Because we value your families health as much as we value your business
Market leading products for high temperature insulating solutions

The Thermal Ceramics business of Morgan Advanced Materials makes a range of fibre and refractory high temperature insulation products used to reduce energy consumption in industrial processes. Its products are also used in passive fire protection applications.

We have extensive experience working with customers all over the world to engineer, design and install high performance insulation in operating environments from 500°C to 1600°C (932°F to 2912°F). We have a proven track record for helping customers to improve operational efficiency and respond to changing environmental pressures.

The Thermal Ceramics business products a variety of market leading brands including: Superwool® low bio-persistent insulating fibre, Pyro-Bloc® modules, Min-K®, WDS® and BTU-BLOCK™ Microporous products and JM™, K* and TJM™ Insulating Firebricks (IFBs).

Morgan Advanced Materials
Thermal Ceramics South Africa
18 Barium Street
Arode · Alberton · South Africa

www.morganthermalceramics.com

e: southafrica.tc@morganplc.com
t: 011 908 0108 / 0208
f: 011 613 1010
industry news

Technology empowered and people driven – ChemSystems Foundry unit; Three South African foundries accredited with PED 2014/68/EU certification; Endeco Omega Sinto ready to ship its first international order; SI Group announces termination of agreement to sell industrial resin business; Proactively looking after its future – Active Foundry; New owners of Schmidt Industries look to broaden scope of business; IMP Scientific and Precision rebrands to Scientific and Precision Solutions; Metso reviewing Vereeniging operations in South Africa; New steel mill denies bribes for jobs claim; Electra Mining Africa 2020 cancelled; Lack of synergy between Denel and Armscor concerns joint committee on defence; Steel industry in financial distress; Automotive industry achieves record trade surplus

international news

Tesla files another casting patent application; Mozambique: Stolen rails found in Chinese foundry; Norican launches Monitizer | PRESCRIBE; 74th World Foundry Congress postponed until 2022; The Corona virus crisis affects the European foundries more negatively than the mood may indicate; The XRf principle – SPECTRO Analytical Instruments; Tesla casts a new strategy for lightweight structures; World Foundry Organisation elects new president; Sintercast reports CGI production is up in 2020

product review

PFERD composite brushes for deburring, O.M.LER decoring benches and hammers, Belec Vario Lab laboratory spectrometer, Grinding Techniques – moving the automotive industry forward; Alphaset (APNB) – Customised formulations for maximum benefits; Power-converting induction melting for aluminium alloys – Inductotherm Combining toughness, thermal resistance in HPDC die steel
"Don’t offer a handshake when guests arrive." “Don’t top-up water and wine glasses, but instead leave the bottles on the table so guests can help themselves.” These are just a couple of phrases from the new training manual for the hospitality and restaurant industry. I am sure strange and counter-intuitive behaviour to many in the industry, but it is what is going to be required in the future and at this stage none of us know for how long that we will have to act strangely.

The whole manual has been turned upside down in terms of our social behaviour. I did say to someone the other day that I would hate to be single during this period, one of the many negative thoughts you could torture yourself with. But where did it all go wrong for the year 2020? I remember commenting at the beginning of year on how I was looking forward to the year because it felt good. 2019 had been a tough year and there was this feeling of anticipation. Plenty had been planned for and to look forward to and even the numbers of the year sounded great. I was not the only one to express such a feeling. But then wham! the Coronavirus pandemic hit us and threw the whole world into turmoil.

There are many unanswered questions as to how, when and where the virus originated and we may never know the answer to these and the many more questions that people are asking. A strange statement to make in this technologically advanced period in history. Additionally, there are many conspiracy theories that have been put forward.

It has been interesting and perturbing, or should I say disturbing, to see how the various governments have put their own measures in place to try and stop the spread of the disease. The debate is why they, the so-called politicians in each individual country, all have such a different view in their approach to finding a solution and a cure. It really is shameful to see how many governments have become embroiled in politicking and, dare I say it, are emblazoned on their own corrupt path to enrich themselves. Some of the decisions taken by these ostensible leaders is plain mind boggling.

Can there be positives that we can learn from as a result of this difficult period in our lives? I say yes. We need to be optimistic and down the line we will all benefit. With virtually every country going through some form of lockdown, localism has almost become a new way of life. Looking after those nearest and dearest to you has been re-enforced by the limited movement that has been allowed. Economically it has been disastrous. And this is the point. To get our economy going again let us think and support local. After all, the old cliché does say that charity starts at home. The number of calls I have had recently from people looking for new local suppliers is encouraging. I know I will be supporting this movement.
The Leading Specialist in No Bake Equipment in South Africa

- Continuous Mixers 3 - 100TPH
- Fast Loop System, mould sizes up to 3.5M x 2.5M
- Carousel Moulding Plants, mould sizes up to 1.6M x 1.2M
- Manipulators from 350kg to 15T
- In-Line Semi-Auto Flood Coaters
- Mechanical Sand Reclamation 1 - 40TPH
- Secondary Attrition up to 10TPH
- Chromite Separation Plants up to 10TPH
- Thermal Reclamation from 250kg/Hr up to 12 TPH
- Core Shooters 2.5 - 100L

New Harmony New Solutions™

Sinto

ENDECO OMEGA
192 Lamp Road, Wadeville, Gauteng, South Africa
T: +27 (11) 907 1785 E: info@endeco-omega.co.za

www.sonto.com
ChemSystems is one of the many companies belonging to the AECI Limited Group (African Explosives and Chemical Industries), which is listed on the Johannesburg Stock Exchange (JSE). AECI is a diversified Group of 16 companies that was registered in South Africa in 1924 and was listed on the JSE in 1966.

As one of the older companies within the AECI Limited Group, ChemSystems celebrated 60 years of manufacturing innovation in 2018. Established in 1958, ChemSystems is the home of AECI’s main chemical manufacturing and supply pillar, consisting of five business unit divisions spanning a variety of industries and services. The five business units are segmented into Industrial and Mining, Paper and Leather, Consumer Specialties, Construction and Refractory and Foundry and Timber Board. These businesses supply chemical raw materials and related services for use across a broad spectrum of customers in the manufacturing, infrastructure and general industrial sectors mainly in South Africa and in other Southern African countries.

ChemSystems is located at ChemPark, Chloorkop, Gauteng where the primary manufacturing facilities, product application and research laboratories, sales, marketing and administration teams and warehousing are located. A second manufacturing plant is located just outside Durban at the Umbogintwini Industrial complex. These facilities support the five business units.

For the foundry applications, ChemSystems represents ASK Chemicals in South Africa through a license and distribution agreement.

“One of the biggest contributing factors to ChemSystems’ success over the years is that the company has always employed individuals who are experts in the chosen fields in which the individual divisions operate. This has allowed us to offer our customers high value-add technical support. Such capabilities are all the more important when you consider the fact that, as a company, ChemSystems doesn’t simply sell a product, it sells solutions,” explained ChemSystems Foundry Unit Sales Manager Jacques Swanepoel.

“The Foundry unit specialises in the supply of resins, various other foundry related chemicals and products and markets formaldehyde, urea formaldehyde and phenol formaldehyde resins, essential additives in the resins used for manufacturing foundry sand moulds.”

“Being a local manufacturer, ChemSystems possesses a certain degree of flexibility that has allowed it to tailor its offerings to customers throughout the years as the market around it has evolved. In addition to having a strong presence in its home market of South Africa, the company has also gained significant access to sub-Saharan territory through various technology and distribution partnerships, giving it a large area of opportunity to pursue.”

“ChemSystems also possesses three distinct models in which it does business, these being direct trading,
The Foundry unit specialises in the supply of resins, various other foundry related chemicals and products and markets and manufactures formaldehyde, urea formaldehyde and phenol formaldehyde resins, essential additives in the resins used for manufacturing foundry sand moulds.

Products manufactured by ASK Chemicals for core and mould production include polyurethane cold-box, alkaline phenolic (ester-cured) no-bake, polyurethane no-bake and furan no-bake.


KEW Foundries focuses on continuous product development and improvement in order to deliver a range of small to large quality castings.

Specialising in all grades of Grey Cast Iron and SG Iron between 1 kg and 10 500 kg, KEW services a variety of markets from its central location in South Africa.

KEW Foundries has built the expertise that allows the company to service the requirements of the VALVE Industry, PUMP and WATER RETICULATION Industries, Railways, Materials Handling and Rolling Element industries, just to name a few.

SERVICING ALL AREAS IN SOUTH AFRICA FROM KIMBERLEY SINCE 1893

Contact us for your casting needs today:
Tel: +27 (0) 53 841 0474  Fax: +27 (0) 53 841 0473
e-mail: info@kewfoundries.co.za
Web: www.kewfoundries.co.za
manufacturing under license and manufacturing its own specialty chemicals.”

“For the foundry applications, ChemSystems represents ASK Chemicals in South Africa through a license and distribution agreement. ASK Chemicals is a multinational business, with its head-office in Germany and is a global leader and innovator in foundry technology with comprehensive manufacturing, logistics and research capabilities across the globe.”

“ASK Chemicals is one of the world’s largest suppliers of foundry chemicals, with a comprehensive product and service portfolio of binders, coatings, feeders, filters and release agents, as well as metallurgical products including inoculants, Mg-treatment and inoculation wires and master alloys for iron casting.”

“Products manufactured by ASK Chemicals for core and mould production include polyurethane cold-box, alkaline phenolic (ester-cured) no-bake, polyurethane no-bake and furan no-bake. On the coatings side they include alcohol and water-based mould and core coating systems suitable for ferrous and non-ferrous applications. Release agents manufactured by them are used in the no-bake process, cold-box process and green sand moulding. Ancillary products include chaplets, core vents, core adhesives, metal cleaners, sand additives, synthetic sands and ceramic washers.”

“Together with comprehensive support from ASK, ChemSystems with its local foundry industry specialists, provides comprehensive technical support in the application of the products, as well as developing tailored product solutions to suit local requirements and conditions.”

People driven

“However, there is more to technology than meets the eye. In a new decade where the potential of development is limited only by our imagination, technology will enable business to respond dynamically to real-time market changes. Artificial Intelligence (AI) will increasingly help us with tasks that can be automated, but it will have less impact on jobs that require human skills such as design expertise and industrial strategy.”

“At the core of this advancement are the people who operate the businesses. People matter more than anything else. This cannot be more emphasised with the COVID-19 pandemic the world is currently experiencing.”

“With the right people to continually engage with customers and guide innovative processes, our ChemSystems team of experts in resin systems and metallurgical products can turn your idea into a thriving organisation that is profitable, impactful and successful.”

“We are here with the same technology, same manufacturing processes, same team and same service for our clients in the foundry and metallurgical industries. We are here with a sustained and a renewed commitment to support and drive local manufacturing initiatives that are setting our local foundries up for strong growth for the future.”

Adaptability and commitment during COVID-19

“ChemSystems has also shown how in difficult times, community needs can be addressed, with its commitment to the fight against COVID-19. The company has responded voluntarily by switching production lines to make hand sanitiser (or to supply the necessary raw materials for hand sanitiser) in an effort to address shortages during this virus outbreak. It’s thanks to the efforts of employees from across ChemSystems and the rapid response of suppliers, with materials, packaging and labels that ChemSystems has been able to adapt its plant and scale up production of the hand sanitiser from laboratory trials to factory production.”

“This has been a massive collective effort by teams within ChemSystems and our suppliers, while many are remote working. The company values your family’s health as much as we value your business,” ended Swanepoel.

For further information contact ChemSystems Foundry Sales Manager Jacques Swanepoel on TEL: 011 922 1824 or visit www.chemsystems.co.za

ChemSystems is located at ChemPark, Chloorkop, Gauteng where the primary manufacturing facilities, product application and research laboratories, sales, marketing and administration teams and warehousing are located. A second manufacturing plant is located just outside Durban at the Umbogintwini Industrial complex.

ChemSystems, with its local foundry industry specialists, provides comprehensive technical support in the application of the products, as well as developing tailored product solutions to suit local requirements and conditions.
Casting partnerships towards success

It is imperative to enhance the manufacturing competitiveness of South African foundries to increase local content and exports.

The National Foundry Technology Network (NFTN) exists to advance the competitiveness of the local foundry industry, especially distressed foundries through a range of support services.

The NFTN is an initiative of the Department of Trade, Industry and Competition (the dtic). Through technical interventions, skills development and enterprise development, the NFTN works to:

- Build foundry capacity technology, tooling and process through support;
- Support the industry with quality standards;
- Support foundries with regulatory compliance; and
- Skills development with accredited core foundry skills.

For more about our support services, or assistance to link up with a suitable foundry to meet your production requirements, contact nftn@csir.co.za or visit www.nftn.co.za.

The National Foundry Technology Network is an initiative of the dtic managed by the CSIR.
The Department of Trade, Industry and Competition’s (DTIC) decision to designate valves for local procurement by State-owned companies (SOCs) was one of the main reasons for valve manufacturers to form VAMCOSA (The Valve and Actuator Manufacturers Cluster of South Africa) in 2011. One of the main goals of VAMCOSA is to grow the South African valve and actuator industry and encourage localisation, which will, in turn, improve job creation and skills development. VAMCOSA promotes the manufacture of products in South Africa with locally produced castings, forgings and materials, which will, in turn, create jobs through local procurement, increasing the value chain both upstream and downstream and promote growth and sustainability. The VAMCOSA platform provides the opportunity to promote interaction between the local valve and actuator manufacturers and SOCs and municipal-owned enterprises (MOEs). Through this effort, it becomes easier to define what the SOCs and MOEs require from local valve manufacturers, as well as to compare their requirements equally with the products offered by local and international manufacturers.

Addressing the challenge of adhering to international standards

The local procurement designation includes a broad spectrum of valves, from simple household taps to complex valves used in specialised industrial and mining applications, with the local content of each valve or actuator required to be 70% by value. This provides an opportunity for local valve manufacturers to develop and add to their range of products the valves that might not have been available with a local manufacturer’s stamp prior to the designation.

A lot of resistance was encountered from SOCs to buy locally made valves and this was largely owing to the SOCs’ perception of locally manufactured products being of ‘inferior quality’. “This is a real crying shame because a lot of the local valve companies have been exporting their products to overseas markets for many years, with no issues. If locally made valves are good enough to export, then why are they not good enough for local clients?” questioned VAMCOSA’s Greg Walker.

However, despite there being increasing acceptance of locally made valves, SOCs continued to use loopholes in some cases to acquire imported valves because of the persistent ‘inferior quality’ perception.

NFTN supports initiative to get Kimberley Engineering Works, RelyIntracast and Vestcast audit ready. As a result of the TUV accreditation the local content pump and valve initiative gets clout and SOCs loophole is closed.

Three South African foundries accredited with PED 2014/68/EU certification standard, which enables them to supply castings with internationally recognised CE marking

DN150 and DN50 butterfly valve body and discs manufactured to PED standards by Vestcast

More examples of castings manufactured by Vestcast to PED 2014/68/EU standards. In the picture is a plug valve body on the left, a 1½ inch and a ½ inch plug and on the top right a 25mm cast body
As a result, VAMCOSA formed a working group tasked with identifying three categories of valves – those already available on the local market, those that should be manufactured locally and those for which local manufacturing will not be feasible. And of course, strategies to close the loopholes that were being put forward by the SOCs.

PED is 2014/68/EU certification

One of the biggest stumbling blocks was that none of the local foundries were accredited with the industry standard PED 2014/68/EU certification. Compliance with all applicable requirements bestows on the manufacturer the right to affix the CE (European Conformity) marking to the pressure equipment. CE marking is a mandatory conformity marking for products sold within the EU, especially pressure equipment and assemblies. The marking is also recognised as the general standard worldwide.

Manufacturers of pressure equipment selling into most European countries (the European Economic Area) must make sure they comply with the requirements of the Pressure Equipment Directive (PED 2014/68/EU).

The PED sets out essential requirements for pressure equipment and assemblies. They vary according to how much pressure, liquid, or gas the equipment is designed to contain. The PED does not tell manufacturers how to meet these requirements, allowing them the flexibility to meet the requirements with various manufacturing standards.

All equipment covered by the PED falls into one or more risk categories. After determining which category applies to your equipment, it has to comply with one or more conformity assessment modules which define the level of quality assurance and third-party involvement, including:

- Product inspection, testing and certification
- Material approval
- Design examination
- Type examination
- Quality system approval
- Approval of joining personnel and procedures

---

**INTEGRAKING**

**THE NEW BELEC IN-SPECT MAXIMUM. COMPACT.**

With the completely redesigned metal analyser Belec again sets new standards. The all new Belec IN-SPECT with its unique dual-spectrometer optics guarantees unbeaten performance in conjunction with significantly reduced maintenance costs in this instrumentation class.

It is used in the classic melting control in foundries as well as in goods receiving, recycling or in regular quality assurance for production control.

The Belec IN-SPECT is a true multifunctional wonder:

Almost unlimited in the number of measuring programmes, it fulfils almost every requirement combined with extremely attractive pricing.
and determined that we met the criteria of a foundry capable of producing castings to the CE standard. They then arranged for a consultant to work with us on a pre-determined timeline in order to get us audit ready. Once the whole PED system was incorporated into our ISO system, it was time for TUV, the company appointed to do the PED audit, to assess us. This they did in February 2020 and we were recommended for certification," concluded Barnes.

“The NFTN supported the intervention to get Vestcast audit ready and also for the first TUV Audit that was done. Going forward it will be our responsibility for the maintenance and cost of maintaining our accreditation.”

“Our main target group is, as I am sure it is with the other two foundries involved in the initiative, all the companies that are involved in the local manufacture of pumps and valves and those that are supplying these companies. These companies will also have to be PED certified and this will allow them to supply all local companies that require CE certified products and components. Currently many of these products are being imported from countries such as China, India and Brazil. It will also allow the companies to export their products worldwide,” said Barnes.

“Now that Vestcast and the other two foundries are PED certified it will assist the DTI in its drive to enforce the local content initiative. There will be no more loopholes to exploit or excuses that the SOCs can give. We are not exporting directly ourselves but our clients are,” said Barnes.

“The PED certification has been mandatory throughout the EU since May 2002, with the 2014 revision fully effective as of 19 July 2016. It enables most international inspection agencies to provide verification and certification services to assess compliance to the requirements of the pressure equipment directive,” said Ian Barratt-Gibson, Managing Director of RelyIntracast.

“Pumps and valves are pressure vessels, so they must be certified for the country in which they will be used. Certifications vary, often quite significantly, depending on the application they will be used for and their country of destination. Sorting through the myriad of requirements that may be encountered is a daunting task. A truly global certification standard would be the ultimate solution, but that remains all but impossible to achieve due to the parameters that must be met for individual country regulations,” explained Barratt-Gibson.

“This normally isn’t a problem for equipment sold and used in most countries, but what if the machine your company produces heads to the EU? The PED certification is internationally recognised and we are happy that we are conforming to these high standards that are set out in the documentation,” continued Barratt-Gibson.

“The NFTN’s main mandate is to manage, coordinate, and facilitate economic development towards the establishment of a globally competitive South African Foundry industry through appropriate skills training, technology transfer, and diffusion of technologies.”

“We would like to thank the NFTN, on behalf of all three of us, for assisting in our accreditation,” concluded Barratt-Gibson.
PFERD

www.pferd.com

There is no substitute for Quality and Safety
Local fabricating and foundry equipment manufacturer Endeco Omega Sinto is getting ready to ship its first international order 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.

The equipment manufactured locally will be assembled at the foundry site once it arrives and will be incorporated into a very large project that the foundry is currently incorporating into its current location. Endeco Omega Sinto’s contribution to the project, which is being project managed by UK parent Omega Sinto Foundry Machinery UK, includes 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 will be supplying the balance of the equipment for the project.

“The moulding line is referred to as a size 10. To give you some sort of comparison the biggest moulding line that has been installed in South Africa is referred to as a size 6,” said Roy Dias, Managing Director of Endeco Omega Sinto.

“We were contracted to manufacture four aspects of the overall project. All the equipment manufactured is 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 45ton, as well as two powered roller conveyors to handle same mould sizes.”

“One compaction table and the one powered roller conveyor have already been factory acceptance tested and will be shipped by the end of June 2020. The second powered roller conveyor will be ready for factory acceptance and shipping by end of June 2020. We are busy collating the packaging material and this in itself is an interesting exercise as it is a first for us.”

“At first the roller conveyors were going to be made up of solid shaft but on consultation it was decided that they would be redesigned and manufactured from Sched 120 pipes. With the rollers carrying such large moulds and weight you had to be very aware that there would not be any bowing of the individual rollers.”

“One of the biggest challenges for us was sourcing the 90 Sched 120 pipes required as they are not manufactured locally.”

“Another challenge was that we only required pipes of 4.8 metres in length, which of course is not a standard size. The only ones we could acquire come in six metre lengths. We therefore had to have them cut-to-size and we are now left with 1.2 metre off-cuts.”

“We cut them on site but finding a machine shop with machines that could handle these lengths was a huge challenge as was the machining of the pipes. Each pipe had to have machining of the O/D to required tolerance as well as the I/D of both ends by about 1,000mm so as to be fitted with shafts. Of course all have to be the exact same size as well. To find a CNC shop with lathes to accommodate 4.8 metre lengths was not easy.”

“We have also been responsible for the rest of the fabrication requirements and the equipment that powers a roller conveyor, which includes power belts, proximity switches, motors, gearboxes, chains and sprockets.”

“We began work on our section of the project in November last year and all items, except for the second compaction table, should be ready for shipping by the end of June 2020. This is scheduled to take place at the end of July 2020.”

Positive Group spinoffs

“This order is a direct spinoff from Endeco Omega Sinto’s move to this larger factory 18 months ago. The improvements in all aspects of our manufacturing business have led to increased orders and also recognition within the Group structure. The positive spinoff is that we are now fabricating and manufacturing company products that are destined to be installed in foundries in other countries where the Group is active.”

“There are many other reasons why we are now included
but one of the main reasons is that we have been acknowledged as being a fabricator and manufacturer that meets the world standards that are demanded and required. We have had to earn the trust but from a broad technical aspect we believe we are ahead in some cases. It is an opportunity that we have grasped and it is a big step as it will be the first time that we will be ‘exporting’ equipment to countries outside the continent.”

“An added advantage is the technical transfer that we are now afforded. Some of the projects that we are involved in where we are manufacturing equipment, includes equipment that we have not manufactured before.”

“Currently we are also manufacturing three different sizes of reclamation units to Omega design that will be shipped back to the UK.”

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

---

Metals
- Ferrous Metals
- Non-Ferrous Metals
- Stainless Steel
- Carbon Steels
- Low Alloy Steels
- Wear Resistant Steels
- Heat Resistant Steels
- Aluminium Alloys
- Copper Based Alloys
- Nickel & Cobalt Based Alloys

Industries
- Automotive Products
- Power Generation
- Armored Vehicle Components
- Food Processing
- Petrochemical Equipment
- Military Weapon Components
- Pumps
- Medical Implants
- General Engineering
- Mining Equipment
- Railway Industry

Tel: 011 397 4594
Fax: 011 397 6376
Email: david@vestcast.co.za
www.vestcast.co.za

NOW PED 2014/58/EU certified
Pressure Equipment Directive for the design and fabrication of pressure equipment

Leading Investment Casting – Quality without compromise
The SI Group, a leading global developer and manufacturer of performance additives, process solutions, pharmaceuticals and chemical intermediates has announced that its agreement to sell the majority of its global Industrial Resin businesses and its Brazilian Specialty business to ASK Chemicals has been terminated. The company previously announced the signing of the agreement in July 2019.

SI Group will continue manufacturing Industrial Resin products globally, including production at four sites; Rio Claro, Brazil; Ranjangaon, India and Johannesburg and Durban, South Africa.

“Despite the global economic uncertainty related to the COVID-19 pandemic, we are committed to ensuring the safety of our employees, our sites, our communities, and our customers. This commitment includes supporting our Industrial Resin customers globally,” said David Bradley, President and CEO of SI Group.

In addition to Industrial Resin products at these four manufacturing sites, SI Group also manufactures rubber, adhesives and oilfield products, as well as foundry products in Brazil and South Africa. In these two regions, SI Group will continue its technological cooperation with Hüttenes-Albertus to support foundry customers.

**Si Group South Africa is a crucial foundry partner**

In 2004 Schenectady International, Inc. (now known as the SI Group), through its South African affiliate, Schenectady South Africa (Pty) Ltd reached an agreement to partner in South Africa with Hüttenes-Albertus Chemische Werke GmbH (HA) by acquiring Hüttenes Albertus Falchem (Pty) Ltd and Zeta Resins (Pty) Ltd’s foundry and timber chemical intermediates business.

In 2010, in order to streamline operations in South Africa and make the group more cost effective, it was decided to flatten this structure and incorporate HA Falchem SA (Pty) Ltd into the SI Group, and SI Group South Africa (Pty) Ltd was formed.
customers in both countries,” emphasised Franz Friedrich Butz and Christoph Koch, Managing Directors of Hüttenes-Albertus.

With the combination of HA’s cutting-edge product technology and SI Group’s modern production facilities in Rio Claro, Brazil and Johannesburg and Durban, South Africa, the two partners are well positioned to meet the needs of foundries in these important growth markets.

About SI Group

The SI Group, which was established in 1906, is a leading global developer and manufacturer of performance additives, process solutions, pharmaceuticals and chemical intermediates, with strong positions in the plastics, oilfield, rubber, fuels and lubricants, active pharmaceutical ingredients and industrial resins industries. SI Group solutions are critical to the quality and performance of countless industrial and consumer goods.

Headquartered in Schenectady, New York, SI Group operates more than 30 manufacturing facilities on five continents with approximately US$ 2 billion in annual sales, and more than 3 000 employees worldwide. SI Group is a portfolio company of SK Capital Partners. In 2018, SI Group received its third silver award for corporate social responsibility by EcoVadis and is ranked among the top seven per cent of more than 45 000 worldwide companies. For more information, please visit www.siigroup.com.

About HA Group

Hüttenes-Albertus (HA) is a leading international manufacturer of chemical products for the foundry industry, with its head office in Düsseldorf, Germany. In the global HA Group, almost 1 500 committed employees in more than 30 countries develop and produce foundry chemical solutions for all common core and mould-making processes for customers around the world.

Parts cast using HA binder systems are the core components in a wide range of products, including car engines, wind turbines and industrial machines. For more information, visit ha-group.com.

For further details contact SI Group South Africa on TEL: 087 057 7635 or visit www.siigroup.com or www.huettenes-albertus.com
The increasing need to improve the quality standards for castings are not likely to be met by existing systems that are as old as the foundry in many cases. Increasing output also requires the foundry to consider process stability and repeatability. At the same time, production costs need to be contained in any change to equipment processes.

Based on its own process R&D, Active Foundry embarked on a modernisation project with the phased introduction of new equipment and systems to the foundry, just over three years ago. Prior to that the foundry had been working to a standard that it was comfortable with, by means of less reliable and more costly manual labour and aging equipment and mechanical systems. That is until the company began implementing and achieved the certification of ISO 9001:2015.

“We were in a comfort zone not realising what we could be achieving. When we tackled the difficult task of becoming an ISO 9001:2015 certified company,
foresmost in our plans was to implement a growth strategy through an increase in production volume and quality of product, while at the same time reducing costs. We already knew that the company’s equipment was dated and systems were being dictated to by this old equipment. But this was highlighted when independent outsiders hired to implement the ISO 9001 standards gave us impartial and objective feedback,” said Chris Viktor, Managing Director of Active Foundry.

“We immediately began developing and formatting a growth strategy. In applying the tools for growth strategy, it’s clear that significant work is required to develop a good growth strategy. However, once completed, strategy must be implemented and this may be the most difficult part of the journey.”

“Managing a foundry is a difficult task. Surviving, let alone achieving, long-term growth, is challenging. Especially given the challenging environment of a foundry, attention to strategy is a necessity, not a luxury. Fortunately, there are useful approaches for developing and implementing growth strategies, even for the foundry environment. The most successful growth companies are those that can transform strategy from a singular event, into an on-going process, overlapping, supplementing, and ultimately strengthening their normal quarterly and annual objectives-setting and financial processes. In essence the most successful companies become strategy-focused organisations,” explained Viktor.

History

“Active Foundry was purchased in 1991 from Murray and Roberts by the owners of Ainsworth Engineering who at the time was one of South Africa’s largest manufacturers of valves and produced. Initially the foundry concentrated on casting large valves for Ainsworth Engineering, at the time one of the largest valve manufacturers in South Africa.”

“My father Piet joined the business in 1993 and later became a business partner. He actively ran the business for many years before retiring three years ago in 2017 and handing over the reins to myself. When he joined Active Foundry he realised that the company was too focussed on one company and set about diversifying the client base and the range of products and components that the company was casting. Thank goodness he took that decision as there has been a massive decline in the demand for locally produced valve castings lately, well at least in our factory.”

“I joined Active Foundry in 2007 as the Sales Manager and continued in that position up until 2017. I did not have the luxury of delegating various types of tasks to other people like managers in larger businesses and corporations do. Instead I did them myself and I made sure I learnt all the aspects of what makes a foundry run. A foundry is not an industry. A foundry is a place where castings are produced, or the place where the process that transforms molten metal into a cast metal part. The foundry process is unique and many instances it is unique to a particular foundry.”

“Active Foundry’s production includes castings used, or forms part of the manufacture of valve castings, ground engaging tools, coal crushing hammers, track pads for underground mining machines, rocker arms and various other ferrous products and components.”

“We have grown over the last 10 years to include...
castings manufactured in high chrome iron, various grades of high-strength low alloy steels, especially for the wear part industry, cast steels for the general engineering industry and various grades of grey and SG iron. Because of the volumes of steel we were making, we decided to design and build our own heat treatment plant which includes five furnaces and a quench bath utilised for normalising, annealing, quenching and tempering of steel.

“Since inception we have been capable of producing finished weight castings up to 100 tons, monthly on a single shift basis, but with the installation of our new equipment our goal is to be able to produce up to 140 tons per month.”

“Our customers are in the water provision, power, agriculture, construction and mining sectors throughout South Africa and surrounding countries.”

“We use the no-bake resin system and currently only have one 2.2 ton induction furnace for our melting requirements. We have a fully equipped pattern shop, a comprehensive fettling bay and a core shop with core shooter to supply all our own cores.”

“We control our material quality in our fully equipped lab, which includes sand testing equipment and a Bruker Q4..."
QUALITY FOUNDRY PRODUCTS

Ceramic Fibre Insulation
Insulation Refractory Bricks
Silicon Carbide Masses
Silicon Carbide Advanced Products
Castable and Monolithic Refractories
Refractory Mould Coatings and Parting Mediums
Insulation and Exothermic Feeding Aids
Refractory Holloware
Refractory Crucibles
Vacuum Cast Products
Bentonite
Steel Shot

www.durransrms.co.za E-mail: rms@rmscc.co.za www.rmsproducts.co.za

SOUTH AFRICA
TEL: +27 11 917 0702
FAX: +27 11 917 0705

Resistant Materials Services
RMS GROUP OF COMPANIES AND ASSOCIATES
Resistant Materials Services - High temperature insulation products
Durrans RMS - Foundry and steelwork products
Thermal Fabricators - Coatings and carbon
- Compensators, expansion joints and high temperature fabricated products
Equipment investment

Operating as a foundry for nearly 30 years Active Foundry credits its success to satisfying customer needs by managing and exceeding their expectations.

"The goal has always been to provide customers with quality products in a fast, flexible and cost-effective manner. And to keep up with that goal we realised that we had to make an investment in the foundry production side. One of the central decisions that we had to make before starting the project was to assess if we would just modernise some sections or do it properly in all areas. We decided on the latter but it had to be a phased approach."

"Three years ago we invested in a sand reclamation plant that was installed by Lauds Foundry Equipment. Due to the satisfactory performance of this plant, it was decided to develop in conjunction with Lauds Foundry, most of our other requirements."

"With this new investment, paramount to our decision was to achieve increased production volumes, decreased costs, improved casting methods and enhanced quality using modern equipment and methods. The investment includes facility renovations, new machinery and equipment."

"Because we financed the project ourselves, we carried out studies to identify areas for potential savings before we committed to the project. Growth is normally the prime directive for manufacturers, but there are limiting factors as well. When Active Foundry was established it focussed on valve manufacture of larger valve castings. After I took over the foundry from my father in 2017 our single production casting weight changed immensely from large castings to higher volume smaller castings."

"It was too expensive and also problematic, especially with regard to labour relations in South Africa, to replace all labour with machines. Besides, our employees are still our biggest asset and some of them have been with us for over 20 years. That experience cannot be replaced by a machine."

Phased in plan

"The first phase of our plan was to replace our old core equipment. All our cores had to be produced in one area to achieve this. We equipped a new core shop with one core shooter and a 1-3 ton per hour continuous mixer with PC control supplied by Lauds."

"The second phase of the plan was to consolidate our moulding operation into one moulding bay instead of the two that we had been operating. Included in the move we had to incorporate a new 6 to 12 ton continuous mixer. We had purchased a Lauds LT6/12 machine, which is PLC controlled. Previously we had to calibrate sand virtually daily but now with the self-calibration option included we only have to calibrate weekly. You can imagine the time we are saving now."

"Additionally, the resin and catalyst volumes are controlled according to volume of the sand and that in itself controls quality and reduces moulding and down time."

New rollover draw machine

"Another of the areas where we needed to make cost savings was on the overhead cranes in the factory. They are extremely expensive to operate and maintain. As our floor moulding was very dependent on these overhead cranes, handling was excessive, as was the time it took to strip moulds manually."

"Taking these non-productive
Active Foundry designed and manufactured its own clamping and chain system to close the moulds.

Active Foundry have a fully mechanised heat treatment plant that includes five electric furnaces utilised for normalising, quenching and tempering.

and costly operations into account, phase three saw us invest in a Lauds 3000 rollover draw machine, which handles copes and drags of 1 300mm by 1 100mm by 500mm. “At the same time we also installed a Foseco flood coating station in the production line. “Our moulding carousel can now process between 10 and 12 medium sized half moulds (1 000mm by 1 000mm by 250mm) at once. Each mould takes approximately 12 to 15 minutes to be set enough for stripping, depending on which type of binder is used. Stripping can be done within 30 seconds per half mould. So, I would say between our mixer and roll over we are able to produce at least 30 to 40 medium sized moulds every hour, which is a big improvement compared to our previous manual methods. To handle our moulds from the carousel we installed a manipulator. “This new setup that includes the new mixer, the rollover machine and the flood coating station is now responsible for...
approximately 80% of our production requirements. The balance (larger moulds) still have to be made and stripped manually, but it’s very difficult to cater for everything in a foundry.”

“Another challenge we have had to overcome during this equipment investment and process upgrade was the transferring of moulds after the coating stage. The foundry floor is not all on one level and with the different heights and contours we had to design and build our own overhead gantry system that includes two 2 ton hoists combined with two manually operated manipulators. This system has replaced the large overhead cranes, which were previously used for transferring moulds for coring and casting. Again we are making sizeable cost and time savings.”

“Phase five was about designing and installing our own mould handling tracks that are divided into two casting lines, two cooling lines and one casting plate return line. We also designed and manufactured our own clamping and chain system to close the moulds. This has replaced the old floor moulding method of using massive weights that are put on top of the moulds. Again, substantial handling and consequential cost reductions were achieved.”

Phase six in concept

“Phase six of our investments and upgrades is still in the concept phase. It is our intention to transfer moulds from cooling line to shakeout and to do this we will have to install another overhead gantry system with smaller hoists to replace the current method of using the large overhead cranes.”

“Currently we are fine tuning all the equipment and systems that we have installed so as to ensure optimal savings and production. We have also implemented a track and trace system. We record all our melts and tracking is done via a dating system, which can trace most castings back to the day they were cast.”

“We should soon be able to assess what the cost savings we are achieving on a daily basis, although I can safely say we are already seeing some substantial improvements in various areas of the foundry including reduced stripping times, better quality moulds and cores, increased production capacity and less maintenance on older machinery and of course substantial savings on labour costs.”

“We are very excited to promote our new production capacity and decreased lead times, but like my father said to me earlier this year, you have built this monster now you have to feed it and this will be very challenging under the uncertain COVID-19 situation. But the fact of the matter is the business owners who can achieve the best balancing act between managing COVID-19 and their factories will reap the rewards at the end of the day.”

Currently Active Foundry employs 58 staff with 45 of those on the production floor. The company is also OHASA certified and complies with all Occupational Health and Safety Act regulations. The foundry operates on a no-bake resin system, offers patternmaking, shot blasting, heat treatment and cosmetic finishing services and has access to simulation and optimisation technology. Castings produced range between five kilograms and 1.5 tons.

“As do other countries in the world, for a number of years South Africa has had competition from imports, especially those coming in from the East, notably China. We have no other option but to offer consistent quality castings as I think this is one area where these imports are still lacking. To compete with their pricing and to sustain quality, I believe every foundry in South Africa needs to cut costs where they can and improve quality. This can be done correctly by modernising and mechanising methods and equipment, which will reduce handling, increase production volume and ensure better control of labour. This is the only way to go as business owners have no real control over our other overheads like power.”

“It is recognised by us, that had it not been for the loyal support we enjoyed from most of our customers over the past 20 years, it would not have been possible for us to find ourselves in our current position. For this we sincerely appreciate and thank you for supporting us, both financially and technically over the period. Included in our customer base for example, original equipment manufacturers such as Komatsu, Hitachi and Cincinnati Mining Machinery have been very loyal supporters. For the support we enjoy from our countrywide distribution networks we thank you from the bottom of our hearts. Thank you also for the loyal support from our end users.”

“The support we referred to has made it possible for us to finance and hold an inventory of more than R2.5 million. In most instances we are now able to supply your requirements from either stock or noticeably short delivery times.”

For further details contact Active Foundry on TEL: 011 828 9900 or visit www.activefoundry.co.za
FROM LIFT-OUT TO BALE-OUT FROM ALUMINIUM TO BRONZE

WE GO FURTHER.

With an extensive range of Morgan crucibles and accessories and 35 years of foundry experience, KEEGOR MELTECH has become the go-to brand for your non-ferrous melting requirements.
New owners of Schmidt Industries look to broaden scope of business

Significant change in culture within the business is showing positive signs.

There comes a time when all of us must face the grim yet daunting task of divesting ourselves of a friendship, once unassailable, in favour of a new and invigorating relationship ignited with passion and endless, yet-to-be-determined possibilities. This is no easy choice, and there is no unequivocally guaranteed outcome. Metaphorically speaking, high-pressure aluminium die-caster Schmidt Industries reached this crossroad in the company’s history last year when the company was taken over by a major creditor that has implemented a turnaround strategy that will realise the true potential of the company.

HW Schmidt Industries was established in 1952 by the late Heinz-Werner Schmidt, and has in excess of 50 years of experience in high-pressure aluminium die-casting manufacturing. The company has the capacity to produce high-pressure aluminium die-cast components for the automotive component industry as well as other industries. More recently it had begun manufacturing blades and hubs for an industrial fan manufacturer.

Investors Alan van der Veen and Mike Taylor took control of the company in August 2019 and immediately began implementing a new strategy that would allow the company to broaden its scope of clients and build on those that the company was already servicing.

Schmidt Industries, as the company is now known as, has for a long time been a first and second tier supplier of components to the automotive industry and a manufacturer of its own range of toolboxes, hand tools and garden tools.

“The business was a very tightly controlled family run business,” said General Manager Graham Dow, who had been working for the company since 1981 and was re-appointed in August 2019 after a six-month absence.

“Since the new shareholders took control of Schmidt Industries, we have seen a significant change in culture within the business and a change in structure and management. Large or small, every organisation should operate with a defined organisational structure. The creation of a corporate culture that supports the strategic vision clarifies reporting relationships and supports good communication – resulting in efficient and effective work process flow.”

“We have retained all staff that were employed before and have made the following new appointments - Group Production Manager, Group Financial Officer, a Quality Control Manager and a CNC Machining Manager,” continued Dow.

Situated in the industrial area of Pinetown, KwaZulu-Natal, Schmidt Industries has an array of CNC machines, cold chamber high-pressure die-cast machinery and plastic injection moulding machinery at its disposal. Within this facility the company also has a computer controlled automatic blade grinding plant, a sophisticated hardening plant, an epoxy powder coating plant and a computerised laser printer.

The main focus in the aluminium die-casting department is a Bühler Evolution 84 DB40 ton high-pressure die-casting machine that was primarily purchased to manufacture aluminium die-cast toolboxes but also opened up revenue streams in the automotive and other industries.

The company has four other high-pressure die-cast machines, ranging from 280 to 700 tons. Together with the Bühler Evolution 84 state-of-the-art casting cell, these four machines are housed in a purpose built 1100m² production hall. The castings that the company can produce have a mass range of between one and 7kgs.

“Our main challenge in this department, and the other manufacturing departments, is to overcome our machine failure problems, due to poor maintenance in the past,” explained Dow.

“We are happy to report that we are now on the positive side of curve and looking forward to uninterrupted production. Maintenance of equipment is crucial to the business’s success and the well-being of staff and clients.”

Automotive industry

“We are happy to be a supplier to first and second tier suppliers in the automotive industry, who then do final assembly. Currently we are manufacturing wiper holders and connectors for air conditioning systems for Smiths Manufacturing, alternator end caps for Robert Bosch and oil and fuel filter components for GUD Filters.”

Other industries

“We are also manufacturing fan blades and hubs for Luft Industries and electric lighting housings for Genlux Lighting.”

Screwwrivers, hand and garden tools

“For many years we have manufactured our own brand of garden tools – Reli-on. We will continue to do so. These tools are distributed through major industrials distributors and retail chains.”

“However, the other brand that we are well-known for –

“We have been particularly successful with our aluminium toolboxes since we launched them. Casting a toolbox of 2mm wall thickness is as a result of our innovative thinking and design capabilities.”
Wera screwdrivers – we will no longer be manufacturing under license. We have decided to launch our own brand of Schmidt screwdrivers and like the garden tools they will be distributed through major industrials distributors and retail chains.”

“Production of the new range is in progress and the screwdrivers will be introduced to the market during May 2020.”

Tool and die design

“We have a fully operational toolroom and offer tool and die design and have formed a partnership with Lesch Tool and Die for tool manufacturing. We have been complimented by the international partners of our customer for the innovative mould design for the long-term contracts that we have in the automotive industry.”

Aluminium toolboxes

“We have been particularly successful with our aluminium toolboxes since we launched them. Casting a toolbox of 2mm wall thickness is as a result of our innovative thinking and design capabilities. The overall result is a Toolbox, the only one of its kind in the world that is lighter and stronger than any other conventional toolbox. Lately we have had a number of encouraging large orders from international clients and we are now able to brand the boxes with individual company logos or brands. This is also a benefit to many who are looking to use them for promotional aspects. Our capacity for these is 2 000 boxes per month.”

“Essentially nothing has changed at Schmidt Industries in terms of the manufacturing capabilities since the new owners took control. However, there has been a big change in company culture, management objectives and output goals. We have attended to and improved the utilisation of one of our main assets – equipment – and will continue to do so.”

“We are now looking at export markets, which we have not done so before, and will also be looking to fill the excess die-casting capacity with non-automotive components,” explained Dow.

For further details contact Schmidt Industries on TEL: 031 702 9321

---

**Metal Casting Technology Station**

The Metal Casting Technology Station (MCTS) is an initiative of the Department of Science and Technology (DST) managed by the Technology Innovation Agency (TIA) and hosted by the University of Johannesburg, at the Faculty of Engineering and the built environment.

The MCTS’ primary function is to act as a partner for metal casting industry in South Africa to provide technical support to improve the competitiveness of industry through:

- Applied research and development activities
- Technology demonstration and transfer
- Human Capital development
- Process and product development

The MCTS is ISO 9001:2015 certified with the following capabilities:

- Fall green sand and chemical bonded sand testing facilities
- Mechanical and Metallurgical Testing (such as hardness, tensile and impact test) which is 17025 SANAS accredited
- Material characterisation facilities using high level techniques such as Scanning Electron Microscope (SEM), X-Ray Diffraction (XRD), X-ray fluorescence (XRF)
- Small scale casting with 3kg and 50kg melting furnace
- 3D rapid prototyping machine
- Automatic polishing machine
- Tensile tester
- Sand specific surface tester
- Image analysis microscope
- Induction furnace
- Spectrometer

The Bühler Evolution 84 D840 ton high-pressure die-casting machine is robotically unloaded

Contact us for more information:
Tel: +27 11 559 6952 • Email: mcts@uj.ac.za

---

**castings sa** vol 21 no 1 June 2020 25
Following the approval of the competition authorities, FLSmidth announced in May 2019 that it had acquired the IMP Automation Group, which included the Mining and Minerals Automation division in South Africa. The IMP Scientific and Precision and associated services companies did not form part of the acquisition.

IMP Scientific and Precision has been providing solutions for the analytical, biological, industrial, metallurgical, pharmaceutical, mining and construction industries since 1987. The products that the company markets includes analytical equipment, electron optics, electron microscopy, atomic force microscopy, sample preparation, surface and dimensional analysis, material testing equipment, pharmaceutical equipment, NDT testing, biomedical research and material testing, industrial and metallurgical laboratory equipment, coal analytical equipment, general and biological laboratory equipment, vibration and environmental testing equipment amongst others.

**Name change to SPS**

It has now been announced that with effect from 15 May 2020 the group of companies have rebranded from IMP to SPS and the company name IMP Scientific & Precision (Pty) Ltd has changed to Scientific & Precision Solutions (Pty) Ltd (SPS).

The company statement said this change of company name is in line with the acquisition agreement between FLSmidth and IMP Holding Company on 31 May 2019, whereby FLSmidth purchased the Mining and Minerals Automation division of the Group, including the brand IMP.

“SPS will continue to provide the same range of equipment as before and we will continue to service and warrant all products previously provided by us. The same service and support teams will continue to support you as per usual. Contact details will remain the same until further notice,” continued the statement.

“Other data, such as our Company Registration Number, VAT ID, business address, telephone and bank details remain unchanged. This change of the company name does not affect the contracts and commitments between you and our company prior to the abovementioned date. Contracts and commitments signed in the past remain valid.”

“From the above-mentioned date, any new business correspondence, purchase orders, invoices, delivery notes, new contracts and changes to existing contracts between you and us must be done using the new company name. Following this change, please update your accounting systems, and please use only the new name in any official communication with our company.”

“The SPS group of companies will continue to operate from their head office in Boksburg, Gauteng supporting the whole of South Africa as well as its current agency agreements within Africa.”

For more information contact SPS - Scientific & Precision Solutions (formerly IMP Scientific & Precision) on TEL: 011 916 5000 or email info@spsrsa.co.za or visit website www.spsrsa.co.za

---

Metso reviewing Vereeniging operations in South Africa

Metso says it is initiating consultations to evaluate the potential closure or other alternatives for its operations in Vereeniging, Gauteng, South Africa.

The Vereeniging unit provides pumps, spare parts, consumables, and repair services for the mining industry and has around 200 employees, the company says. The move is part of the global supply footprint development strategy in its Minerals operations. Similar reviews across regions in Metso’s Minerals Consumables business area have led to the closure of the rubber and poly-met wear parts manufacturing facility in Ersmark, Sweden, and a discontinuation of the Isithebe foundry in South Africa.

Sami Takaluoma, President, Minerals Consumables business area at Metso, said: “Our strategy is to utilise synergies of the most efficient manufacturing and sourcing opportunities regionally and globally. We are continuously developing our supply footprint to deliver the best value, availability and quality for our customers.”

The Finland-based minerals-processing group is also planning to centralise warehouse operations in several markets.

Takaluoma also said the company had identified Lithuania as “an attractive location for a new manufacturing hub.”

“The closeness of our current customers in the Europe, Russia, Middle East and Africa region, efficient logistics network, sustainable operational environment and favourable market conditions were important criteria in the decision-making,” he added.

Some years ago Metso closed its brass foundry in Vereeniging.
Still serving the FOUNDRY INDUSTRY and more...

Insimbi’s core business is supplying the metal industry, and by design and organic growth the company has diversified its product offering and caters for the following industries as well.

FOUNDRIES AND NON-FERROUS
This division is constantly seeking new and innovative solutions for our customer base.

STEEL
Ferrous and non-ferrous alloy products required in the steel and stainless steel melting production process ranging from cored wire, fluorspar, FeMn, magnesium and aluminium.

SPECIALTY PRODUCTS
Supplies welding powders, optical consumables, cobalt sulphate and carbon products to a diverse spectrum of industries.

EXPORTS AND BULK
Supplies ore, ferro alloys and metals on a global scale.

ROTARY KILN
Our established partnerships with the cement and lime industries enables us to remain the preferred supplier of refractory and technical support to this market.

FIBRES
Manufacturer and supplier of both steel and polypropylene fibres into the concrete and monolithic refractory industries.

POWDER COATING
This newly introduced division supplies quality coating powders into the metal finishing industries.

REFRACTORY DIVISION
We specialise in the design and supply of refractory products to the metals and furnace building industry.

SEPARATE ENTITIES
- Insimbi Aluminium Alloys
- Insimbi Mellite Alloys
- Insimbi Plastics
- Insimbi Metals Recycling

www.insimbi-iras.co.za
New steel mill denies bribes for jobs claim

United Steel condemns unnecessary protest at old Metso foundry.

International metals and minerals company United Steel, a division of United Heavy Industries, has disassociated itself from allegations that jobs are up for sale at its steel mill, and condemned the protest action at the site, in Mandeni, KwaZulu-Natal, on June 1.

The company recently acquired the business of Metso Minerals at the Isithebe industrial estate and is still in the process of evaluating the workforce it requires.

United Steel assures that it will engage with the community and always follow best practice when taking on new employees. After Metso closed its foundry operations in December last year, United Steel bought its assets. However, while Metso manufactured steel castings, United Steel produces semi-finished ingots and bars of various grades of iron and steel.

United Steel director Kanishka Dhar confirms that the plant in Mandeni is in a product testing phase for 12 months to be able to meet international accreditation standards.

“We required only 30 personnel during the start-up phase and advertised on notice boards in the area where Metso usually posted vacancies so that we could hire people from the community, especially those that were previously employed by Metso. We ended up taking on about 50 people, most of whom were former Metso workers,” he says.

However, on June 1, protesters gathered outside the gates of the steel mill, resulting in the plant being barricaded with burning tyres and riot police were called in. Dhar explains that a voice recording was circulated in the community, alleging that security at the gate was charging R1 500 to accept CVs, which is not true.

“It is a blatant untruth that bribes were taken in exchange for CVs being accepted. All our people will be employed on the basis of merit. Since taking over the business from Metso, we have not released any communication to the public apart from the vacancies that were posted on the notice boards. United Steel is part of a global business and we strictly adhere to our golden rules of best corporate governance practice. We place high value on transparency and accountability. All vacancies will be filled in an open and fair manner,” he added.

A meeting between representatives of United Steel and Mandeni mayor Thabani Mdlalose has been scheduled so that the company can share its employment plans and its social development initiatives.

“We are aware that due to violent protest action in the past, many businesses departed, especially from the Isithebe industrial area. This, together with the coronavirus lockdown, has only worsened the unemployment problem in the area. It is most encouraging that the mayor of Mandeni is committed to attracting new investors and we will provide all the support necessary to create meaningful jobs as our business expands. We are aware many people lost their jobs when Metso closed its foundry. We hope to eventually fill the unemployment gap by creating up to 100 jobs. Our total investment in the plant over the next 24 months is set to exceed R350 million,” concluded Dhar.

Electra Mining Africa 2020 cancelled

Organisers of Southern Africa’s mining, manufacturing, automation, electrical and power trade exhibition Electra Mining Africa, Specialised Exhibitions, reports that the 2020 edition of the trade fair has been cancelled as a result of the COVID-19 pandemic.

This year’s show had been scheduled to take place from September 7 to 11 in Johannesburg. The next edition of the trade fair will now be held from September 5 to 9, 2022.

The lockdown imposed in South Africa to help curb the spread of COVID-19 prohibits large gatherings and restrictions on local and international travel.

“Although disappointed that the 2020 show will not go ahead, it is the right decision for all stakeholders involved. We fully support the measures taken by government. The safety and wellbeing of our exhibitors, suppliers, visitors and the industry as a whole continues to be of paramount importance to us,” says Specialised Exhibitions MD Gary Corin.

Specialised Exhibitions portfolio director Charlene Hefer says exhibitions post COVID-19 will play an essential role in providing a fast-track to economic recovery.

“They will enable the all-important face-to-face connection between buyers and sellers, bring new products to market, drive innovation, forge partnerships, build brands and community, offer immersive experiences and provide intellectual content and educational opportunities through seminars and workshops.”

She notes that the company has some exciting new ideas and innovative plans for more value-add show features, and that having extra time will enable it to put these in place.

“These will be in addition to our popular ‘every-day-a-themed-day’ experience, industry conferences, free-to-attend seminars, skills development zone, inward buying mission, business match-making and live demonstrations.”
Lack of synergy between Denel and Armscor concerns joint committee on defence

Parliamentary committee concerned at failure of Denel to deliver on key army project.

The Joint Standing Committee on Defence has resolved to ask the Minister of Defence and Military Veterans to intervene in the inability of Denel Land Systems to meet its contractual obligations to Armscor with respect to the Hoefyster project, and report back to the committee. Armscor is a defence materials acquisition agency for the Department of Defence.

Denel appeared before the committee in a virtual meeting to brief it on Defence Projects, specifically Projects Hoefyster, Biro and Hotel.

Denel was contracted to develop and deliver 264 infantry combat vehicles (Badger) to replace the Ratel Infantry Combat Vehicle to the total value of R9 billion. The delivery of the project was expected to start from 2019 and end in 2023. The committee heard from the briefing that the project is three years and nine months behind schedule, and that Denel is unable to deliver on the agreed contractual technical specifications and price.

The committee raised concerns over what it said is a clear inability of Denel to deliver on the project according to the specification of the client.

“The unfortunate thing is that there seems to be a misalignment on progress status between Denel and Armscor. The committee has called upon all the parties involved to converge and agree on where the project is, and what is the best possible way forward,” said Mr Cyril Xaba, the Co-Chairperson of the committee.

The delayed delivery of the project and the resultant escalation of costs was also an issue of concern for the committee. The concerns the committee highlighted are in the context of the dwindling defence acquisition budget and the capability gap created by the inability to deliver the 264 Badger to replace the Ratel.

Furthermore, the committee has noted the liquidity position of Denel as another problem that contributes to the delayed completion of the project and a serious risk to the entire defence industry. According to Denel, currently the suppliers are not supporting the programme because of the outstanding unsettled invoices due to legacy debts.

While the committee is cognisant about the problems of Denel that are historical, and the fact that the entity is currently implementing a turnaround plan, the committee called for a greater reflection on the plausibility of completion of the project, especially in the context of the huge investment that the Department of Defence, through Armscor, has made on the project.

The committee raised concerns over the reputational damage that Denel has suffered as a result of the delay of Denel Land Systems to deliver on its contractual obligations, especially at a time when the State-Owned Entities should reposition and rebrand themselves, and improve their technical capability to contribute towards job creation in South Africa.

Meanwhile, the committee has noted the progress in the implementation of Project Hotel and Project Biro. However, despite the commendable progress in the implementation of the projects, the committee is concerned by funding risk factors on both projects due to reduction of the acquisition budget of the Department of Defence.

The committee has called upon Armscor and the Department of Defence to reflect on the funding challenges and offer possible solutions to the funding shortfalls.

Project Hotel

Work on the SA Navy’s multi-mission inshore patrol vessels (MMIPVs) is, according to Armscor, on schedule with the first of three to be delivered by mid-2021. The contracts will see the SA Navy acquire three MMIPVs and a new hydrographic survey vessel (HSV). The MMIPV contract is in the hands of Damen Shipyards Cape Town while the HSV and ancillary work was awarded to Durban-based Southern African Shipyards.

The maritime service of the SA National Defence Force (SANDF) will acquire a new HSV to replace the 50-year-old SAS Protea (A324). The project will also see the SA Navy acquire three survey motor boats (SMB) and a sea boat (SB) as well as upgrading of the SA Navy Hydrographic Office at Silver Mine as part of the total Project Hotel.

Project Biro

At concept, Project Biro would have seen the SA Navy acquire a total of six maritime patrol vessels – three inshore and three offshore. Financial constraints saw the project cut down to the three inshore patrol vessels with the offshore platforms put on hold.
Steel industry in financial distress because of lockdown

The Department of Trade and Industry has warned that the steel industry would exit the coronavirus (COVID-19) lockdown in severe financial distress with potential plant closures and job losses.

The department’s Trade and Industrial Policy Strategies (Tips) said the industry could experience a devastating R1 billion negative cash cost on the five-week lockdown unless the government intervened.

It said the situation would be made worse by the fact that China and Russia were expected to resume their low-price steel offering.

Tips said its research showed that the industry needed emergency funding and consolidation for plants to reopen and be sustainable.

It said cash flow had been fundamentally disrupted with many customers reporting that they would not be able to pay as they had also not been paid.

“This lack of liquidity will force a spate of defaults and possibly some parts of the industry will not survive this crisis, not because they are bad businesses, but simply because the flow of cash dries up,” Tips said.

“Manufacturing companies integral to the supply chain of SA Inc. may not recover, which will have a longer-term impact on the competitiveness of some other sectors.”

Tips said steel production in the second quarter was expected to be 50 per cent lower.

It said while there may be slight improvement in the third and fourth quarters, demand was still expected to be 30 to 40 per cent lower than normal.

The group said domestic steel consumption was projected to be below 3.3 million tons this year, 26 per cent lower than 4.5 million tons in 2019, “as the major part of the forward order book is cancelled.”

The local steel industry produces some 9 million tons a year, making it a small global player, compared with for instance China, the biggest producing country, with 928 million tons produced in 2018.

Tips said the downstream steel fraternity was “extremely pessimistic” from both demand and cash flow perspectives.

It said a possible solution to the liquidity crunch was for the Industrial Development Corporation to create a temporary lending facility to provide payment-term relief to customers of the steel industry, possibly administered by one of the industry bodies.

This would allow steel mills to offer extended payment terms to customers of up to 120 days rather than the standard 30 days, which would allow South African-based manufacturing to weather the short-term impact to cash flows.

The interventions also needed to cater also for large businesses with a turnover in excess of R50 million a year. The upstream steel industry also needed exemption from the Competition Commission to work together “to save whatever was possible to save.”

A proposal for the government to protect the manufacturing industry included a review of imports to prevent a flood of products from countries that had opened up earlier, and had excess stock to dump into South Africa’s market.

There was ready-for-dispatch steel export cargo at the ports of Saldanha and Durban, but these were being held up because Transnet was unclear if this cargo was part of the so-called allowed activities, the Tips report said.
South Africa’s automotive industry achieved its fifth consecutive trade surplus in 2019 and its highest level on record. Subject to the global impact of COVID-19 and an anticipated weak domestic market, it is expected to improve its trade balance further in 2020, according to the latest Automotive Industry Export Council (AIEC) export manual.

Norman Lamprecht, Executive Manager: Trade, Exports and Research at the National Association of Automobile Manufacturers of SA (Naamsa) and author of the report, said the report was written before the impact of COVID-19 had become evident and the outlook for the domestic and global automotive industries had looked positive.

However, Lamprecht said South Africa’s automotive industry could still achieve a trade surplus this year because vehicle exports and components might decline by 20% this year and imports by 30%.

Lamprecht stressed that the future is uncertain but the majority of South African vehicle and component export sales are to first-world countries and comprise only a small percentage of the total sales in those countries.

He added that people will still buy vehicles although they may buy cheaper models and the vehicles produced by South African-based manufacturers are part of the popular vehicle model ranges.

The industry achieved a trade surplus of R27.1 billion last year compared with a surplus of R16.8 billion in 2018 and R10.3 billion in 2017.

Lamprecht said vehicles remain the key driver behind the automotive industry’s healthy trade balance over recent years.

South Africa exports to 151 countries

A record 387,125 vehicles worth a record R148 billion, along with a record R53.7 billion in automotive components, were exported to 151 countries in 2019.

“Record vehicle exports, and a decline in vehicle imports due to a weak domestic market, have resulted in a positive trade balance for vehicles over recent years, but the trade balance related to automotive components has remained negative,” he said.
Tesla files another casting patent application

Invents new aluminium alloys for die-casting electric car parts. The “high-performance die-castable aluminium alloys” described by Tesla also have “a high flowability and low susceptibility to hot tearing when die-cast.”

Electric car parts are typically made using stamped steel, which is a material that is only capable of forming parts through a sheet-forming process. But, as an automaker, Tesla Motors is still working to produce vehicles in high volume. But, as a material and process developer, Tesla’s patent applications show that it understands what metalcasters know: That quality and productivity are equally demanding goals.
Mozambique: Stolen rails found in Chinese foundry

Maputo: Earlier this year the Mozambican police found a large number of stolen rails and other railway material in a Chinese-owned foundry in the Ceramica neighbourhood of the central city of Beira, according to a report in the independent daily O Pais.

The police had difficulty accessing the interior of the foundry. Only after they had spent half an hour demanding entry, were the doors finally opened for them. Inside they found rails, bolts, and other metallic parts of railway tracks.

The rail director of the central division of the publicly owned port and railway company (CFM-Centro), Boaventura Mahave, said the material had been stolen from the lines linking the port of Beira to Zimbabwe, and to the Moatize coal basin in Tete province.

"In the last two years we have been accumulating enormous losses. We’ve been suffering thefts every day. These are thefts that one day will culminate in tragedy, because our railway lines are used by both passenger and goods trains. Any lack of attention on our part, and we will have a catastrophe," he said.

It has long been believed that metallic parts stolen from CFM, like metallic parts of electricity pylons, are sold to foundries, which have sprung up recently in Beira and the neighbouring town of Dondo.

Mahave protested that some of the thieves and their vehicles have been caught, but the police released them.

According to O Pais, the lawyer for the Chinese company, Jose Capassura, has claimed it is too early to conclude that the metal rods produced by the foundry are made out of stolen materials. He also suggested that the foundry may have been deceived by its suppliers into purchasing what it had imagined was scrap metal, without knowing that it had been stolen.

His argument is absurd. Film of the interior of the foundry shows the rails piled up, and they cannot be mistaken for anything else. The only place the rails can possibly have come from is CFM.

The police have promised to investigate the case further, taking into account that the foundry acquired the raw material for making rods, at night.

KNOW YOUR SAND.

EFFICIENT FOUNDRIES KNOW THAT WHAT GETS MEASURED GETS CONTROLLED.

More foundries around the world choose Simpson Analytics for their sand lab than any other technology. Consisting of over 85 instruments, Simpson Analytics is:

• More flexible to different standards
• More accurate
• More repeatable
• Easier to use
• More durable
• Easier to calibrate

Simpson Analytics, is supported by our global service network, for spare parts, repair and calibration.

VISIT OUR ONLINE RESOURCE CENTER TO IDENTIFY THE RIGHT TECHNOLOGY FOR YOUR FOUNDRY AT WWW.SIMPSONGROUP.COM/SAND

Simpson Technologies (Deutschland) GmbH
sales.de@simpsongroup.com
www.simpsongroup.com

Mondeo

Our Local Agent in South Africa:
Mondeco Solutions (Pty) Ltd.
info@mondeco.co.za
+27704481277
Norican launches Monitizer | PRESCRIBE for automatic process optimisation

First product launched since Norican’s industry-exclusive partnership with South African company DataProphet.

Norican Global A/S (Norican), a leading metallic parts enhancement company, has launched Monitizer | PRESCRIBE, an Artificial Intelligence (AI) service that rapidly optimises production and reduces scrap in real-life foundry environments.

The AI software applies sophisticated predictive analytics to evaluate entire foundry processes, not just sub-processes. It pinpoints the complex root causes at the heart of most process challenges and calculates the optimal machine and raw material settings for every casting to avoid defects.

Monitizer | PRESCRIBE is also an Industry 4.0 expert execution system (EES), giving foundries precise dynamic control of casting lines, delivering real-time machine settings and other recommendations to keep quality exactly on track as well as increasing capacity and production predictability. It can supervise fully automatic operation of cells and entire lines.

Delivered as a cloud-based service, Monitizer | PRESCRIBE can be deployed swiftly with no need for new hardware or in-house data scientists. It’s the latest, most sophisticated member of Norican’s modular Monitizer suite which supports data collection, process automation, data visualisation, reporting and analysis.

“Monitizer | PRESCRIBE is a huge step forward in digital transformation for foundries,” says Anders Wilhjelm, CEO of Norican Group.

“It leverages the computing power of the cloud to analyse very large, complex sets of data and translate them into simple advice. This powerful and practical AI service gives expert advice every time, solving real operational issues and solving them quickly – not after years of system development. Monitizer | PRESCRIBE will rapidly deliver significant gains for our customers.”

Monitizer | PRESCRIBE is the first fruit of Norican’s industry-exclusive partnership with DataProphet, a global leader in artificial intelligence (AI) for manufacturing. The technology has been proven in multiple projects carried out over the past year by DataProphet and Norican brand DISA, the leading supplier of green sand foundry technology. One project with a South African iron foundry reduced defects by 50% in the first month and achieved 0% external defects for three months, saving over US$100,000 every month.

“Norican’s brands understand how to help foundries turn their data into value,” adds Anders. “They can see where to look first for improvements, which data to collect and how to understand what it tells you, then swiftly apply that learning to minimise defects, scrap rates and downtime. Whether a foundry is already data-savvy or just starting out, Monitizer | PRESCRIBE and the rest of the Monitizer suite help them take the next step in their digital journey.”

Monitizer | PRESCRIBE will initially be available from DISA for green sand applications and from Italpresse Gauss for die-casting. As an equipment-agnostic service, it will work with solutions from other Norican brands (StrikoWestofen for high-end furnace technology and Wheelabrator for surface preparation), and with non-Norican equipment.

For further information contact Peter Petersen of Mondeo Solutions on 079 448 1277 or email peter@mondeco.co.za or visit www.mondeco.co.za or www.norican.com

74th World Foundry Congress postponed until 2022

The event was due to be held in October of this year in Busan, South Korea, but the organising committee, the Korea Foundry Society and the World Foundry Organisation (WFO) have decided to postpone due to the current COVID-19 coronavirus pandemic. The new date for the 74th WFC will be 16-20th October 2022, at the same venue of the former programme – Bexco, Busan, Korea.

Under the guidance of the WFO, the event is held every two years in different locations around the world and brings the global foundry industry together to discuss technical aspects of metal casting. It is accompanied by an industry exhibition, an extensive social programme and industrial visits.

WFO general secretary Andrew Turner FICME said: “This decision was not taken lightly but in view of the current situation and the uncertainty around international travel that looks set to be in place for some time, the judgement was taken with the host organisers – the Korea Foundry Society – to postpone the event to ensure that when it is held in 2022 participants can come together safely and gain maximum benefit from attendance.”

For updated information and to be kept informed about the rescheduling of WFO events, email: andrew@thewfo.com or visit: www.thewfo.com

10th BRICS Foundry Forum postponed

Due to the current situation and the official prohibition of the Government on holding all mass events, the Russian Association of Foundrymen (RAL) decided to postpone the 10th BRICS International Foundry Forum which was scheduled to be held between 9 and 11 June, 2020 in Moscow.

“As the organiser of this forum, the Russian Association of Foundrymen (RAL) suggests monitoring the situation and discussing the new dates of the forum after the countries have lifted all prohibitions on holding events, to make sure the success of the forum. On the website of BRICS Foundry Association, we will keep you informed of any updates about the postponed forum: http://www.brics-foundry.org.”
Our Research & Development is focused on industry innovation and customer driven advancements and support (e.g. casting defect analysis). With a fully equipped research foundry, our scientists test and refine our products before ever reaching your doorstep. Quality is our guarantee! We advance your casting. One of the world’s largest suppliers of foundry chemicals, with a comprehensive product and service portfolio of binders, coatings and auxiliary foundry products.
The Coronavirus crisis affects the European foundries more negatively than the mood may indicate

While the Coronavirus spread around Europe, the COVID-19 pandemic affected the health care and the socio-economic systems of the European countries to varying negative extents. Accordingly, the European Foundry Industry Sentiment continued to decline in April, after the mood already worsened in March. This was primarily due to the deterioration in expectations for the coming six months. Because COVID-19 has a strong impact on the automotive industry and machine manufacturers, European foundries are facing a sharp drop in incoming orders and consequently lower production. But the sentiment does not show the full scope of the challenging impacts, because the response rate this month was lower than usual. However, the Business Climate Indicator visualises the negative mood of industrial companies in the Euro Area: The BCI decreased dramatically to -1.81 points. But it remained above the record low of April 2009 during the financial crisis.

After the year 2019 was already characterised by a wide range of uncertainties and unstable economic policy conditions and German industry had been in recession since the fourth quarter of 2018, it still looked like a trend reversal for 2020 with subsequently more stable business. Since the outbreak of the Coronavirus in China and the global spread of the new pathogen, the tide has turned and will keep the economy in suspense in the coming months.

Germany's foundries are already considerably restricted in their operations and are increasingly heading for short-time working and are expecting a recession. This is the result of the member survey carried out by the Federal Association of the German Foundry Industry (BDG). A second survey by the BDG from March 31st to April 3rd, 2020 shows that Germany's foundries are increasingly restricted in their operations due to the Corona crisis. According to Max Schumacher, General Manager of the BDG, the corona crisis has now affected the foundry industry nationwide.

In its third survey the BDG asked its members again about the effects of the corona crisis. In the current survey, key statements from the previous surveys came to a head: In the first survey in March, 76% of the companies surveyed had felt ‘Coronavirus effects on business operations’, 24% had not. In the second survey in April, the rate had dropped to 4%, 96% had an impact on the operational process. The value has increased further in the current third survey. In May, 99% of companies notice ‘effects on the operational process’.

A serious point is lack of orders
Almost 90% of respondents answered yes to the question of lost orders or cancellations, 54% even registered serious losses, only 12% minor. 81% of the companies surveyed answered yes to the question of capacity adjustments.

When it comes to the current or expected use of loans in the event of liquidity shortages, the industry picture is mixed. Around 52% of the companies surveyed are able to cushion the corona crisis well and see neither current nor prospective liquidity needs through loans. A minority of 44% currently has or is expecting liquidity shortages.

The XRF principle – Spectro Analytical Instruments

The traditional use of X-ray fluorescence analysis (XRF) has its roots in geology. Solid samples were the first sample types analysed by X-rays. Over the years the applications have expanded and nowadays cover the analysis of alloys, various types of powder samples to liquid samples and filter material.

The effect of X-ray fluorescence is based on the excitation of atoms in the sample. Unlike optical spectroscopy, the excitation involves interaction with the inner shell electrons rather than valence electrons.

The process of X-ray Fluorescence begins with an excitation (or primary) X-ray which is typically generated using an X-ray tube. This excitation X-ray hits an inner shell electron of the atom and ejects the electron from the atom. The open position is filled by an electron from a further outer shell and fluorescence radiation is emitted. The energy of this radiation is characteristic to the specific atom and indicates what atom is present in the sample.

Learn more about the XRF principle in this informative whitepaper. Go to https://extranet.spectro.com/-/media/8CC93043-2863-489F-806E-98EF775948B7.pdf

For further details contact Spectro Analytical South Africa on TEL: 011 979 4241 or visit www.spectro.com
CNC UNIVERSAL MACHINING CENTRE

DMU 50 3rd Generation

HIGHLIGHTS

+ speedMASTER - spindle up to 20,000 rpm
  36 Months warranty - unlimited hours
+ Integrated swivel rotary table for simultaneous
  5-axis machine
+ Direct measuring system on all axis

CELOS with SIEMENS control or
CELOS with HEIDENHAIN control

PRODUCTIVITY | RELIABILITY | QUALITY

Contact Franz Studer
Tel: 011 976 8600 • Fax: 011 394 2471
machines@retecon.co.za • www.retecon.co.za
Cape Town: 021 555 2270/1 • Port Elizabeth: 041 453 2720 • Durban: 031 701 8149
Aluminium is synonymous with "weight-saving" in most contemporary automotive-engineering reference points. But apart from a few applications - most notably Ford's F-Series pickups - aluminium largely is deployed where steel can be readily displaced without performance loss or for comparatively small components that deliver comparatively small weight or process savings says Bill Visnic of Automotive Engineering.

Electric-vehicle maker Tesla is readying the next step in aluminium use, however – one that effectively matches Ford’s “big gain” approach by specifying a massive piece of structural die-cast aluminium for the rear underbody of the recently launched Model Y crossover. According to Tesla CEO Elon Musk, this new aluminium application represents a radical step for its design and manufacturing advantages and its light weighting potential.

Musk is renowned for outsized promises, but in the case of the Model Y’s die-cast rear underbody, his enthusiasm for this advanced use of aluminium – cast by a house-sized “Giga Press” – is supported by manufacturing experts who call it a game-changer. “It’s definitely an all-new look at how to do things,” asserted Laurie Harbour, president at Harbour Results Inc. manufacturing consultancy. “Elon Musk has always pressed his engineers to be creative.”

**Reductions in – pretty much everything**

Musk spoke in detail about the new casting process in an episode of the “Third Row Tesla Podcast” in April and made more than a passing mention of it in Tesla’s 1Q2020 financial results call in early May.

“The current version of Model Y has basically two big high-pressure die-cast (HPDC) aluminium castings that are joined and there’s still a bunch of other bits that are attached. Later this year,” he said on the podcast, “we’ll transition to the rear underbody being a single-piece casting that also integrates the rear crash rails.”

“It gets better,” he continued. “The current castings, because you’ve got to interface with so many different things, we have to CNC-machine the interfaces and there’s a bunch of things that have to be joined; they have datums on them and that kind of thing. The single-piece casting has no CNC machining – it doesn’t even have datums. It took us a lot of iterations, by the way, to get there.”

Sandy Munro, CEO at Munro & Associates, the benchmarking and competitive analysis firm renowned for its highly analytic “teardowns” of popular and innovative vehicles, recently completed a teardown of a Model Y. A series of Internet videos covering Munro’s assessment garnered more than 36 million impressions in little more than a month. Munro was particularly impressed by the current two-piece aluminium underbody structure and openly offered admiration in an interview with Bill Visnic of SAE’s Automotive Engineering.

He said the current Tesla Model Y has “two of the biggest castings we’ve ever seen in a car. We’ve never seen them used in an automobile before of that size. There’s lots of innovative aluminium applications at Cadillac, BMW, Audi – they’ve all used castings. But nothing quite the size of this thing.” Munro also participated in the podcast in which Musk spoke of the coming single-piece casting. Moving to the “mega casting,” as Munro dubbed it, “definitely wins the prize,” he asserted. “That’s going to be the biggest casting for quite a while. Nobody’s exploring that.”

The mammoth machine is being supplied by IDRA Group, an Italian leader in HPDC equipment founded in 1946. Tesla is the first customer for IDRA’s hulking OL6100 CS (with upgraded locking force to handle the special Tesla casting), destined for installation in the company’s Fremont, California and Shanghai, China, plants.

IDRA’s “Giga Press” measures some 19.5m long and 5.3m tall. Along with the higher clamping force is a maximum aluminium-alloy “shot” weight of 104.6kg. The OL6100’s output may be lightweight castings, but the machine itself is anything but light, weighing in excess of 410 tons.

The single-piece casting for Model Y will replace around 70...
stAMPINGS, extrusions and castings that currently make up the same fabricated assembly in the Model 3, on which much of the Model Y is based. Musk described the Model 3’s rear structure as “a patchwork quilt – it’s not great. The complexity in the body shop is insane,” he said.

Harbour agreed. With such a large and inclusive casting, “Even with a big cycle time, you eliminate all the labour to assemble pieces and subcomponents,” she observed. “You’re saving on automation cells, you’re saving on people. It would be tough to put dollars to it, but think of multiple suppliers doing stampings, you could save maybe 20% on labour cost. And reduction in footprint is major. My guess is that it’s a net-net efficiency gain.”

Musk claimed the new single-piece casting design, and the goliath machine that will produce it, will deliver a 30% reduction in the size of the body shop. He added that the process probably will transfer to Model 3 production as well. “That’s the thing we want to bring to bear on the Model 3 over time,” he said.

Potential caveats

Munro said Tesla is pondering a similar strategy for the front of the Model Y. And a large casting probably makes changes to the affected structure a less-expensive proposition than “trying to change a bunch of stamping dies.” Alterations such as wheelbase changes also could easily be accommodated by such an architecture, he said. But it wouldn’t be the approach for low-volume production, Munro maintained. And “castings don’t repair very well,” he added. “If an impact was severe enough, the car’s a write-off,” he said. Of course, such is the case with many contemporary vehicle designs.

Munro said Tesla plans to assemble up to one million vehicles annually off the Model Y architecture, so the company’s Giga Press investment likely is a sound one. He and Harbour agree that the mega-casting approach is an example of Tesla being Tesla. “They do continuous improvement in design,” a practice most auto companies typically don’t embrace, Munro said.
Annualised SinterCast CGI series production for the first two months of the year reached 3.1 million engine equivalents, providing a 5.4% year-on-year increase. The sampling volume at customer foundries remained stable at recent run-rates throughout February 2020, providing a positive indication for foundry shipments into March 2020, SinterCast AB reports.

The start of 2020 provided new series production opportunities beyond the core cylinder block and head market. During February 2020, Hyundai started production of a new bedplate for a 3.0 litre V6 diesel engine in Korea. The bedplate – mated to a SinterCast-CGI cylinder block – had previously been produced in ductile iron. The conversion to CGI was introduced to improve mould yield and to reduce defect rates in the foundry, and to realise productivity gains in machining. During March 2020, SinterCast also received a new order for large components used in industrial power applications.

Series production is expected to begin during the first half of 2020, with the potential to provide more than 100 000 Engine Equivalents per year at mature volume. The new order provides the opportunity for the industrial power sector to continue to account for 5 to 10% of the total volume, even as the core cylinder block and head market continues to grow.

“The start of 2020 has introduced obvious challenges, but also provided new opportunities,” said Dr. Steve Dawson, President and CEO of SinterCast.

“While the series production may be temporarily influenced by the COVID-19 virus, we remain confident in our long-term growth, both for series production and new installations.”
High Productivity Shoulder Mill with Strong Tangential Insert

- Strong tangential insert
- High productivity due to ramping angle
- Strong tool body with large core
- High positive rake angle
- 90° shouldering

TaeguTec SA (Pty) Ltd
Tel (011) 362 1500 • Fax (011) 362-1511
Clearwater Office Park, Block F, Cnr Atlas & Park Roads, Parkhaven, Boksburg
Email: info@taegutec.co.za

www.taegutec.com

AGENTS
Cape Town - DTM Prazion - 076 411 9937
Durban - Rodney - 062 923 3487 • Port Elizabeth - Johan - 064 587 6186
Secunica - Jimmy - 082 654 6164 • Blouenfuinter - Kevin - 083 407 1068
Industrial brush applications such as deburring or surface finishing are more and more often carried out in a fixed setup situation. Composite brushes from PFERD have been specifically developed for industrial, automated use. They are suitable for a variety of applications and their variable clamping options mean that they can be used on many different drive systems. This offers the advantage that workpieces can be produced and finished on the same machine. As a result, there are no additional setup times, labour-intensive manual work is reduced and reproducible results are achieved with short cycle times.

PFERD, one of the world’s leading manufacturers of tools for surface finishing and metal cutting, offers a comprehensive and efficient line of composite brushes especially for these kinds of applications.

“The manufacturing method is what distinguishes composite brushes from ‘conventional’ brushes. This manufacturing method allows a higher filament density and an even distribution of the lament material. This results in a longer tool life, more aggressiveness and reproducible deburring results,” explains Thomas Rühle, product manager for industrial power brushes at PFERD.

Composite brushes consist of a plastic main body in which the brush filament is firmly fixed or embedded. The filament consists of flexible plastic filament containing abrasive grains. Composite brushes from PFERD are available with a large number of filament types and configurations. Among others, aluminium oxide, silicon carbide and ceramic oxide grain are used as an abrasive grain. When these grains are combined with different filament diameters and geometries, different brushing effects are achieved.

“Wheel brushes, disc brushes and end brushes with different dimensions are used as brush bodies. This way, we can work on almost any workpiece geometry,” says Rühle.

“Shank-mounted disc brushes DBUR with a bridle are a new addition to the line. Because of the 6mm shank, they can easily be mounted on hand-held drives or stationary machines,” adds Thomas Rühle.

“The bridle surrounding the filaments ensures that they are evenly compact under load and contributes to the special aggressiveness. Once the filament is worn down to the bridle, it can be removed so that the brush can continue to be used until the end of its service life. Our customers achieve very long tool lives and very high surface qualities with these brushes.”

“Shank-mounted end brushes PBUPR with a bridle are another new addition to the line. They also have a very aggressive brushing effect, and their service lives are just as long. PBUPR brushes have the stabilising bridle too. Thanks to their compact design, they are particularly suitable for working on hard-to-reach areas, such as drilled holes and cavities.”

For further details contact PFERD South Africa on TEL: 011 230 4000 or visit www.pferd.com

O.M.LER decoring benches and hammers

Decoring of castings in a foundry is not one of the most sought-after employment opportunities but is a necessary operation in the foundry. Removal of the core and core residue from the casting is usually done by introducing impact energy (using a hammer or vibration/swinging energy) and the broken mould material is then disposed of or more likely to be sent to a reclamation plant.

Foundries want to clean castings quickly and thoroughly and meet the strict quality requirements for further processing. O.M.LER s.r.l., with its head office in Italy, are an international leader in the design, manufacture and marketing of pneumatic decoring hammers for foundries, and are able to provide different models of hammers for all decoring applications.
O.M.LER decoring stations and decoring benches are designed for hammers to be fitted and fixed to the structure and to work in both vertical and horizontal positions. Decoring stations and benches are designed to work with one hammer up to four hammers.

O.M.LER decoring benches allow the castings to be either manually or automatically loaded and unloaded. By using a robotic arm, the castings are automatically placed in the same position in a pre-set jig. The decoring unit is mounted into a certified soundproof cabin which can be designed to include a hopper to collect the spent sand or with a conveyor belt to remove the sand from the cabinet.

O.M.LER s.r.l. designs and manufactures decoring benches in accordance with the particular needs of every customer. Thanks to several years of experience in decoring equipment the O.M.LER s.r.l. team is able to find the right solution for every customer.

O.M.LER decoring pneumatic hammers are used to remove the sand cores from cast iron, aluminium and steel castings, such as cylinder heads and engine blocks. Different hammer models allow for the right solution for decoring every type of casting.

Investment casting foundries

Although often used in the automotive industry, the pneumatic decoring hammer is also relevant for other sectors. O.M.LER hammers are also used in investment casting foundries to break or remove the investment casting ceramic shells. Consequently, O.M.LER has become a member of the European Investment Casters’ Federation (EICF) for the year 2020. EICF is a federation that joins together the investment casting foundries and their suppliers. Being a member of it is a great opportunity to know and be known in the market of foundries that adopt the investment casting process.

O.M.LER and sister company O.M.LER 2000, offer hands-on design expertise and practical know-how regarding decoring equipment.

For further information contact Globen Engineering Services and Supplies on TEL: 082 450 8232 or visit www.globensa.com or www.omlersrl.com

Your performance relies on our solutions

... from high quality equipment to dependable consumables, raw materials and spares for the aluminium, steel, foundry and refractory industries

Tel 011 894 3039 • Fax 011 894 4185 • Email wouter@ceramicalloy.com • 1 Dormehl St, Anderbolt, Boksburg, Gauteng

Ceramic and Alloy Specialists (Pty) Ltd

www.ceramicalloy.co.za

A member of AMC Holdings (Pty) Ltd

Vol 21 No 1 June 2020
The Belec Vario Lab laboratory spectrometer sets a unique standard in terms of precision and flexibility as it has been continuously improved in order to fulfil today’s needs for metal analysis. From small parts to large castings the Vario has no limit on size or shape for analysis. The optional sparking probe allows analysis of oversized forgings or castings to be easily tested without part destruction.

Thanks to a simple operating interface and the Belec WIN 21 software there are virtually no limitations. Any programme feature can easily be selected and configured according to customer specific applications. The fields of application are not limited. Whether in the laboratory or workshop, there is no location that cannot be considered.

The attractive design of the Belec Vario Lab ensures an ergonomic set-up of the spectrometer at a comfortable working height. The drawer has enough space to accommodate user tools, drift correction samples and other accessories.

Get your Belec Vario Lab in the different versions - as inert gas, vacuum-operated or even air spectrometer, depending on the application.

Two models to select from
The Belec Vario Model 2P is equipped with the traditional, highly sensitive photo-multiplier detectors, whenever maximum accuracy of low-level concentrations are required.

The Model 2C is equipped with the latest state of the art CCD detectors. Due to this flexible design it is recommended for any multi-based application.

The well-established 5GSO system, already used in other Belec spectrometers, ensures the uncompromising use of ideal spectral lines. The need for daily recalibration is a thing of the past due to the MCDC system which automatically corrects spectral line drift.

Universally applicable with additional probe (only model 2P)
An additional sparking probe can further enhance the functionality of the instrument. For the analysis of big, bulky or indestructible samples, you can use one of our sparking probes. With this unique option, the Belec Vario Lab covers all possible applications for metal analysis.

Additional sparking stand keeps up versatility
An additional sparking table is recommendable, if you will analyse e.g. samples of different bases with a low melting point. An alternative sparking stand can keep the versatility of the instrument. While one of the sparking stands has to be cleaned before reusing it, the other one is fully available at the same time. This offers an additional assistance and saving of time to the operator.

For further details contact Innov-X Africa on TEL: 010 006 0430 or visit www.innovxafrica.com
Why Extending Your Brand Online Matters

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
With an average monthly readership base of over 4 000 unique readers, Castings SA is the premier online space in South Africa for all foundry related news, information and international industry insight. As industry experts with highly credible journalistic integrity, Castings SA is always at the forefront of the latest foundry and related trends and innovations. 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 publication is extended to the web with its own dedicated website (www.castingssa.com) where you will find many more exciting features. These include the latest issue and archives 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.

Visit www.castingssa.com and see how you can reach a wider market!

www.castingssa.com puts your company in front of prospective buyers at a time when they are looking for the specific solutions you offer.

Contact
Bruce Crawford/Wendy Crawford
Tel: 011 463 0480
Cell: 083 828 7654
Email: online@engnews.co.za
B.A Crawford Specialised Publications (Pty) Ltd

www.crawfordpublications.com
www.castingssa.com
www.metalworkingnews.info

Crawford Publications

Please Note:
We offer a make-up/reproduction service for advertisers.

Crawford Publications brands are distributed to decision makers – owners, management and senior employees that are involved in decision making, buying and manufacturing – working in metalworking and metal casting facilities of all sizes – from small job shops to OEMs and component manufacturers. Crawford Publications provide suppliers, foundries, job shops, service centres and industry related companies a variety of opportunities to advertise.
Global earth warming plays a major role on climate change, in some parts of the world wreaking havoc with uncontrollable bush fires, severe flooding and drought. The major contributing factor being high levels of carbon dioxide that is released in the atmosphere by gas emissions from internal combustion engines. A renewed focus on climate change and stricter policies are changing the way in how motor vehicles will be manufactured in future. Manufacturers are downsizing engine size, but increasing engine capacity by adding turbochargers, placing huge emphasis on the quality and surface finish requirements of engine components. The reduction in weight of alloys and material chosen poses a great challenge in the machining of these components.

“Grinding Techniques, a Tyrolit company, has the experience and expertise locally in providing cost effective grinding solutions to cater for the OEM automotive component and automotive reconditioning market, especially the grinding of crankshafts. Our local R&D facility enables us to provide the best possible product specification whilst obtaining low machining costs per unit,” said a local spokesperson.

“When considering the overall grinding process, business development specialists are able to offer support on all technical issues taking into account the preferred grinding solution, machine, grinding wheel and dressing tool. One of the major challenges experienced in crankshaft grinding is wheels being out of balance and this is particularly due to lack of training on the correct safety checks, mounting and balancing procedures, as well as crankshaft wheels having bigger outside diameters and smaller widths, which accentuates any out of balance conditions. With proper training of operators this problem could be eliminated. Grinding Techniques is able to provide the necessary training.”

“With our local range of ANDOR grinding wheels, we are able to produce wheels of up to 1 015mm in diameter. The change to lightweight alloys and higher surface finish requirements on engine components has established a dynamic shift on the production of grinding wheels in both conventional and super abrasives. By using the latest technology in high quality aluminium oxide, CBN grain and bonding systems challenges experienced with issues relating to parts being ground out of round, and to non-sufficient tolerances, are minimised and further employed to the automotive reconditioning market, earthmoving equipment and armour-plated vehicles.”

“Specific to the automotive reconditioning market, we have products available to suit crank-and-camshaft grinding, polishing, valve seat and stem end grinding as well as the brake and clutch industry to name but a few. We also employ the latest CNC machining which enables us to produce wheels for the gear industry with a range of modules, pressure angles and starts required for continuous generating and profile gear grinding. With the addition of sintered aluminium oxide in various products, we are able to cut down on the overall production cost per unit, whilst still attaining a cool cut and good form holding on the grinding wheel. Partnering with Grinding Techniques offering tailor-made products with competitive lead times and custom grinding solutions will go a long way in moving the automotive industry forward.”

For more information contact Grinding Techniques on TEL: 011 271 6400, email info@grindtech.com or visit www.grindtech.com
Dhosh of Forace Polymers, India has written a paper on the Alphaset (APNB) process for mould and core making in foundries, one of the two most widely used self-set processes practiced across the globe at this time.

In this paper, attempts have been made to relate few variables in APNB formulations to physical, chemical and sand mix properties, at ambient and elevated temperature. Major variables in APNB formulations are mole ratio of phenol to formaldehyde, total alkali content, ratio of two alkalis NaOH and KOH, non-volatile content and extent of reaction. Total eight formulations A-H were made by varying ratio of two (NaOH and KOH) alkali and extent of reaction (molecular weight). Other variables were kept unchanged.

All these formulations have been studied for physical, chemical and sand mix properties, at room and elevated temperature over a period of time. This study may help to correlate essential parameters like increase in resin viscosity, decrease in bench life and drop in strength of mixed sand with resin ageing on storage. Efforts have been made to identify strength requirements of moulds at various stages right form stripping to post pouring and simulate same with laboratory strength values. Special efforts have been made to understand difference between Na and K as alkali in resin formulations on sand mix properties, a widely asked question in foundries.

Studies in this paper conclusively proves that quality of thermal reclamation chemical is the sole variable contributing to quality of thermally reclaimed APNB bonded sand produced from standpoint of stability. Using proper chemical, thermally reclaimed sand generated maintains essential properties like bench life, strip time and strength properties like that in fresh sand. Otherwise, if chemical is not proper, reclaimed sand generated works at beginning, say one or two days, then properties drop continuously making it totally in effective within as quickly as one week.

For a full version of the paper contact Joel Mutero of FP Specialty on TEL: 011 865 2845 or Mobile: 060 570 0035
Power-converting induction melting for aluminium alloys – Inductotherm

The first induction furnace to use an air-cooled coil achieves total energy efficiency of 92-94%, a rate never before achieved in either electric or gas-fired melting.

Standard aluminium melt furnaces, including electrical resistance (ER), induction, and fossil fuel-fired furnaces continue to be options for melting aluminium. Inductotherm Corp is offering a new method for melting aluminium and other non-ferrous metals that, in many applications, will melt metal quicker, cleaner and more efficiently.

The Acutrak® system with direct electric heat (DEH) technology is well suited for foundries, permanent mould casting and die-casting operations.

Prior to the introduction of this new furnace, foundries and die-casters had to rely on inefficient and costly ER and fuel-fired crucible furnaces, or refractory-lined reverb furnaces, to melt and hold aluminium for casting. In conventional induction furnaces, the magnetic field couples to the metal inside and the metal itself gets heated. In an Acutrak® DEH furnace system, the crucible conducts the electric current, becoming a resistive load for the system.

Acutrak® is a revolutionary induction melting furnace, the first in the industry to use an air-cooled coil. The total energy efficiency for the furnace is very high at 92 to 94%, which according to the company has never been achieved before by any other electric or gas-fired furnace. The system can transfer 94kW to the crucible to melt metal for every 100kW drawn from the utility line and is applied to the crucible for melting.

The DEH technology uses a silicon-carbide crucible, which provides faster, cleaner and more efficient melting and when combined with the Acutrak® furnace, it is able to apply electrical energy directly into the crucible. The metal is heated evenly and to a precise, preset selectable temperature with minimal overshoot by way of an immersion metal bath thermocouple, which is coupled to a digital temperature controller. This clean induction technology provides exceptional metal recovery and quality at the required casting temperature for their process.

Due to the fact that 95% of the power is concentrated in the crucible, the electromagnetic forces formed in the liquid metal are very low, therefore, the stirring effect is minimised. This reduces the disruption of the protective oxide layer on the surface of the molten bath and prevents contact of high temperature aluminium with oxygen. Thus, inclusion and dross formation, which is a result of oxidation, is greatly reduced along with metal loss.

The Acutrak® system uses a special, patented furnace coil coupled with the high resistance of the silicon-carbide crucible. By comparison, conventional ER furnaces that use fragile element panels cause a loss of production when they fail. Due to the reduction of the melt rate, the kilowatt rating of a traditional ER furnace drops with each panel failure. This decrease creates a domino effect making the functioning elements work harder to compensate for the failed panels. A complete shutdown of the furnace will need to be scheduled to replace the expensive element panels, compounding the production loss.

Another by-product of this scenario is the reduction of crucible life from the ‘cold spots’ caused by element panel failure. The patented furnace coil on the Acutrak® system ensures excellent transfer of energy into the crucible, avoiding production loss.

The furnace provides precise temperature control via two thermocouples placed inside and outside the crucible. Since temperature control is achieved as only the crucible and the metal are heated, there is no stored excessive energy retained by heat-soaked furnace walls, tiles, refractory or insulations. Furthermore, when the molten metal temperature hits the desired set point, power is cut off by the automatic temperature controller, ensuring it remains within the required temperature range. This makes it possible to attain a melt temperature with a precision of 5 to 7°C.

One of the unique features of the Acutrak® system is that it is completely air-cooled. The power supply and the furnace body are cooled by forced airflow. Low furnace losses make water cooling for the induction coil unnecessary as is commonly required by induction furnaces. In addition, the air-cooled system does not require the excessive insulating materials needed by gas-fired and ER furnaces.

The furnace also provides the operator with a comfortable work environment. There is no excessive noise or heat generated by the exhaust from an Acutrak® system. Tasks such as hand ladling, adding ingots and scrap materials to the furnace are made easier with the smaller width of the exterior walls.

The Acutrak® DEH system is currently available in stationary and tiltable versions, with three capacities. A 300kg unit with 100kW power supply, a 500kg model with 125kW power supply and a 1 000kg unit with 150 kW power supply. With an integrated power supply, the furnace is compact and requires minimal time, effort and cost to install. Its rugged construction assures high reliability.

For further details contact Cerefco on TEL: 011 845 3253 or visit www.cerefco.co.za or www.inductotherm.com
WE HELP WITH THE HARVEST EVERY DAY.
By ensuring that modern harvesting machines can be built with the help of our products and experts.

Castings are indispensable in the construction of agricultural machinery that needs to deliver a high quality and fruitful harvest.

Foundries have relied on having a strong partner at their side for more than 100 years, with innovative solutions, efficient technologies and products of the highest quality. Together with the expertise of experienced foundry engineers - worldwide and also directly on your doorstep.

FOSECO. Your partner to build on.
There is more to technology than meets the eye, in a new decade where the potential of development is limited only by our imagination, technology will enable business to respond dynamically to real-time market changes. Artificial Intelligence (AI) will increasingly help us with tasks that can be automated, but it will have less impact on jobs that require human skills such as design expertise and industrial strategy.

At the core of all this advancement are the people who operate the businesses. People matter more than anything else. With the right people to continually engage with customers and guide innovative processes, our ChemSystems team of experts in resin systems and metallurgical products can turn your idea into a thriving organisation that is profitable, impactful and successful.

Ask more from us.