," stated Shinichiro Sakai, project manager for the lander, during a press conference. "This will inspire more and more people, desirably Japanese missions, to try to land on unexplored places on the moon." ■

Metso invests EUR 8 million on a DRI smelting furnace pilot facility

Supporting decarbonisation of the iron and steel industry.

Metso is expanding its testing capabilities by investing EUR 8 million to build a state-of-the-art DRI (direct reduced iron) Smelting Furnace pilot facility. The pilot plant will be constructed in Pori, Finland, where Metso has one of its major R&D Centres serving the minerals and metals industry. The new facility will allow customer-specific pilot-scale testing to demonstrate the applicability and results of industrial-scale DRI smelting with Metso's Outotec® DRI Smelting Furnace technology.



"Currently, the iron and steel industry accounts for about 8% of the global carbon dioxide emissions. With the tightening environmental regulations, the industry is looking for new innovations to reduce its carbon footprint. There has been a lot of interest towards the recently launched Metso's Outotec® DRI Smelting Furnace. It substitutes traditional blast furnaces used in iron and steel making, and enables a significant reduction of emissions, when combined with a direct reduction plant," notes Jyrki Makkonen, Vice President, Smelting at Metso.

"The investment into the DRI Smelting Furnace pilot facility supports the rapidly increasing customer demand for reliable testing when planning a transition to emissions-free smelting. With the pilot facility, we can reliably test various types of customer materials for industrial scale-up. The construction of this unique facility has started, and we expect to run the first tests and campaigns in the latter part of 2024. Currently, we are serving our customers with smaller scale laboratory tests," explains Mari Lindgren, Director, Smelting Research & Development at Metso.

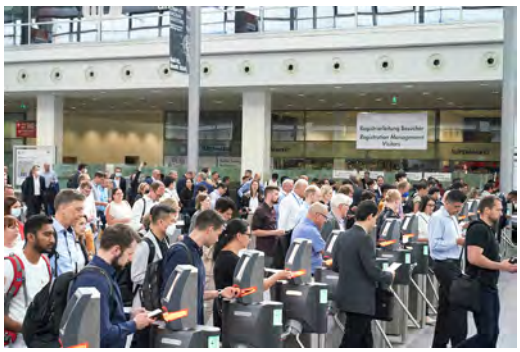
A breakthrough technology

The new high-capacity Outotec® DRI Smelting Furnace, launched in 2022, is one of Metso's breakthrough technologies and a major Planet Positive solution to support decarbonising the iron and steel industry.

Combined with a direct reduction plant, Metso's Outotec® DRI Smelting Furnace substitutes traditional blast furnaces in the production of hot metal, making it an optimal solution for primary steel producers aiming for a significant reduction in their CO2 emissions with minimal changes to the rest of the steel plant. The furnace can be integrated with Metso's hydrogen-based CircoredTM process or other direct reduction processes. ■

analytica and ceramitec 2024 in parallel – added value for exhibitors and visitors

From April 9 to 12, 2024, analytica, the world's leading trade fair for laboratory technology, analysis and biotechnology, and ceramitec, the world's leading trade fair for the ceramics industry, will be held in parallel at the Munich Exhibition Center. That will create added value for exhibitors and visitors at both events, as the entire value chain from material development to analytical precision will be covered.



The ceramics industry will benefit, for instance, from automated laboratory systems, modern analytical tools, and innovative measurement technologies that provide accurate data on material composition in order to control and further optimise the quality of the raw materials used and the end products.

In many laboratories, in turn, technical ceramics are used in devices and components because they can withstand extreme temperatures and high mechanical stress and are resistant to aggressive chemicals. Some ceramic types are also biocompatible, which makes them suitable for certain experiments in biomedical research.

The supporting programme for both two trade fairs will also include presentations and discussion panels that are beneficial for both sides. At ceramitec, guided tours will be offered that provide an introduction to the range of products and services for technical ceramics and ceramic components. In the Occupational Safety and Health Forum at analytica, experts will once again show, in part with explosive live demonstrations, how safety can be ensured in daily laboratory work.

Exhibitor and visitor tickets for analytica and ceramitec grant admission to the parallel event.

For further details visit www.messe-muenchen.de or email sabine.wagner@messe-muenchen.de ■

Hüttenes-Albertus' CEO
Christoph Koch gives his views

"We have far too many regulations. Germany will only remain viable for the future if the government finally stops this bureaucratic madness."

In a recent interview with WirtschaftsWoche (a German weekly business news magazine published in Germany ("Wirtschaft" means economy and "Woche" is week) Hüttenes-Albertus' CEO Christoph Koch, who has been running Hüttenes-Albertus Chemische Werke GmbH together with Franz Friedrich Butz since April 2015, gives his views on the many current challenges such as high energy costs, overwhelming bureaucracy and production migration in Germany.

WirtschaftsWoche (WW): Mr. Koch, Germany is in recession and the global economy is weakening. How badly is your company affected by this?

Hüttenes-Albertus' CEO Christoph Koch.
Photo credit WirtschaftsWoche

Christoph Koch (CK): Our business did very well globally in the first half of the year and the economic development in the entire foundry industry is solid. Although the production volume in Germany is no longer at the level of previous years, our company can compensate for this through its strong global presence and growth in foreign markets. Our business in Turkey, Mexico, the USA and also Europe is running stable. I believe that the German economy overall is not as bad as it is sometimes made out to be.

WW: What are the company's investment plans?

CK: As a chemical company, you always have to invest one to three per cent of sales in systems in order to keep inventory at a stable level. However, we are not currently building completely new chemical plants. Our strategy is more like a puzzle. It is modular investments in our production network that allow us to continually adapt to demand. Our investment plans for 2024 therefore focus primarily on our largest growth markets of India, Turkey and Mexico.

WW: The company's largest factory in the world is in Hannover, Germany. Will you continue to stay in Germany as a location in the future?

CK: Yes, Germany is the backbone of our group. This is also the centre of our research and development. Our roots here go back more than 100 years. Withdrawing from Germany is out of the question for us.

WW: Such confessions are currently rather rare. According to surveys, one in four medium-sized companies is currently thinking about relocating production abroad.

CK: We are committed to Germany as a location – but I didn't say that everything was going well here.

WW: And what is going wrong?

CK: We have far too many regulations. Germany will only remain viable for the future if the government finally stops this bureaucratic madness. I would like to see a radical reduction in bureaucracy. For every new regulation, two old ones should be abolished. That would be a huge economic stimulus programme not only for Germany, but for all of Europe.

WW: Which old regulations would you cut off?

CK: One of our biggest problems is the long approval processes. Let's take our new administration building. You can't imagine how long it took to get permission to demolish the old building! And do you believe that our telecommunications provider managed to lay an Internet line for the new building within a year? No, instead we had to temporarily extend the cable from the old building for a lot of money. That's typically German for me. We have to become much more agile and faster.

WW: A key locational disadvantage in Germany is currently the high energy prices. The foundry industry needs a lot of gas and electricity. As a supplier, do you feel this cost pressure?

CK: We have customers who suffer greatly from high energy prices. And yes, unfortunately there are also foundries that go bankrupt. Some are also moving production abroad, for example to Turkey, where energy costs and wages are lower. While 5.4 million tons of castings were produced in Germany five years ago, this year there are only around 3.5 million - around a third less.

WW: And that has no consequences for you?

CK: Of course the market for us in Germany is getting smaller. But if the casting volumes move to Turkey, China or India, we have the advantage that we are already represented in these countries. We have a global production network, which protects us from the effects of market shifts and geopolitical shocks.

WW: So you remain future-proof primarily through your global positioning?

CK: Yes. Globalisation and our international interdependence are our lifeline for difficult times. We compete because we do profitable business abroad. In Germany we have suffered economically over the past four years. If we had only produced in Germany during this time, we would certainly not be making any profits today.

WW: Can the migration of medium-sized companies still be stopped?

CK: I think we need to start thinking in long-term cycles again. We are currently experiencing many negative developments in Germany and Europe. High energy prices, a shortage of skilled workers and the conflict in Ukraine are creating a difficult environment. But that doesn't mean it will always stay that way. Sooner or later the tide will turn again for our region, and we have to set the right course for this now. Companies that leave today may come back in a few years.

The full WirtschaftsWoche interview can be read at:

https://www-wiwo-de.translate.goog/unternehmen/mittelstand/huettenes-albertus-deutschland-bleibt-nur-zukunftsfaehig-wenn-es-diesen-buerokratiewahnsinn-stoppt-/29338144.html?_x_tr_sl=de&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc

■

GF Casting Solutions showcases their high-pressure die-casting capabilities

Attendees at Euroguss 2024 were able to experience how GF Casting Solutions is pushing the boundaries of high-pressure die-casting in the automotive industry.

Die-casting components are getting bigger and bigger

The automotive casting industry is in transformation. Driven by advancing technology, components become bigger and bigger. Big castings offer numerous advantages, including cost and time savings in vehicle production, integration of functionality, and the reduction of overall vehicle weight. New vehicle architectures open doors for innovative ideas and even more development projects. These advancements create historical challenges for both car manufacturers and suppliers alike. To fully exploit these advantages, components need to be designed and developed with casting expertise from the very beginning.

Going beyond limits – Dimensions, functionality and performance

"GF Casting Solutions is constantly pushing the boundaries of what is possible, let it be the size of components or the limits of the equipment. By pushing the technical requirements in combination with the best product design, GF empowers its customers to find the most resource-efficient manufacturing process for each challenge," said a company spokesperson.

The showcased component in the front is an innovative, GF-designed concept of a bulkhead. The HPDC aluminium component is designed to fit in a mid-size to luxury car and is engineered for serial production

Interested visitors

"GF Casting Solutions stands for functional integration without compromises. Whether it is the connection to neighbouring components or the integration of assembled parts."

"Structural components, designed in close alignment with the customer, can show a better performance in stiffness and comfort."

GF Casting Solutions produces for a variety of market segments: Light vehicles, commercial and off-highway vehicles, aerospace and energy, and the company serves customers worldwide – most of which belong to the automotive industry. The four technologies used in production are high-pressure die-casting, precision casting, iron casting and additive manufacturing. ■

New name for European foundry association

The European Foundry Association, CAEF, marked a transformative milestone at its annual council meeting, held recently in Sofia, Bulgaria.

The meeting, attended by representatives from leading foundry associations across Europe, sees the adoption of critical decisions made to reshape the association's future. Foremost among the significant developments is the decision to rebrand the association, which from 2024 onwards will be known as the European Foundry Federation (EFF). This change reflects the organisation's renewed commitment to fortifying its presence and influence within the European foundry industry.

Underpinning this transformation is a newly established governance structure. A president has been elected to lead the federation for a three-year term, supported by a board composed of the presidents of major European foundry associations. Chiara Danieli (France) was elected president of the EFF; her experience and knowledge of the industry are vital for the challenges ahead.

The newly formed board comprises esteemed members, each serving as the president of their respective federations in Germany, Spain, Italy, Poland, and Turkey, guaranteeing a wealth of expertise and leadership to the EFF. EFF says this "dynamic leadership team is poised to steer the federation towards new horizons and unprecedented accomplishments."

In a statement the newly named EFF said: "The primary objective behind these changes is to bolster the organisation's visibility and establish it as a reliable, authoritative voice for the European foundry industry. In a climate marked by evolving challenges and formidable competition from multiple counterparts, coupled with the imperative to augment industrial capacity, the foundry sector recognises the urgent need for amplified representation in the political arena of Brussels."

"The European Foundry Federation (EFF) is ready to rise to the occasion, leveraging its renewed structure to navigate the complexities of a rapidly changing industry landscape. By becoming a unifying force, the federation aims to galvanise the foundry sector towards greater innovation, sustainability, and competitiveness on the European stage." ■

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

Extend your brand and put your message in context and receive the actionable results needed to grow sales while expanding your brand's digital presence. The castings sa website (www.castingssa.com) includes the latest issue of the publication in both digital and PDF format to download, industry events, international and local exhibitions and links, news, employment opportunities and a showroom giving you details of supplier and metalcasting engineering companies' activities.

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Grinding Techniques – a focus on grinding applications within the foundry industry

In the manufacturing sector, the foundry industry plays a pivotal role producing essential components for various applications, from automotive parts to industrial machinery. Grinding applications within this industry are indispensable for achieving the precision, quality and functionality demanded by diverse sectors, where castings are required to meet the rigorous standards of modern manufacturing.

When metal is melted and cast into shapes, either by sand casting, investment casting, or die casting, castings are created. Regardless of the technique or method used, these resulting components often require a grinding application not just as a finishing touch, but as a precision - driven process to meet specific dimensional tolerances and surface finish requirements.

Some common grinding applications found within foundries, include surface, blanchard, cylindrical, centreless and internal grinding.

Surface grinding, is employed to achieve a smooth and flat surface on castings, particularly crucial for components requiring precise contact surfaces, where blanchard grinding, uses vertical spindle rotary table grinders to remove material quickly and efficiently, ensuring parallelism and flatness – an ideal application for large castings.

Where high-precision cylindrical shapes need to be achieved, cylindrical grinding is used as this process is essential for components with intricate geometries.

Centreless grinding is used to produce accurate, round components with tight tolerances, and internal grinding, for castings with internal features requiring dimensional accuracy inside the component.

As grinding applications carry certain attributes that impact the quality, accuracy, and functionality of the end product, this step is crucial in the foundry workflow. Apart from achieving the desired finish to enhance the physical appearance of the casting, special care should be taken with dimensional accuracy, as even the slightest deviations can compromise the functionality and fit of the final product.

Ensuring the integrity of the end component, is done by removing any defects like burrs, excess material, and surface irregularities. Further to this, grinding applications also refine the microstructure of the material to enhance the mechanical properties of components – especially when prone to high stress or wear. With ongoing advancements in technology and a focus on sustainable practices, the roll of

grinding in the foundry industry is poised to evolve, further contributing to the production of superior castings that will drive innovation across various industries.

While grinding plays a pivotal role in ensuring the quality of castings, it also poses certain challenges. Heat management on application is considered one of the primary risks as excessive heat can lead to thermal failures, altering the metallurgical properties of the casting. Although various cooling techniques, such as using coolant fluids and optimising grinding parameters, can mitigate this, the correct choice of grinding media remains key.

Grinding Techniques has been a supplier to the foundry industry for over 40 years, and have become experts in pairing the correct grinding media with the relevant application, finding the perfect balance between cost and performance.

Both their ANDOR and Superflex range boast specific product solutions for the industry, offering excellent longevity, with optimum results for stock removal and finish.

Being a proud local manufacturer, Grinding Techniques use only the best in raw materials, offering competitive lead times, on-site support and product training. Their solution-driven approach allows a full abrasive basket tailored to your need.

For further information contact Grinding Techniques on TEL: 011 271 6400 or email info@grindtech.com or visit www.grindtech.com ■

Evident releases updated Vanta model analysers

Evident says its Vanta handheld X-ray fluorescence (XRF) analysers deliver improved elemental analysis and material identification using smart and cloud-connected technology.

The scrap analyser manufacturer, formerly branded as Olympus, says its next-generation Vanta handheld units combine performance with comfort. “The updated Vanta Max and Vanta Core portable XRF analysers combine the exceptional accuracy, speed and durability of the Vanta series with improved ergonomics, a refreshed interface and enhanced connectivity for greater comfort and productivity,” Evident says.

Vanta Max

The new design includes a balanced handle with an enhanced grip, making the updated portable XRF analysers more comfortable to hold for extended use in the field or lab, the company says, adding, “Combined with their proven ruggedness and ease of use, the analysers can increase uptime in the toughest environments.”

A reconfigured interface has been designed to enable users to work more efficiently, according to Evident. With a wireless connection, users can review, share and manage XRF results on a personal computer, tablet or smartphone, “enabling seamless data integration into their workflow.”

Software updates on the new Vanta models are now automatic, giving users instant access to the latest features. Users also can take advantage of enhanced application support with the option to add custom analytical capabilities, the firm says.

Evident says its Vanta analysers are used by thousands of customers in applications such as scrap recycling, mining, metal fabrication, positive material identification (PMI), environmental assessment, scientific research and education.

The Vanta Max model, which replaces the M series, offers the series’ highest analytical capabilities while Vanta Core model, replacing the C series, combines value with speed, low limits of detection (LODs) and a wide elemental range, making it the standard choice for fast alloy identification, Evident says.

“The next generation of Vanta handheld XRF analysers demonstrates Evident’s commitment to innovation,” Evident Vice President Randy Wertz says. “The new Vanta analysers are designed to empower our customers around the world with exceptional performance, comfort and efficiency, enabling them to achieve outstanding results both in the lab and field.”

For further details contact Innov-X Africa on TEL: 010 006 0430 or visit www.innovxafrica.com ■

Enhancing crucible performance in non-ferrous applications: Foseco

Crucibles may seem like a small part of the casting process, but they have a huge impact on improving energy efficiency and environmental performance in non-ferrous foundries. Recent technological advances have resulted in crucibles that offer improved thermal performance and significantly extended service life.

Crucibles have three overlapping functions within the non-ferrous foundry:

- Melting
- Holding the melt at a specified temperature
- Transferring the melt to the casting area

These applications – and especially the first two – are particularly energy intensive functions.

But there's more!

While state-of-the-art crucibles are impressive, the 'secret sauce' lies in the way they are installed and operated. Installation and operating practices are also critical to achieving consistent crucible performance however, and therefore careful attention to recommended procedures should be followed to ensure foundries get the most from their crucibles.

This paper highlights the critical importance of following recommended procedures to ensure foundries get the most out of their crucibles. You can download at:

https://media.licdn.com/dms/document/media/D4E1FAQFDh2SDqoQqYg/feedshare-document-pdf-analyzed/0/1699438984814?e=1706745600&v=beta&t=EahkIouHCFmxM-iuBZy0_delsnU9rXJyg10Vndnz53g

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

Akasel AKA-Brief preparation methods covering the optimum preparation of a wide range of ferrous and non-ferrous metals

Materialographic sample preparation made easy.

Scientific and Precision Solutions is introducing the Akasel AKA-Brief preparation methods covering the optimum preparation of a wide range of ferrous and non-ferrous metals. Aka-Brief is a preparation method with all the parameters for the individual Grinding & Polishing preparation steps. In addition, a micrograph is shown with the expected preparation result after each step.

This makes it possible for you to determine whether the individual steps have been successfully completed or if something needs to change.

There are two different types of preparation methods: Specific Methods for certain materials and General Methods for a range of materials based on their hardness. All methods are carefully optimised to provide the best possible quality at the lowest possible cost.

Akasel is a Danish company that specialises in developing, producing and distributing high quality consumables and the best performing preparation methods for metallography.

They are present in 30 countries through a network of highly competent distributors. The strong partnerships built between Akasel and their distributors ensures that you receive the best support and service possible.

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 ■

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HUSHBORE line introduces Ø80 head exchangeable anti-vibration boring bars

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- Available in various dedicated head types
- Dedicated Adapter use a 20x20 standard square holder
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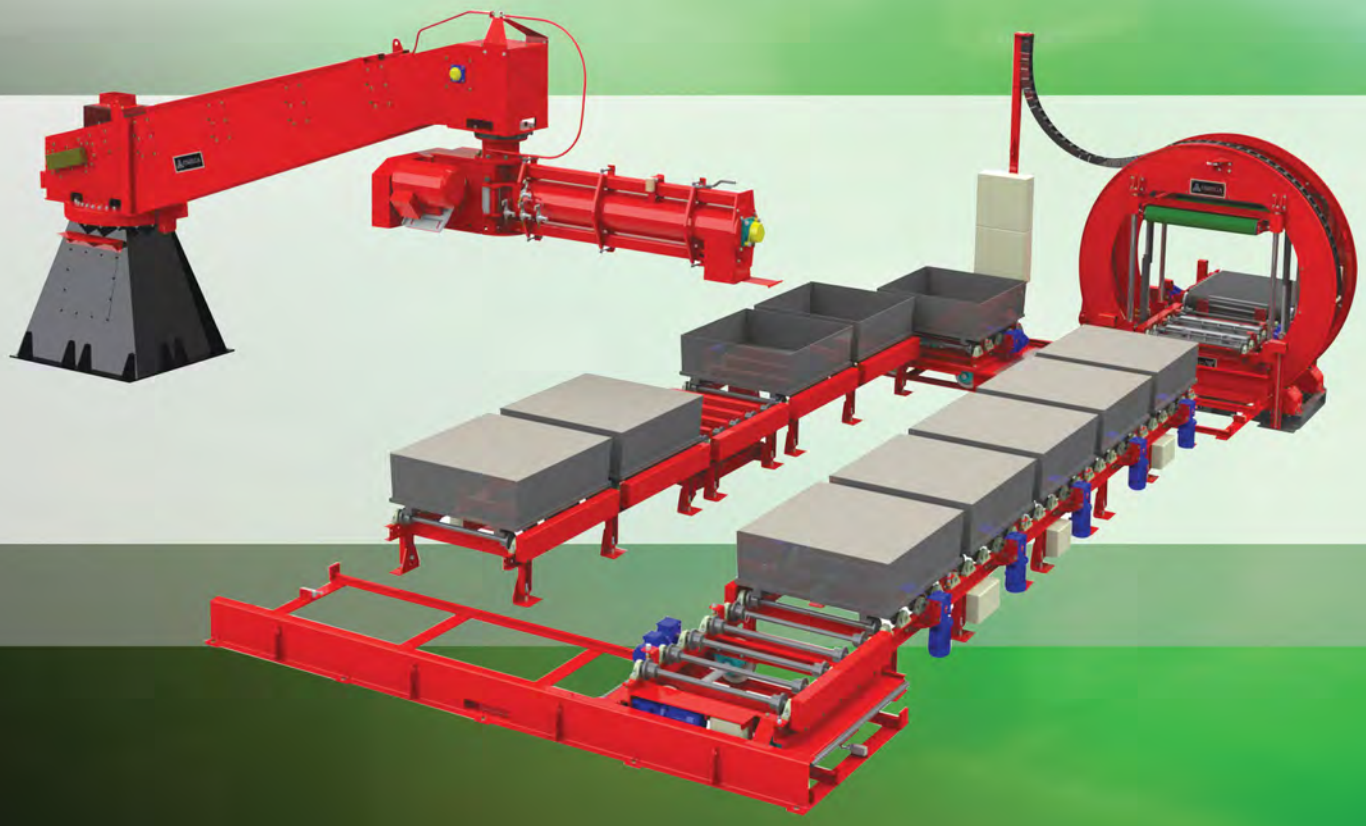

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