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United States
Sand reclamation
for chemically bonded sand systems

By Chris Wilding, Omega Foundry Machinery Ltd.

Why reclaim

Today’s foundry using one of the many chemically bonded sand systems is under increasing pressure to reduce costs, reduce its impact on the environment but at the same time improve and maintain its casting quality. One of the ways of meeting these requirements is to invest in sand reclamation.

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

Due to less sand being dumped there is an obvious reduction to the impact on the environment.

Casting quality is improved by using less resin at the mixer and improving the sand grain’s characteristics so that it becomes more rounded. A more rounded sand grain leads to better compaction after mixing, greater strength and better surface finish.

Reclamation requirements

In order to reclaim the sand, the equipment used must first of all reduce the lumps back to grain size, remove all coarse grains, agglomerated sand grains as well as dust and fine particles. The sand must be cooled before re-use but more importantly, as much binder should be removed as possible.

Characteristics of the sand

After reclamation, the shape of the grain changes due to the attrition part of the process where sand grains rub against other sand grains. The effect is that all sharp edges are removed and extracted from the sand as dust. It is also important that the AFS or average grain size does not change dramatically from that of the new sand first used. Therefore it is important that the type of reclamation is not too harsh or damaging to the sand grain. The silica content of the sand should be as high as possible and the Acid Demand Value (ADV) should be as low as possible, particularly if the furan resin system is to be used.

Grain shape

There are four main grain shapes: rounded, sub-angular, angular and compounded. The best type of grain shape is rounded and so long as the correct type of equipment is used this should be the shape of the sand grain after processing. It is also useful to note that the cavities of the natural sand grain become filled with resin, again leading to the more rounded shape, therefore requiring less resin absorption at the mixer.

Options

There are three main options for sand reclamation: primary attrition, secondary attrition and thermal.

Primary attrition can be further broken down into three main types: primary attrition — low-level, primary attrition — high-level and combined shake-out/attrition.

This type would typically be positioned in a pit and fed via a separate shake out and vibratory feeder. It would not have its own shake out deck and would be used where heavy castings or high throughputs would be processed.

Low-level units are floor mounted requiring no special foundations and can be used as a shake out as well as attrition unit. This type of plant is usually more compact, easier to maintain and has a low investment cost. The main limitation is the maximum load capacity of three tons and a maximum throughput of 15 tons per hour.

Combined shakeout attrition units are usually mounted in a pit but can take much higher load capacities.

All three types of primary attrition unit will consist of a heavy duty shake out grid, a secondary perforated plate screen made from mild steel with 6mm diameter apertures, a third screen usually of stainless steel with 1.6mm apertures with a wedge cross section to enable a certain amount of self cleaning and finally a 1.6mm square aperture mesh screen for final sand classification.

The actual attrition process takes place between the shake out grid and the area prior to the final mesh screen. Here there should be sufficient retention to enable grain scrubbing and binder removal. With any type of attrition unit, there should always be the facility to remove flash metal, chills, reinforcing bars and other non-sand contamination. Therefore a clean-out door should be provided to enable quick and easy access to the screen areas.

Secondary attrition

Secondary attrition can be employed after the primary attrition unit to enable further binder removal. These units are especially suitable for the alkaline phenolic process and give furan levels of reclaim sand re-use at the mixer. Secondary attrition is also not as costly to purchase or operate as thermal so can be considered a cost effective alternative to thermal.
The basic principle of secondary attrition is to use a spinning drum at high speed to propel sand against sand at the right force so as to remove binder but not harm the sand grain. RPM can be adjusted to suit different types of sand grain and binder removal levels.

There are two types of secondary attrition, hard and soft. The soft system uses the centrifugal method only and is more suitable for the Furan process where not so much binder removal is required. The hard system uses the centrifugal method as well as a pair of squeeze rollers that force the sand grains together to give greater attrition and binder removal. This type of unit is more suitable for Alkaline Phenolic’s, Silicate and Green Sand back to core shop.

It is worth noting that in the case of the hard system, the spinning drum and the squeeze rollers have ceramic outer linings to give a much longer lifetime. Also the pressure of the squeeze rollers can be varied to suit different sand grain structures and different levels of binder removal. The sand can be passed through the unit up to three times (three separate cells) to further reduce the binder on the sand.

**Thermal reclamation**
The ultimate in sand reclamation has to be thermal, whereby 100% of all binder and other organic material is removed. The sand is generally better quality than when it was first bought.

Typically a thermal unit will run on gas or electric and operate at temperatures of between 600C and 750C depending on the type of binder used. The sizes range from 250kg/hour up to 12 tons per hour.

For the alkaline phenolic system, a special inhibitor must be pre-mixed with the sand to prevent the alkaline salts causing low temperatures and the fusing of sand grains. Thermal reclamation with the addition of pre- and post-mechanical scrubbing can also be used for reclaiming green sand back to the core shop.

**Sand cooling and classification**
The final section is regarding the cooling of the sand and the removal of dust and fines. Often overlooked, the sand cooler/classifier is equally as important as the attrition unit because unless we remove all of the dust and fine particles from the sand we will not see a reduction in the loss on ignition (LOI) at the mixer.

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

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

**Conclusion**
Whilst no two foundries are the same and all have different sand systems and requirements, there are many variations of sand reclamation plants available. All that has to be determined is the amount of binder removal required and the level of investment.

Modern sand reclamation plants have evolved in such a way that even the smallest foundry can be accommodated in terms of floor space required by the plant but also in terms of investment and running costs. Essentially, there is a sand reclamation plant to suit every foundry requirement and budget.

For further information contact Roy Dias of Endeco Omega on TEL: 011 907 1785 or email roy@endeco.co.za, or Peter Petersen of Mondeco on 079 448 1277 or email peter@mondeco.co.za or visit www.endeco-omega.co.za
Auto Industrial Group transforms its high-volume mould, shotblasting and sand handling systems

When you are supplying a range of safety critical components to all of the automotive OEMs in South Africa your attitude towards your production operations and systems has to be progressive and inefficiency is not an option.

That is why the Auto Industrial Group has spent over R50 million in the last two to three years on new equipment and systems for its two cast iron foundry operations that are situated in Isando and Wadeville, Gauteng. The number is even more impressive — R375 million over the last 10 years — when you take into account what has been spent at its machining operation in Spartan. And capital expenditure for the foundries and machining operations is not destined to stop there. Already in the advanced stages of planning is the installation of a third automatic moulding line that could be up and running by 2019, depending on whether the company wins future projects from the OEMs and the government commits to an extension of the Automotive Production and Development Programme (APDP) beyond 2020.

“These investments in plant and equipment were made with assistance from the DTI’s Automotive Production and Development Programme (APDP), more specifically the Automotive Incentive Scheme (AIS). The AIS provides for a cash grant of up to 30% of the value of qualifying investment in productive assets by component manufacturers. The planned investment in a new foundry line would only be possible if the DTI continues to assist component manufacturers through the AIS or a similar programme when the APDP programme comes to an end in 2020,” said Andrea Moz Managing Director/CEO of Auto Industrial.

The foundry industry in South Africa is at best struggling to survive and the success of Auto Industrial is in stark contrast to this precarious situation. Moz is convinced that by continuing to invest in new technologies and processes, Auto Industrial has been able to keep running costs at a manageable level and has reaped the rewards of incremental increases in volumes.
Click2Cast offers complete casting process simulation in 5 simple steps through a highly intuitive user experience, catering to beginners and experts alike. Avoid casting defects like porosity, air entrapment, cold shuts, etc., with Click2Cast’s easy to use interface and guided templates for gravity sand and die casting, investment casting, high pressure die casting and low pressure die casting.

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“Investing in new technologies and processes is vital when you are running factories at maximum capacities. You cannot afford the excessive down time and the incurring of significant additional running costs by trying to extend the life of old obsolete plant and equipment.”

As the name of the company suggests, auto parts manufacturing has always been the primary focus of the company with a significant local market share for its product offering. Today it is a leading supplier to most of the auto OEMs in South Africa. In fact virtually 100 per cent of the company’s output is supplied to the local OEMs including Nissan, BMW, Ford, Toyota, Mercedes Benz, GM and VWSA.

Established in 1968 as Auto Industrial by Dean Fragale the company manufactures steering knuckles, brake discs, brake drums and wheel hubs as its core products. However, Auto Industrial also manufactures many other products like differential components, gearbox covers, flywheels, clutch plates, wheel carriers, pinions, brackets and ball joint attachments among others.

The company has had various owners and partners during the course of its history. These included ZF Lemforder and Brembo with ZF being the owner since 2006. However, in 2013 ZF Friedrichsahfen AG, the holding company of ZF, decided to realign its business and sell its South African subsidiary. Local private equity investment company, Trinitas Private Equity, purchased a 70% stake in the Auto Industrial Group with the remaining 30% of the business sitting in the hands of a management equity pool. Although Trinitas do not get involved in the day-to-day issues of the business, they are fully aware of and support the strategic direction management has put forward.

“Trinitas Private Equity has since increased its exposure in the automotive arena when in November 2016 it purchased Powertech Industries a subsidiary of Allied Electronics (Altron) Battery Group. The Powertech Battery Group manufactures and distributes a wide range of automotive batteries for the South African market, including Willard and Sabat batteries.”

The main machining plant of Auto Industrial is located in Spartan, Gauteng. The 20 000m² under roof facility comprises two factories. The one is mainly involved in roughing and finishing of round parts such as brake drums and discs and the equipment is made up mainly of lathes and turning centres. Many of the lines are fully automated.

The second factory is involved in the machining of asymmetrical shape components such as knuckles and differentials. Here milling work is predominant and you will find machining centres as the predominant machine on the shopfloor.

With over 300 CNC machines on the shopfloor you are overwhelmed when you visit. The mix is made up of Pittlers, Weisssers, Chirons, Okumas, Hyundai-Kia, Hitachi-Seikis, Leadwells, DMG MORI’s, Hellers, Doosan Pumas, and Quasers to name a few. Organised by cells catering for the various machining operations and product lines the flow of work is clear to see.

The quality ratings of the company are ISO TS 16949, ISO 14001:2004, ISO 9001:2008, Ford Q1 and 430 staff are employed at this location.

The company has for a long time had the philosophy of being in control of its own destiny, and the key components to feed the numerous machines are castings and forgings.
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The company acquired the first of its two foundries in 1984 and added the second one to the asset list in 2009. Since a number of final components supplied are first forged and then machined before being assembled, the company acquired Hubco Forgings in 1985.

**Wadeville Foundry**
Auto Industrial Foundry manufactures grey iron and high carbon castings and is located in Wadeville, Gauteng. Operating from a 48 000m² property with 24 000m² under roof, the foundry has recently been through a major refurbishment and installation of new equipment that doubled production capacity.

With a melt capacity of 40 000 tons per annum the foundry is equipped with a Loramendi moulding machine with a box size of 750 x 600mm. The castings emanating from this foundry range between four and 22 kilograms and there are 170 employees.

**Isando Foundry**
Isando Foundry, which was only acquired in 2009, produces ductile iron and grey iron castings. The foundry operates from a 20 000m² property with 10 000m² under roof and is located in Isando, Gauteng.

The melt capacity of the foundry is 30 000 tons per annum and it operates one Disa line with a box size of 750 x 535mm. Casting weights of the various components vary between one and 22 kilograms and there are 110 employees.

**Hubco Forgings**
The company’s main activity is hot forging of steel forgings. Operating from a 23 000m² property with 18 000m² under roof, it is also situated in Wadeville.

The capacity of the companies machines are 500, 750, 1300, 2000, 3000 and 4000 tons and the capacity is in the region of two million parts per annum with steering knuckles, wheel hubs, spindles, control arms, side gears and ring gears in the mix of components forged. Some pre machining is done at this plant.

Process development is done from 3D models and the company has a fully equipped tool room for in-house die manufacturing. Other operations include billet cutting, CAD/CAM methodology, die modelling, Magnaflex crack detection systems.

Both Isando and Wadeville have Simpson Technologies sand treatment systems. This includes both sand preparation and sand reclamation.

The volume of castings being manufactured on a daily basis at both the Isando and Wadeville foundries runs into the thousands. Typical foundry casting flaws such as porosities, the formation of pores and blisters, thermal cracking, dimensional changes and inclusions can occur in all casting techniques. Auto Industrial therefore have to be constantly aware of these flaws and this is why the company have invested in the latest x-ray crack and leak detection systems.

The melt capacity of the foundry is 30 000 tons per annum and it operates one Disa line with a box size of 750 x 535mm. Casting weights of the various components vary between one and 22 kilograms and there are 110 employees.

**Cores at Isando foundry are made in two Laempe machines**

**Mitutoyo high accuracy CNC controlled CMM for measuring cores and castings. This technique allows for process control of cores and product with the possibility of SPC real time data capturing and process analysis. The machine was supplied by RGC Engineering and has been installed at Wadeville foundry**

**Inspection of a raw steering knuckle casting before machining, utilising a GOM Compact Scan System. This enables manufacturers to immediately check product quality and conformance. The manufacturer can optimise casting size and weight, thus reduce machining times and therefore optimise costs and productivity by not machining parts that have excess material or are not to specification. The machine was supplied by RGC Engineering and has been installed at Isando foundry**

**Both Isando and Wadeville have Simpson Technologies sand treatment systems. This includes both sand preparation and sand reclamation**
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Investment in new processing machines for foundries

In the last year or so the Auto Industrial Group has spent over R50 million on new equipment and systems for its two cast iron foundry operations, mostly in post casting operations. The difference between the two foundries is that Wadeville Foundry operates on an automated press pour system whereas Isando Foundry operates on a tundish continuous moulding system.

However, post-casting the foundries are very similar and this is where the majority of the investment has taken place.

“It's a combination of many factors that have driven us to investing. We continually invest in the latest technology and always put in the required capacity as and when needed. Additionally, we are always looking at continuous improvement in our manufacturing processes to avoid mechanical damage, eliminating waste, cutting manufacturing costs, increasing productivity and improving workplace safety,” said Moz.

General Kinematics Vibra-Drum® sand and casting conditioners

“At both foundries we have installed a new General Kinematics Vibra-Drum® sand and casting conditioner in the shakeout operation. This includes the conveyors and agitation systems post and prior the drums. The gentle tumbling action of the drums keeps the castings in a bed of sand, never dropping or creating impact during the shakeout process and it eliminates any mechanical damage.”

“Furthermore, high frequency agitation efficiently reduces sand to original grain size. Put it all together and you have a simple, easy-to-maintain, non-rotating design with all the environmental benefits of a totally enclosed drum but with no air handling, sealing, or interface problems and no casting damage.”

“A big benefit has been the lower temperature of the castings once they exit the shakeout system and the homogeneous sand returns for reclamation. Initially the lower temperature of the castings created a minor problem for removing the runners and risers but we have now come up with a satisfactory solution.”

“You could say that we have achieved all the objectives that we were looking for before installing the drums.”

Extraction hoods for induction furnaces at both foundries

“Currently being installed on the induction furnaces at both foundries are BO Anlagenbau extraction hoods. They are designed to control our heat and dust capturing in the harsh conditions of the melting areas. We anticipate savings on electricity bills because there will be less loss of heat during
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Manufacturers of crucibles and related hot metal products.

**IMF (Impianti Macchine Fonderia)**
is a market leader in the field of chemically bonded moulding systems. They have recently acquired Foundry Automation, a specialist in the design and construction of turnkey moulding plants and core shooting machines and Cafo Barfi, a manufacturer of shotblasting and shotpeening machines.

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the melt and temperature variation of the metal, and of course the capturing of the dust in the exhaust air through a duct system will contribute to our environmental protection."

“Once we have completed the installation of the extraction hoods at both foundries we will be awarded our permanent Air Emissions License that will sit comfortably with our ISO/TS 16949, 9001, 14001 certification that we hold at all four of our manufacturing plants, and will be fulfilling our commitment to maintaining the highest environmental standards possible in this type of industry.”

**New Pangborn shot blasting machines**

The benefits of the new General Kinematics drums have also been extended to the shot blasting operations, where Auto Industrial have spent R19 million on two Pangborn machines that were installed just over a year ago. One was installed at the Wadeville foundry, which is a continuous shot blaster type TR3-11, and the other one is an overhead monorail conveyor unit that has been installed at Isando foundry.

“With the installation of the General Kinematics drums at the foundries the castings are now arriving at the shot blasting machines virtually sand free. This has had a huge implication on the quality.”

**Windows of shutdown for installation**

“We have had a long relationship with all the OEMs based on good quality products, supplied on time. Over the past 40 years we have virtually removed all OEM in-house manufacture of the core components that we manufacture for them. As a result they now rely on us and we cannot afford to offer excuses. We run a 24-hour operation and cannot have our manufacturing operations standing idle.”

“It was therefore imperative that the planning of the installation of the new equipment took place during the annual shutdown in December and during the shorter version in April. We are happy to say that we had complete cooperation with the suppliers of the equipment and there was a seamless integration.”

**X-ray crack and leak detection**

The volume of castings being manufactured on a daily basis at both the Isando and Wadeville foundries runs into the thousands. Isando foundry is producing about 9 000 components a day and Wadeville foundry between 6 000 and 7 000, depending on demand. The mix of components is different at both foundries but the volume is still high for a South African foundry.

“We are competing against international competition in a very competitive automotive OEM market. The difference lies in the volumes. In South Africa we generally quote for thousands of units while elsewhere they quote for hundreds of thousands of units or even millions. However, we still have to achieve the same quality standards and supply performance,” explains Moz.

“Typical foundry casting flaws such as porosities, the formation of pores and blisters, thermal cracking, dimensional changes and inclusions can occur in all casting techniques. We therefore have to be constantly aware of these flaws and this is why we have invested in the latest x-ray crack and leak detection systems.”

**Inspection and quality**

Equally important to Auto Industrial is tolerance inspection of its cores and cast components. In view of the growing complexity of shapes and functions, the scanning, analysis and inspection is carried out with 3D measurement systems. In this department the company has invested in a GOM 3D scanning and inspection system and a Mitutoyo Crysta-Apex S, a CNC coordinate measuring machine.

**Briquetting**

Auto Industrial’s machining plant processes over three million components a year that results in a huge amount of metal shavings and swarf. The two foundries are now benefitting as a result of the company investing in a briquetting machine.

“We used to sell our shavings and swarf on the open market. With the amount of components that we are machining we generate a huge amount scrap material that we realised we could put to better use. The solution has been installing a briquetting machine at our machining plant and we now recycle all this scrap material from our machining operations. The outcome is that we are now supplying the foundries with 400 tons of compacted scrap that is ideal for melting. Not only are we saving on scrap metal expenditure
but we are also realising savings on electricity costs, which we all know, along with labour costs, have become a major challenge to the manufacturing sector in South Africa in recent years,” said Moz.

Complete solution
Auto Industrial also manufactures most of its tooling and castings patterns in-house, which significantly reduces lead times when implementing new projects.

“Having our own toolrooms enables us to have a fast turnover time with a significant reduction in cost. We are also able to do prototype tooling and changes can be made quickly to suit new processes. This facility allows us to manufacture quality tooling and patterns because of the intimate knowledge of the project, and thus tracking of the project is much easier and customers are allowed to have visual inspection in-house and if necessary, changes can be made quickly.”

“In short we offer a complete solution from design, using proprietary software, to manufacturing the tooling, to casting the components to machining, along with inspection and quality checks.”

“When new vehicle models enter the market, Auto Industrial is generally involved in the process. This includes the recent introduction of the new Toyota Hilux and Fortuner where we manufacture five new components that we have never done before, as well as the next generation Volkswagen Polo. We are also already included in the next generation Ford Ranger currently in the prototype process.”

“The Group has seen a healthy growth of 20% over the last three years and we reached the significant figure of R1 billion aggregated turnover in 2016, and are looking to grow this by another 10% in 2017. We offer a value added production chain, from the foundries and forge to machining and assembly. In addition, we have been very successful in controlling our costs through investment in new equipment and technologies, which is paramount in the motor industry,” concluded Moz.

For further details contact Auto Industrial Group on TEL: 011 922 5600 or visit www.autoindustrial.co.za

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Industry supports Machine Tools Africa 2017 as sales exceed 70%

With a few months still to go and the two allocated exhibition halls largely booked, industry has again demonstrated its strong support for Machine Tools Africa 2017, taking place at the Expo Centre in Johannesburg from 9-12 May 2017. Exhibition space sales have exceeded 70% of overall square metres available and many other stands have been provisionally booked. Sales are on track and it is expected that the show will be sold out.

Machine Tools Africa, launched in association with the Machine Tools Merchants’ Association of South Africa (MTMA), is the biggest trade exhibition of its kind in Africa showcasing cutting edge developments across the machine tool and related industries. Exhibitors in halls 6 and 7 are mainly the local machine tool suppliers together with their principals.

Hans-Peter Neth, MTMA Chairman, has given MTMA’s full commitment to Machine Tools Africa so ensuring an industry showcase that is inclusive and reflective of the South African machine tool market. The exhibition will be a showcase of a broad range of machinery, equipment, products and services involved in the machine tool cycle.

“Quality tools and machinery are the backbone of the South African manufacturing industry and this important sector will take centre stage at Machine Tools Africa 2017,” says Neth. “Machine Tools will not only be displayed but demonstrated. There will be equipment in Machining such as turning and milling, grinding and drilling, as well as all types of sheetmetal machinery, laser, plasma cutting, bending and punching and presses. And many more machines will be displayed. Also exhibiting will be various suppliers of Tooling and CAD CAM software who are an integral part of the successful machine shop.”

The arrival of Industry 4.0 has led the world to gearing up for more automation, with equipment driven and controlled by computers and handheld devices. Machine Tool developments never stop and with 3D printing of metal parts, a whole new world in design and manufacture has just begun.

“Daily talks by industry leaders from all over the world will make this event a must for all engineers, company owners, workshop managers and staff,” says Neth. “They will learn about these latest developments happening all around us in our exciting industry.”


“We have been involved with Machine Tools Africa since its stand-alone shows from 1977 until 1997 and then as a co-located show with Electra Mining Africa every four years from 2004 through to 2012,” explains Gary Corin, Managing Director of Specialised Exhibitions Montgomery, who have partnered with MTMA as Organisers of the show. “The decision to host the show alongside Electra Mining Africa was based on the market conditions of the time and the show remained fully supported by the Machine Tools Merchants’ Association of South Africa. A decision was made last year to again launch a stand-alone show as the market has become strong enough to support this. The endorsement we have received from industry and the number of leading companies already booked to exhibit validates this decision.”

The visitor experience will be enhanced through a series of free-to-attend technical seminars hosted by the South Africa Institution of Mechanical Engineering (SAIMechE). “These seminars will bring additional value to visitors and the seminar programme will be presented by leading industry experts,” says Corin.

Both Corin and Neth agree on the importance and value of the MTMA being behind this exhibition. “Not only does it provide a platform where we can demonstrate our strength as an association,” says Neth, “but also to ensure that buyers know that purchasing a machine from members of the Machine Tool Merchants’ Association means peace of mind for the machine tool buyer. All MTMA Members subscribe to a strict Code of Ethics designed to protect buyers.”

Corin also confirmed further industry support from the South African Capital Equipment Export Council (SACEEC) and the Italian-South Africa Chamber of Trade and Industries.

Specialised Exhibitions Montgomery is a member of the prestigious Montgomery Group, one of the most widely respected exhibition companies in the world with trade shows, consumer shows and specialist projects currently spanning Europe, the Middle East, Africa and Asia.

For more information, contact Leatitia van Straten, Marketing Director at Specialised Exhibitions Montgomery at email leatitiavs@specialised.com.
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Aluminium supplier Hulamin has informed its shareholders that it expected a surge in earnings a share of between 127 per cent and 141 per cent for the year to the end of December 2016.

The company attributed the expected surge in earnings to a strong manufacturing performance last year.

If the company achieves the earnings, it will report earnings of 116 cents to 123c a share for the year, up from 51c a share reported at the end of the previous financial year. Hulamin’s share price thrived on the good news.

“This positive momentum, achieved with an excellent safety record, provides a solid base for further focus and improvements going into 2017,” the company said.

Hulamin also noted that its rolled products had benefited from consistent investment in operational excellence and risk management to achieve record sales volumes of 214 000 tons for the year under review. The local sales of rolled products increased to more than 70 000 tons.

“Sales of can body stock improved strongly in the second half after the slow start to 2016. This increase in demand allowed for an increase in scrap purchases and improved utilisation of Hulamin’s recycling capacity in the second half,” the company added.

Growth
Improvement is also expected in headline earnings a share. The company anticipates a growth of between 208 per cent and 227 per cent for the year.

The company said it performed well in the second half of the year, despite the strengthening of the rand and a relatively stable London Metal Exchange price environment, to deliver a record operating profit for the full year.

The improved profit performance and capital discipline allowed the company to improve cash flows in the second half. Net borrowings were reduced by some R350 million after closing at R952 million at the end of June last year.

There is no doubt that Hulamin will improve on last year’s results, when it reported a 57.47 per cent decline in profits to R163.71 million, down from R384.93 million a year before. The decline forced the company to forego paying a dividend.

With an expected improvement in profit in 2016, shareholders must be expecting some rewards this time around.

Hulamin chief executive Richard Jacob said last year that the decline in profit was a result of a slump in commodity and aluminium prices.

The company is currently focusing on maintaining the positive momentum in the business. It will release the full-year results at the end of February.
The WFO Technical forum is being held in conjunction with the South African Metal Casting Conference 2017 (MCC) where 60 technical presentations will be given. These presentations include speakers from Germany, Norway, UK, Romania, Poland, USA, China, India, Netherlands, Denmark, Spain and South Africa.

In addition, there will be presentations from the member associations of the BRICS Foundry Forum, which comprises the countries of Brazil, Russia, India, China and South Africa, as well as presentations from companies and associations such as the Aluminium Federation of South Africa, International Zinc Association, WFO, MRT Castings, Thomas Foundry, ABP Induction Systems, GUT, Transnet Engineering, Stellenbosch University, Kuettnner GmbH, ZPF GmbH, Forace Polymers, University of Witwatersrand, DISA Industries, ExOne Digital, Altair and Met-Link.

Sponsors and exhibitors include Huttenes Albertus Group, Foseco, Inductotherm, Laempe, Oskar Frech, Heinrich Wagner Sinto, Click2Cast, Synchro ERP, Ametex (Magma Software), VDMA, United Scientific, Chem Systems (ASK Chemicals), IMP Scientific, TCT Tesic, Hawk Tech, Fochem International, Fundigex Amfex, WFO, Ncoded Solutions and NCPC.

**WFO Technical Forum**

The World Foundry Organisation (WFO) is the recognised centre of strategic foundry knowledge, designed to develop, enhance and improve the production of metal castings through the latest technical and sustainable industry practices.

Through the involvement of the member associations in 30 countries the WFO creates a network of technical knowledge and resources that is a vital tool to every foundry association, foundry and foundry worker throughout the world.

The WFO is a neutral body that represents the collective needs of the members on a global stage.

The WFO hosts the World Foundry Congress (WFC) in collaboration with the national foundry association in respective countries every second year. Between congress years, the WFO organises an international Technical Forum (WFO-TF). South Africa is the host for the 2017 Technical Forum.
SI Group, a leading global manufacturer of chemical intermediates, specialty resins and solutions has announced that its South African Director of Operations, Gordon McNeilage, has been promoted to the position of Senior Director, Manufacturing — Northeast Asia for the Group. McNeilage’s new position is effective 6 March 2017 and he will be based in Shanghai, China.

“This is a big opportunity for me and my family with many challenges going forward, but ones that will also offer prospects for myself and the Group,” said McNeilage.

“The Asia Pacific region is being reorganised in a way that can better support this very large, dynamic, and diverse region. In my new position I will have responsibility for the three manufacturing operations in China and the one in Korea.”

“The three plants in China are situated in the Songjiang, Jinshan, and Nanjing Chemical Industry Parks. Nanjing was established in 2013 as a result of strong demand from our loyal and strong customer base in the rubber, abrasive, friction, impregnation, and refractory markets in the region. The Jinshan plant manufactures antioxidants and active pharmaceutical ingredients such as Ibuprofen and Propofol and was acquired in 2014. Nanjing is in the central region of China while the other two, Songjiang and Jinshan are close to Shanghai.”

“Effectively I will be moving out of the foundry industry that I have been part of for the last 23 years. I would like to thank all the clients and colleagues that I have dealt with during this period. All of them have contributed to my personal growth and I am thankful.”

“I qualified with a bachelor’s degree in metallurgical engineering from the University of the Witwatersrand and my first position in the industry was a sales role at Minerals Binders Clays followed by a similar position at Durrans RMS.”

“I joined the SI Group as the National Sales Manager in South Africa in 2005 before being appointed to the position as General Manager in 2010 for the Group in South Africa. From 2012 I have served as Director — South Africa Operations with responsibilities for both Johannesburg and Durban.”

“The South African operation, with manufacturing plants in Kwa-Zulu Natal will continue to operate as is. There are significant plans to invest and grow the business commitments in South Africa, including the Huettenes-Albertus foundry business, which has identified South Africa to further invest,” explained McNeilage.

“Although the Group has made significant investments in China it is still very bullish about the whole area. The Group is preparing to expand the Jinshan plant, adding capacity to make materials that prevent plastic from oxidising and aging. The investment will boost SI Group's presence in China beyond the 459 employees who already work in the country.”

“Founded in 1906 and headquartered in Schenectady, New York, USA the SI Group is a family-owned company with over 2 700 employees worldwide. SI Group operates over 20 manufacturing facilities on five continents with over $1 billion in annual sales.”

“I am proud to be part of this dynamic Group and to be given this opportunity.”

Gordon can still be contacted on his company email address Gordon.McNeilage@siigroup.com

For further details contact SI Group SA on TEL: 011 389 8200 or visit www.siigroup.com or www.huettenes-albertus.com
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Two-Mass vibrating drums deliver high capacity up to 400 TPH, plus superior material motion for efficient sand and casting conditioning and cooling. Natural frequency vibration produces a beneficial drum-like rotary motion that quickly reduces sand lumps without casting damage. High frequency agitation efficiently reduces sand to grain size. Put it all together and you have a simple, easy-to-maintain, non-rotating design with all the environmental benefits of a totally enclosed drum – air handling, seals and all interface connections are to non-rotating locations, allowing for moisture addition and ventilation throughout the drum. Our design simplifies the installation of feed and discharge systems and facilitates in-process inspection.

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General Kinematics SPRAYCOOL™ water addition systems are designed for precise in-process conditioning of foundry sand... not achievable in rotary or other technologies. SPRAYCOOL™ improves the efficiency of evaporative cooling systems, and automatically adjusts water addition and blending rates to preset parameters. Custom engineered systems include all components and remote controls for state-of-the-art, non-contact temperature and weigh sensing.

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- Automatic air purge of infrared temperature sensors minimizes dust build up, assures consistent readings and process control
- Manual valves for easy service of strainer and optional booster pump
- Feedback sensor automatically adjusts and maintains preset sand discharge temperature

Sizing chart:

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<th>Width Non-Drive</th>
<th>Length</th>
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The Keegor Group has recently expanded its product portfolio to create a new group company specialising in induction heating equipment. The new company, Keegor Power Electronics (Pty) Ltd, has been established as a result of the Keegor Group purchasing the LH-Power Electronics (Pty) Ltd intellectual property, assets and stock.

Although Keegor Power Electronics (Pty) Ltd is a newly registered company, the Keegor Group of companies has been in operation since 1959. Keegor Managing Director, Bruce Hansmeyer, has been involved since 1981.

The Keegor Group includes Leonard Light Industries (Pty) Ltd, Keegor South Africa and Keegor Meltech (Pty) Ltd. Keegor™ is a brand name that is a registered trademark to Leonard Light Industries, which has been designing and manufacturing a range of Keegor™ brand products for the precious metals assaying and refining industry since the company’s inception in 1959.

The company’s products and related accessories include furnaces, smelt-house hardware, sample preparation equipment, cupels, fire-clay crucibles and various items of fire assay hardware including tongs, trays, trolleys, bins, rollers, mixers, plates, cups, slag moulds, laboratory crushers and pulverisers.

Keegor Meltech was established 14 months ago as a result of Morgan Molten Metal Systems, a division of Morgan Advanced Materials, appointing of Keegor Meltech (Pty) Ltd to distribute its complete range of crucibles and accessories for the melting, holding and treatment applications used in the casting of ferrous and non-ferrous metals and metal alloys in South Africa.

"Many industries rely on the LH-Power products and technical support. This support will continue with the introduction of the new company under the Keegor Group. Keegor Power has met with overwhelming positive support. The new company already has commitments and orders,” said Bruce Hansmeyer.

LH-Power staff

The Keegor Power Electronics team includes key former LH-Power staff including Alan Grant as General Manager, Trevor Ferreira and Charles Rafuma in the service and technical division and Desiree de Waal in the finance and administration department. This adds up to over 30 years experience and skills in the induction heater and furnace market.

"Decades of experience in the furnace industry, vested with LH-Power and the Keegor Group, is now available to the local manufacturing industry. Keegor Power Electronics services will include mechanical and electrical design, fabrication, service and spare parts. The company will be located at the head office and factory that is situated in Leicester Road, Benoni, Gauteng,” explained Hansmeyer.

“We pride ourselves in being honorable in everything we do. We strive to have four basic ingredients for success: great customers, great suppliers, great people and great products. It goes without saying that we are committed to building strong relationships with existing customers and suppliers.”

“This development is a very positive situation for the many existing customers of LH-Power Electronics. We look forward to working with these customers and the suppliers to our mutual benefit,” concluded Hansmeyer.

For further details contact the Keegor Group on TEL: 011 421 0711 or visit www.keegor.com
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**Exports and bulk**
Supplying 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**
- Metlife Alloys is a producer of quality aluminium ingots and deoxidants.
- Insimbi Aluminium Alloys is a producer of quality deoxidants.
- Insimbi Nano Milling develops, manufactures and distributes nanosized products and composites.

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Mentorship is just the first step at Pressure Die Castings

Company records 24% growth for 2016.

Progressive and success-hungry Pietermaritzburg, KwaZulu-Natal based Pressure Die Castings (PDC) has just completed a year that the company’s management says they will look back at with great satisfaction on many fronts.

“2016 was a year that saw the company grow on many operational facets of the company. This included investing in a new zinc high pressure die casting machine and a chrome plating plant, which all formed part of our long-term strategic decision to diversify and to move further up the value chain, with an emphasis on product delivery and quality,” explained Pressure Die Castings’ managing director Mike Wolhuter.

“The strategy involved reconfiguring the business, increasing factory productivity and training employees, which would ultimately lead to improving the quality of our products and reducing costs.”

Mechanical engineering graduates

“It is estimated that there are over eight million people who do not have jobs in South Africa and of these there are over five million that are young people. Some have even given up looking for employment. The manufacturing industry in South Africa, and in particular the engineering sector, is always griping that we have an aging labour force and that South Africa does not have enough skilled artisans and engineers being trained to replace the outgoing generations. It has been a long-time grievance. But how many of these companies do anything about it?”

“We did just that and employed four smart and innovative graduate mechanical engineers on a one-year internship basis. It gave the candidates an opportunity to get a year of experience but more importantly it gave PDC the opportunity to harness the energy and intellect of the graduates, who are continuously pushing the boundary for implementing radical and new ideas, including automation.”

“One example of this was that the one graduate had a keen interest in 3D printing and before I knew it him and I were off to an additive manufacturing conference in Europe and we subsequently purchased a machine. The result is that we virtually recuperated the costs of investing in the machine in the first month with our projects and we are now also offering this as a service to our customers.”

“PDC’s business is no longer just about being a pressure die caster anymore. We have advanced in many ways but we still have plenty of room for improvement, particularly on the manufacturing side. We have placed a lot of emphasis on data management and analysis systems that are now world-class to compliment our automation. We are continually striving to stay ahead of the game with Industry 4.0 being implemented worldwide.”

“We have encouraged the graduates to learn as much as possible and to maximise the opportunity with the important criterion that the company must benefit as well. They were expected to be passionate about their work and demonstrate a willingness to go beyond the proverbial mile.”

“Equally, management has had to be committed. There is no point taking on interns if they are not mentored, nor directed about what is expected of them.”

“Included in their time with us they had to tackle tasks such as failure modes and effects analysis (FMEA), robotic programming, time management, hands on production and maintenance implementation, as well as report writing and skills presentations.”

“We were not scared to learn from them as well. Suggestions on how to improve the manufacturing process were amongst the important debates that took place.”

“Another important factor was that they had to visit 12 different unrelated manufacturing entities during their one year stay with us. This gave them a chance to experience other companies and the people and manufacturing processes within those companies.”

“While the interns were initially assigned specific projects, they were also expected to broaden their knowledge in all areas of PDC’s business. We have benefitted from their input and as a result our new chrome-plating plant is running more efficiently, a gremlin in our sprinkler frame castings was resolved, protocols for an automotive application certification were developed and a 3D robotics system to test the durability of window handles was implemented.”

“With the ever-increasing challenges of regulation and energy costs, they — the graduates — have advanced some of our projects relating to these issues.”

“The importance of continuing to develop and implement new technologies has never been greater and I am happy to say that PDC is now in a better position than it was at the beginning of 2016. The graduates have been part of and contributed to our impressive growth for 2016 while also gaining invaluable hands on experience, including people skills, and yes, we will repeat the exercise again,” said Wolhuter.

Learnership training

“The IMF is right to stress the need for South Africa to create employment and make the economy more competitive and the government must take heed of this. This is one way of doing it. Statistics show you are six times more likely to find employment with a year’s experience than without it. Work experience on a CV is more likely to land a candidate employment than what they achieved at school, college or university.”

“With this in mind, for 2017 we have embarked on a programme whereby from the beginning of February we have employed 10 learners on a one year contract. All of them are under 23 years old and will be given the opportunity to gain work experience in all departments of the company, including administration. They will be following a mentorship programme while with us and at the end of the year will a have a better prospect of gaining full time employment.”

“Like the graduates it is just the first step in their young lives but we believe it will have an impact.”

“However, I must emphasise that companies need to be committed to offering these opportunities because all parties benefit if it is correctly managed and in the long-term industry will reap the rewards,” concluded Wolhuter.

For further details contact Pressure Die Castings on TEL: 033 397 5500 or visit www.pdc.co.za
Eco-Friendly Foundry Solutions

The **HÜTTENES-ALBERTUS GROUP** manufactures chemical products for foundries all over the world: advanced binder systems and auxiliary products for every stage of the casting process accompanied by comprehensive support.

In South Africa the HA Group is represented by its partner company **SI Group HA South Africa** – firmly committed to offering economic and eco-friendly solutions and an extensive range of services to the foundry industry.

**huettenes-albertus.com**  **siigroup.com**
Imagine a high volume automated foundry running an overall 21% scrap rate with suspect castings making it to the customer’s production line. A new general manager takes the helm and mandates that scrap will be no higher than 4%. Within two weeks and without any tooling changes, production changes, or scrap analysis, the new scrap target was achieved.

How was this possible? As it turns out, the solution was to “remelt and not report our mistakes”. WIP and material inventory numbers become skewed when castings are remelted without being reported. Once the remelt bins were monitored to prevent unreported scrap from being remelted, the motto became “we bury our mistakes”.

Material inventory, WIP, and Finished Goods continued to spiral out of control and the computer department was told that the software could not add and subtract and that a bug must exist. The financial controller of the company and the production supervisor stopped and inspected a dump truck leaving the facility with spent moulding and core sand. Upon further examination, buried in the sand were scrap castings. The landfill was dug up and hundreds of tons of scrapped castings were located. The moral to the story: scrap reduction can only be achieved through analysis and changes and that a modern ERP software solution is required.

Since 1975 Synchro ERP have been providing industry specific focused solutions for the cast metal industry, covering every aspect of the foundries. Synchro ERP is dedicated to specific software ERP systems within the sector. Synchro ERP embarks on a technical scrap reduction study

There are different types of scrap and a cause and effect relationship between the scrap reasons. In order to understand scrap, root cause analysis is paramount. With root cause analysis through a modern ERP-MRP software solution, the cost of the analysis can be minimised. Data entry of the production WIP and scrap is required and should be able to be achieved with a minimum of time and effort. Modern software solutions provide cost effective methods of data input through shop floor data collection terminals and tablet applications. Before embarking upon a scrap analysis reduction programme, goals should be established such as reduction in PPM, identifying scrap or suspect castings at the earliest possible process step, and ability to identify the true cost savings.

Synchro ERP, a specific software ERP system developer for the cast metal industry, has embarked on a technical scrap reduction study and associated cost analysis with a large USA customer.

The study will be published in a multi-part series in which the company will define, control and analyse the results.

The authors maintain that all scrap reduction improves the bottom financial line. There is an economic opportunity cost associated with scrap in that the money, time, and materials could have been expended on other profitable endeavours. There is a real cost and a hidden cost associated with scrap. The real costs are easily derived while the hidden costs must be dug out of the landfill.

Since 1975 Synchro ERP have been providing industry specific focused solutions for the cast metal industry, covering every aspect of the foundries. Synchro ERP is dedicated to specific software ERP systems within the sector.

These include:
- Iron foundry ERP software
- Steel sand foundry ERP software
- Centrifugal casters ERP software
- Aluminium sand foundry ERP software
- Diecasting (pressure diecaster) ERP software
- Gravity diecasting (permanent moulder) ERP software
- Precision moulder (precision moulder) ERP software
- Investment Casting ERP software
- Loss wax & lost foam casting ERP software

Synchro ERP’s software is a fully integrated system that facilitates extensive control of your business. The software offers depth and breadth of function with a wide range of flexible facilities designed to meet the unique requirements of your company. Features of the software include production and scheduling, costing and estimating, pattern and tooling, shop floor data collection, sales and marketing and much more.

Synchro ERP also have an app for Android and Apple tablets that will allow foundries, in real time, to enter information accurately into the software system.

Metal Casting Conference 2017
Synchro ERP will be exhibiting at the Metal Casting Conference 2017. Visit them at stand 24.

The company welcomes your input into this study. However, the first report of the multi-part study is available at: Email sales@synchroerp.com.

For further details contact Max Morgan and Associates on 082 920 3081 or email maxmorgan@synchroerp.com or visit www.synchroerp.com
CAN'T GET IT ANYWHERE BUT HERE

Keegor Meltech is the official distributor of Morgan MMS crucibles in Southern Africa

Stocked brands include:

SALAMANDER EXCEL which is intended for aluminium melting in oil-fired furnaces, melting copper-based alloys in gas and oil-fired furnaces, melting precious metals and non-ferrous alloys in low to medium frequency induction furnaces. They are made from high-quality carbon-bonded silicon carbide.

SALAMANDER SUPER crucibles offer consistent performance when melting ferrous, non-ferrous and precious metals. Their excellent thermal conductivity keeps metal from cooling too rapidly and accommodates temperatures up to 1600°C (2912°F). They are made from high quality flake graphite, silica and silicon carbide in a ceramic bond.
Well-known German manufacturer of high performance, asbestos free calcium silicates in a density range of 200 to 1 100 kg/m³, Calsitherm Verwaltungs-GmbH, opened a subsidiary in South Africa 18 months ago. The new company was established as Silca South Africa (Pty) Ltd in line with the Calsitherm Group’s marketing and branding development of subsidiaries worldwide.

One of the key products leading to the success of the company has been the Calcast® range. Calcast® is a high performance technical ceramic manufactured from calcium silicate. All products are asbestos and quartz free. The densities range from 850 to 1 100 kg/m³ and can be machined to very close tolerances. The non-wetting properties of Calcast® make these products ideally suited for non-ferrous metal casting applications. Calcast® products are also used in a wide range of thermal process applications, and are rated to 1 000 °C continuous exposure.

As a refractory material, Calcast® is used in metal flow control applications in the aluminium industry, and as “hot face” lining in holding furnace and heat treatment equipment. Calcast® has a high dimensional stability, and incorporates a unique particle reinforcement to increase fracture toughness and thermal shock resistance. These improvements extend the service life of the refractory components, and reduce operating costs. In low-pressure die casting Calcast® is used as sprue bushings, intermediate tubes, nozzles and feeder box liner.

Calcast® graphite compound products for the die casting industry

The company manufactures numerous brands and products for specific industries. However, one of the more exciting recent developments has been the launch of the Calcast® graphite compound range that combines the mechanical and physical properties of calcium silicate and graphite and are particularly beneficial for die casters due to the excellent non wetting properties.

Calsitherm group acquisitions

As a result of recent acquisitions by Calsitherm the South African subsidiary now has access to an extended range of products that are used in the thermal and foundry industries.

The acquisitions include:

SRS Amsterdam is the official European distributor of Marshall thermocouples. L.H. Marshall is a market leader for temperature for the temperature measurement of nonferous metals. The company also represents Syalon International Ltd, based in Newcastle, UK, a manufacturer of an ever increasing portfolio of sialon, alumina, zirconia and silicon carbide products, including tubes, foundry products, powders, balls, weld pins, seals and weld rolls, which utilise the excellent wear, corrosion and thermal resistance of the company’s materials.

Ceramco an industrial ceramics manufacturer based in the UK. The company manufactures thermocouple protection tubes, radiant heater protection tubes, immersion heater protection tubes and de-gassing components for the aluminium and non-ferrous materials industries, with a particular interest in foundries and the re-melting sector.

Additional news

Silca South Africa has also recently purchased its own factory and warehouse. The 500m² property in Germiston South, Gauteng will now enable the company to hold stock and manufacture the specialist products that it markets to the melting industries.

The local subsidiary also distributes products from other Calsitherm related companies. These include a comprehensive range of chaplets that are manufactured by Karl Schmidt, and the Mars range of crucibles manufactured by Aug.Gundlach KG.

Environmental Monitoring & Control Limited

EMC Limited is a leading manufacturer of solid electrolyte-based sensors, providing customers with fast, reliable sensor solutions, allowing them to reduce costs through improved process monitoring and control. EMC’s areas of expertise include molten metal applications, combustion and atmosphere control, solid oxide fuel cell monitoring and ceramic / glass processing.

Alspek H

Alspek H offers real time analysis of hydrogen dissolved in molten aluminium for the foundry and casthouse market. Suitable for routine shop floor analysis, continuous immersion, low pressure die casting and closed loop control of hydrogen when used with a foundry degassing unit.

EMC is currently developing a handheld version of the popular Alspek H analyser and probe for the aluminium foundry industry. This will provide a simple, affordable, highly portable solution for measuring hydrogen dissolved in molten aluminium. The analyser will be battery powered and will provide basic measurement functionality. Working prototypes are already in the industrial trials phase.

For further details contact Alexander Saam on Cell 060 972 7505, email alexander.saam@silca-sa.com or visit www.silca-online.com
The New Global Standard in Sand Testing Technology

To achieve the highest casting quality and lowest costs of operation, modern foundries demand analytical laboratory instrumentation that is accurate, easy to use and maintain, dependable and offers repeatable results.

Simpson combined the best of the former +GF+/DISA and Simpson/Gerosa product lines to form Simpson Analytics, which has become the world’s most popular standard in foundry sand testing technology. Foundries, raw material suppliers and research universities in more than 50 countries recognize Simpson Analytics as being superior to all other alternatives by offering technology that is –

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Over 70 instruments are available, most in both AFS and DIN testing standards, to test any characteristic of molding sand or raw materials. For our catalog and videos of machine operation visit www.simpsongroup.com or contact our representative listed below or our main office at sales.ch@simpsongroup.com.

For service, calibration or spare parts for your existing +GF+/DISA equipment contact service@simpsongroup.com.

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The National Association of Automotive Component and Allied Manufacturers of South Africa says high levels of industry participation in the Naacam Show, will ensure that it makes a significant contribution to increasing levels of localisation in the automotive value chain.

Naacam President Dave Coffey said since its launch in July last year that almost half of all exhibition space had been secured by a range of suppliers, including Tier 1 manufacturers and that prominent speakers, including several local OEM CEOs, would address conference delegates on topics ranging from automotive policy, transformation, trade in Africa, localisation, leadership, the future of the automobile, tooling to manufacturing best practices.

“We are encouraged by the level of commitment from the supply base and especially the higher tier suppliers who have the potential not only to provide locally made components to OEM and other clients but to also source products previously imported from lower tier suppliers.”

“The rate at which the industry is registering for all the activities of the Naacam Show, demonstrates a strong appetite and resolve from the entire automotive value chain to unite and explore the opportunities to grow the sector,” Coffey said.

The Naacam Show is scheduled for 5 to 7 April 2017 and being held at the Durban ICC will be run in conjunction with the Durban Automotive Cluster’s National Localisation Indaba.

“Higher volumes along with deeper localisation in the value chain facilitate competitiveness and economies of scale resulting in greater manufacturing output, job creation and an improved trade balance which are key to our economy. In addition an important element of the show will be the strong presence of Black suppliers showcasing their capabilities in order to facilitate trade with Tier1 and other Tier suppliers,” says Coffey.

“Naacam fully supports government’s long-term objectives for the South African automotive industry, namely the production of high-volume, high-quality vehicles at a competitive cost and with deeper levels of local content. The Naacam Show, which will showcase the total supply chain — Naacam members and non-members alike — is designed to assist in achieving these objectives.” Coffey said.

A large-scale exhibition, automotive industry conference, learning tour and The Durban Automotive Cluster’s (DAC) National Localisation Indaba are key features of the effort, says Coffey.

Buyer-Supplier Linkage meetings are facilitated free of charge to all SA domiciled manufacturers and buyers who are registered to attend the Naacam Show incorporating the DAC National Localisation Indaba.

The meetings (facilitated between OEMs, Tier 1s, Tier 2s and Tier 3s) facilitate both short and long term localisation opportunities. They will take place in private meeting rooms throughout the duration of the Naacam Show.

In partnership with the Durban Automotive Cluster (DAC) and the National Localisation Indaba, the Naacam Show provides South African component suppliers the opportunity to demonstrate their capabilities, network and do business with local and foreign, existing and potential customers.

Automotive manufacturing is a mainstay of South Africa’s industrial base, contributing 7.2% of GDP, 30.2% of manufacturing output and 11.7% of South African exports (source — AIEC).

While the sector produces around 600,000 vehicles a year, supporting more than 100,000 manufacturing jobs, Naamsa President Mike Whitfield has forecast its contribution to GDP to rise to 10% by 2020.

More information is available at www.naacamshow.co.za
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The world’s oldest bell foundry, which made Big Ben and Liberty Bell, is closing after 500 years in business. The Whitechapel Bell Foundry, based in London’s Whitechapel area, has long been the international centre for bespoke bells but the family run business has announced it is now set to close due to the “changing realities” of running a niche business.

Listed in the Guinness World Records as the oldest manufacturing firm in Britain, the company was formed in 1570 in the reign of Elizabeth I. The family business, which has had close links to the Royal family, is set to close its doors in May.

Owners Alan and Kathryn Hughes said it was with a “heavy heart” they have taken the decision to close the business.

It comes as the company saw renewed success due to the hit drama Downton Abbey which saw a surge in orders from American fans for table bells that were traditionally used to ring for tea.

Despite diversifying into manufacturing doorbells and creating an online store a few years ago, the owners have taken the difficult decision to close the firm.

“We have made this decision with a heavy heart, but in response to the changing realities of running a business of this kind. The Bell Foundry in Whitechapel has changed hands many times, but it has always been a family business,” Mr Hughes said.

“My own family has owned the foundry since 1904, but other families have run the firm through its history, which stretches back to 1570. Whitechapel Bell Foundry will cease its activities at the Whitechapel Road site where it has been since 1738 in May 2017.”

“We will complete work on all projects presently in hand during the coming months but will not be entering into new contracts for the time being while discussions with the company’s staff and other interested parties regarding the future direction, ownership, and location of the company are ongoing.”

“The business has been at its present site over 250 years. So it is probably about time it moved once again. We hope that this will provide an opportunity for the business to move forward in a new direction.”

The mould for Big Ben still hangs on the wall of the foundry. It was the largest bell ever cast by the firm in 1858, weighing 13 and a half tons.

The Whitechapel Bell Foundry is responsible for many acclaimed bells worldwide, from creating the Liberty Bell in Philadelphia in 1752 to bells for St Mary’s Cathedral in Sydney and the US National Cathedral in Washington.

More recently, it cast the “Royal Jubilee Bells”, a set of eight bells featured in the Thames Diamond Jubilee Pageant.
in 2012 that now hang in the church of St James Garlickhythe in the City of London.

Following September 11, the firm was the first choice to create a lasting tribute of a bell to mark the tragedy as a gift from London to New York.

Members of the Royal Family, including the Queen and Prince Charles, have conducted a number of visits to the foundry.

It has been several centuries since the boom years of bell making, yet the foundry has found ways of adapting to modern times by making traditional doorbells, popular among people restoring Victorian properties. The Downton effect has seen a third of its business exported overseas.

However, quality craftsmanship takes time. The average time from enquiry to order is 11 years, and the longest commission in the foundry’s history took 100 years to produce.

Order to installation takes another year, and a major project could cost as much as £250,000 to produce.

Mr Hughes, who learnt the craft from his father, previously told the Telegraph newspaper: “We’ve survived because we produced stuff that people want. That means constantly adapting. You do not remain in business if you keep saying no. Twenty years ago we didn’t provide any doorbells.”

“We are a tiny market. And at the end of the day, there aren’t many churches being built now, but people still love the sound of bells and that’s what has kept us going.”

The firm has been at its premises on Whitechapel Road since 1670, previously a coaching inn called the Artichoke that was damaged in the Great Fire of London.
Hüttenes-Albertus’ 20-year success story

Twenty years ago, researchers at Hüttenes-Albertus achieved a decisive break-through in improving the environmental properties of the cold box binder system. By using biodiesel as a solvent, benzene, toluene and xylene (BTX) emissions could be significantly reduced—an invention that is continuing its success in foundries to this day.

For some decades, the cold box system has been one of the most prevailing core production processes. It meets many key requirements that foundries have, particularly for automated series production: high productivity through quick curing, high strengths at a low dosage as well as high-quality castings due to good thermal resistance and good collapse behaviour.

Although the cold-box system offers many economic and manufacturing benefits, there is, however, one downside to it: emissions generated during core production and casting burden the natural and workplace environments.

Rapeseed oil reduces BTX emissions
Researchers at Hüttenes-Albertus (HA) successfully tackled this problem. 20 years ago, HA chemists, Dr. Marek Torbus and Gerard Ladégourdie, managed to improve the environmental compatibility of the Cold-Box binder system by substituting the aromatic solvents that were normally used with fatty acid methyl esters (biodiesel). This helped to reduce BTX emissions significantly—both during core production and also during casting.

The modified cold-box system with solvents on the basis of vegetable oil offered clear advantages and became a success story that still continues today. As the inventor of the environmentally friendly binder system, Hüttenes-Albertus can now look back on 20 years of experience and expertise.

Further benefits: less amine, less release agent
In addition to the clear benefit for the environment and work place, the system also offers a number of other advantages: the biodiesel-based cold-box variant is highly reactive, which reduces the consumption of amine as a catalyst.

Moreover, it has an excellent release effect, i.e. it has a lower tendency to stick to the core tool surface than a cold-box binder on the basis of aromatic solvents. For foundries, this means improved efficiency, since less release agent is needed. Plus, the cleaning intervals are longer, which contributes to higher productivity.

Aliphatic instead of aromatic solvents
The cold-box process is based on the formation of polyurethane from two components, which are added to the core sand: a phenolic resin (also called gas resin or part 1) and an activator (part 2, polyisocyanate). A tertiary amine is used to catalyse the polymerisation reaction of these two components.

The reactive components of part 1 and part 2 are available in dissolved form. The solvents contained in these components ensure sufficient liquidity of the product and serve as a carrier medium to provide good mixability with the sand. In addition, they control key properties, such as the sand bench life, feasibility of using water-based coatings, moisture resistance of the cores and collapse behaviour.

Traditionally, aromatic hydrocarbons were used as a solvent. As a result of the thermal load during the casting process, they have the disadvantage of producing undesired decomposition products (particularly BTX) that are emitted into the air. Aliphatic solvents based on fatty acid methyl esters (e.g. from rapeseed oil) considerably reduce the level of harmful emissions, both in iron and aluminium casting.

Renewable resource
Biodiesel is made from renewable resources. Meeting all physical requirements for a solvent to be used in polyurethane binding systems, it is a starting product that is odourless and non-hazardous to health. Moreover, biodiesel is not classified as flammable, which simplifies transportation and storage.

For further details contact SI Group SA on TEL: 011 389 8200 or visit www.siigroup.com or www.huetttenes-albertus.com

Elkem buys iron foundry alloy business of Minex

Elkem has acquired the iron foundry business of the Indian Company Minex Metallurgical Co. Ltd, a leading provider of speciality alloys.

Based in Norway, Elkem AS is one of the world’s leading companies for environmentally responsible production of materials. Its principal products are silicon, silicones, ferrosilicon, foundry alloys, carbon materials and microsilica.

Elkem AS is a global leader in metal treatment solutions to the cast iron industry and a supplier of high quality special ferrosilicon to the steel industry. This acquisition will strengthen Elkem’s strategic position building upon the existing competence, manufacturing high quality and consistent products, strong technical customer service, technology and R&D.

“We have been present in India for the last three decades and getting a manufacturing footprint allows us to leverage our strengths of quality products and technical service with local production. This acquisition is a commitment from Elkem to India’s iron foundries and we will continue to offer technical services to help our customers improve their products and processes, enabling them to be more competitive,” said Roland Hennigfeld, Global Sales and Marketing Director in Elkem.

Elkem AS will acquire direct control of Minex Metallurgical Co. Ltd’s iron foundry alloy business including the Hingna plant, its sales and marketing organisation, its distribution network across India as well as the R&D Facility at Hingna. This acquisition does not include the Minex cored wire business.

For further details contact Ceramic & Alloy Specialists on TEL: 011 894 3039 or visit www.ceramicalloy.co.za
The dosing furnace “Westomat Plus+” recently won the renowned “Good Design Award” of the Chicago Athenaeum Museum of Architecture and Design, putting it in line with lifestyle products such as Apple’s “iPhone”.

“Demands can be made to improve the working environment in light metal foundries too,” said Rudi Riedel, manager of the StrikoWestofen company that makes the furnaces.

In practice, the design of mechanical designer Jürgen R. Schmid also excelled with regard to its technical values. The Westomat Plus+ consumes only one third of the energy required by conventional ladle systems. At 0.06 per cent, its metal loss has also been reduced dramatically.

“We not only make the foundry cleaner and more attractive but we also make it greener too. In this way, we are initiating a positive change of image for the foundry industry.”

The Westomat Plus+ can do more than just look good is also proved by a look inside. On the basis of thousands of examples of customer experience, every technical detail of the dosing furnace was tested. Now its more compact design gives it a smaller footprint in the production facility, while the optimised insulation distinctly minimises the heat radiated.

“Working in the ‘hot hell’ has now become a thing of the past,” Riedel emphasises.

“A new pneumatic unit makes the dosing furnace especially reliable and easy to maintain. In place of the usual heating rods, StrikoWestofen relies on overhead heating. This is easy to replace and ensures a service life that is up to three times longer than before. Additional time savings are allowed by the ease of charging using an enlarged funnel as well as the rapid installation and setting up of the system.”

“The Westomat Plus+ is delivered with the base frame already installed. It is optionally available in a fully encased version, thus reducing pinch points and increasing safety around the furnace. Also, the installation of a lift/tilt cylinder ensures that the frame can be tilted in any desired position. Cleaning and emptying are possible at all times.”

“We want to offer foundries technology that provides for a modern and efficient production environment. In this way, we create a friendly working environment and turn our systems into flagships for foundries. This will convince our customers’ customers too,” said Riedel.

For further details contact Ceramic & Alloy Specialists on TEL: 011 894 3039 or visit www.ceramicalloy.co.za

- high material flexibility for low cost operation
- high quality iron grades
- 5-100 t/h melting capacity in 1, 2 or 3 shift operation
- heat recovery from excess energy
- low dust and gas emission, no odors
Küttner Schwingtechnik and Savelli Technologies complete Küttners global foundry platform in the field of green sand moulding and vibrating equipment

Küttner Group has expanded its global foundry platform by adding two new companies for vibrating and moulding equipment that perfectly complete the key activity of Küttner. Each company has a traditional and high tech expertise in its field — with all necessary competences for the design, fabrication/assembly, installation and commissioning services. The companies will be integrated in the field of sales, project development and later realisation but will remain independent with its own management. This strategic expansion enables Küttner to provide entire green sand moulding foundries, from melting, sand preparation via moulding up to shake out, castings cooling and conveying.

Küttner has been building material handling systems for foundries using vibrating equipment from various partners for 70 years. During the past few years Küttner, in cooperation with the Austrian vibrating equipment manufacturer IFE, has built and installed a new generation of all relevant foundry machines like electronic controlled shake-outs, castings cooler and other special machines. As result of this successful cooperation IFE and Küttner have established Küttner Schwingtechnik, a new joint organisation with offices in Essen, Germany and Waidhofen, Austria. The Waidhofen operation uses the existing infrastructure and capabilities for design and fabrication of tailor made foundry equipment and services.

Küttner has also become a major shareholder of Savelli Technologies, which was founded by Francesco Savelli and his partners Boldi, Botticini, Gilberti and Tura. Savelli Technologies S.r.L. has hired the most experienced employees of the old Savelli S.p.A. enabling the team to design, build, install and start-up complete moulding plants. Savelli Technologies is based in Brescia, Italy with modern offices located in Tre Torri building and an own assembly, spare parts and service shop. In its first year Savelli Technologies was awarded with orders from Russia, Korea and Poland for new generation moulding and green sand preparation equipment.

For further details contact Küttner South Africa on 082 822 6128 or visit www.kuettnner.com or www.savellitech.it

Allied Mineral buying monolithics, precast shape manufacturer

Refractories manufacturer Allied Mineral Products Inc. has announced it plans to buy Pryor Giggey Co., a manufacturer of monolithic refractory products and precast shapes. No price has been reported for the purchase. Both companies are employee-owned. The buyer indicated that business would continue to be conducted without change for both companies in the near term.

"Pryor Giggey’s workforce, product line and manufacturing locations in the US will be great additions to Allied," according to Jon R. Tabor, president and CEO.

Allied Mineral Products manufactures monolithic refractories and precast, pre-fired refractory shapes at 12 plants in seven countries. It also has two R&D centres. In the US, Allied manufactures at its headquarters location in Columbus and in Brownsville, TX.

Allied Mineral Products refractory brands include American Precast Refractories, Chicago Fire Brick, and Matrix Refractories.

Pryor Giggey manufactures monolithic refractories and precast shapes at plants in Anniston, AL, and Chehalis, WA, US. According to its announcement, Allied Mineral plans to expand these operations “in the near future.”

“This acquisition will allow Allied to be more agile in supplying customers in the Southeast and West Coast while providing a new global platform for Pryor Giggey products. We will leverage our strengths to benefit both Allied and Pryor Giggey customers,” Tabor added.

Mike Chieppor, president of Pryor Giggey Co., said that the company’s standards for customer service and its product line “will fit perfectly with Allied and how they do business.”

For further details visit www.alliedmineral.com
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 produces a variety of market leading brands including: Superwool® low bio-persistent insulating fibre, Pyro-Bloc® modules, Min-K®, WDS® and BTU-BLOCK™ microporous and JM™, K® and TJM™ Insulating Firebricks (IFBs).
**President of Institute of Indian Foundrymen calls for import of key raw materials to be duty-free for foundry sector**

In an interview with Indian newspaper Business Standard, Anil Vaswani, President of the Institute of Indian Foundrymen has called for the import of key raw materials to be duty-free for foundry sector.

“The Indian foundry sector is the feeder industry to the manufacturing sector as it supports sectors like auto, auto components, railways, electric, cement and others that are the major contributors to India’s GDP.”

“The Indian foundry industry is third largest globally with revenue at US $18 billion and exports of approximately US $2.7 billion. It employs directly and indirectly two million. Over the last few years the Indian foundry industry has gradually risen from the fifth to the second largest producer of castings globally.”

“The Government of India is taking several steps to promote Make in India, skill development and ease of doing business. To support Make in India, the foundry sector will need to grow to at least three fold in next 10 years. Although, the auto and capital goods sectors have already drawn very ambitious mission plans but, that cannot be realised in full measure without corresponding growth of foundry sector.”

“The auto sector has envisaged to grow to US $300 billion by 2026 under the New Automotive Mission plan and the Capital Goods Policy envisages the sector to grow from US $35 billion to US $115 billion by 2025 providing new job opportunities to about 22 million. Even if these goals are achieved partly, it will augur well for the foundry sector and will drive demand for castings.”

**Hurdles up ahead**

“There are however many challenges that the foundry industry faces. The sector faces the shortage of good training facilities, as there is only one national level institute, i.e. NIFFT Ranchi (National Institute of Foundry and Forge Technology) that was established in 1966. During the last five decades there have been revolutionary changes in technologies therefore there is the need to upgrade the NIFFT. Government also needs to consider the requirements of the industry and should establish at least two modern institutes. Similarly polytechnics and ITI near major foundry clusters need modernisation to meet future skilling needs.”

“Environment costs are increasing day by day. There is a need to promote recycling and efficient use of resources and energy for climate change mitigation. However, the Government needs to augment and support the industry willing to invest in more environment friendly technology and equipment, energy efficient equipment and recycling.”

“Lack of new technology is another major challenge faced by the industry. While some units are world-class, many need to invest in new technology to become globally competitive. New technologies such as 3D printing, robotics, automation, increased use of IT in design and manufacturing needs to be acknowledged. Government should establish a technology upgrade fund for the foundry sector to promote investments in new technologies.”

“Uninterrupted power supplied at a competitive price is also a big challenge. The industry is being made to pay for inefficient distribution system and for cross subsidies. As such the cost competitiveness of the foundries is eroded substantially and this makes the operation of foundries running at low margins unviable and makes it impossible to invest in new technologies.”

**Import duties on key raw materials**

“The import of key raw materials should be made duty free so that the impact of devaluation of the Indian Rupee is offset to some extent. In fact some of the raw materials such as metal scrap were allowed to be imported duty free. However, subsequently import duties were imposed on these and the falling Indian Rupee resulted in a further impact on the cost of imports of these raw materials. The average duties on raw materials for foundries in India are higher than those in competing countries, which results in a cost disadvantage to Indian foundries as compared to foundries in the competing countries effecting the global cost competitiveness of Indian foundries.”

**Definition of MSMEs**

“The definition of MSME was amended nine years back regarding the cap in investments in plant and machinery. The cost of equipment has gone up steeply over the last seven years and as such the limits in investment in plant and machinery for classification of units in micro, small and medium category has become obsolete and therefore need to be relooked.”

**Technology upgrade fund for foundries**

“The technology and processes in the foundry sector over the last few decades have changed radically and the technologies adopted today will become outdated in next 5-7 years. Moreover, the average production in the Indian foundry is smaller as compared to foundries in other countries (almost 1/7th of average of German Foundries). Therefore the foundries will have to not only upgrade periodically in various areas but also need to scale up production to achieve global competitiveness.”

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**ASK Chemicals to build binder, coating and riser sleeve plant in Mexico**

ASK Chemicals has approved the construction of a Mexican production facility in the Monterrey area that will produce binders, refractory coatings, and riser sleeves for the growing Mexican foundry industry.

The facility will be strategically located in Monterrey in the wake of a thorough analysis of current and future foundry customers. The new plant will produce cold box and no bake binders, refractory based coatings, and EXACTCAST riser sleeves. The new Mexican plant will complement ASK Chemicals’ existing facilities in the United States, bringing its portfolio of foundry solutions alongside the Mexican foundries.

ASK will co-locate development laboratories to bring the company’s longstanding record of innovation closer to the growing Mexican market. The facility is due to be completed in the fourth quarter of 2017, with production commencing immediately.

ASK Chemicals will install binder capacity in excess of 30 000 metric tons to fully meet all current and future growth of the Mexican market. The company’s coatings plant will be built to produce 10 000 metric tons. Given the strong growth of the Mexican casting market, the foundry supplier will install infrastructure for multiple riser sleeve machines with an initial capacity of more than 5 000 000 pieces.
Altair wins Airbus benchmarking competition

HyperMesh® and HyperView® to become company's pre- and post-processing tools — new agreement enables worldwide employment of HyperWorks® solutions in Airbus aircraft.

Altair has won a benchmarking competition, and as a result Airbus will implement a new pre- and post processing tool based on Altair’s solutions HyperMesh and HyperView as the new platform worldwide. The benchmarking competition, which was initiated by Airbus in early 2016, has led to this agreement between Altair and Airbus.

The agreement confirms the worldwide Airbus aircraft migration to HyperWorks Desktop. It demonstrates Altair’s competencies in pre- and post-processing and confirms Altair’s position as a major player in the Aerospace industry.

The agreement will enable a worldwide employment of the HyperWorks Desktop solutions in all Airbus aircraft, effective immediately. In addition to providing the aforementioned solutions, Altair has also committed to dedicated support of the Airbus teams, which includes:

- Tighter collaboration between Airbus and Altair teams, to set up a deployment roadmap for integration of Altair solutions in Airbus aircraft.
- Customisation of Altair software according to Airbus' needs and requirements.
- Training of the Airbus Teams on HyperMesh and HyperView.

"We are very happy that Altair won this Airbus benchmarking competition and are now supplying HyperMesh and HyperView to Airbus as their preferred pre- and post-processing solutions," said Dr. Detlef Schneider, Senior Vice President EMEA Operations at Altair.

“The agreement proves our position in the aerospace industry as a key provider of high-end simulation and development solutions. It also complements and tightly aligns with the long term consulting collaboration between Airbus and Altair ProductDesign.”

Altair ProductDesign supports a wide range of industries with engineering consulting and staffing services to help bring the company's clients’ products to market faster. Over the past decade, Altair ProductDesign has been supporting Airbus innovations and delivered efficiencies in “Time Compression” and therefore associated cost reduction, driven by synergies between Altair’s engineering services and software development teams. Based on an in depth understanding of the Airbus activities, Altair has proposed a number of innovations to provide best-in-class pre- and post-processing tools, to reduce the model build process and to improve process efficiency.

For further details contact Fiona Richardson or Gronum Smith of Altair South Africa on TEL: 021 831 1500, email frichardson@altair.co.za or visit www.altair.com
In today's modern production technology you will find many processes, solutions and options to handle different work pieces in surface technology. The miscellaneous industrial applications in this special technology sector deal with the surface of solid matter.

Manufacturers and suppliers of surface preparation equipment and solutions are knowledgeable companies with a deep comprehension of material handling, surface conditions and demands. The Pangborn Group is as a worldwide positioned manufacturer and an innovator in this special field of technology since 1873 and designs and markets its products (blast cleaning and peening equipment, integrated surface preparation systems and associated replacement parts, and service programmes) throughout the world to industries that prepare the surfaces of metal and other products.

Nearly all areas of steel industries, even if it is the foundry industry, the automotive or shipyard industry or energy and power industry need tailor-made solutions for their special requirements in surface preparing, cleaning or finishing of parts before undergoing further processing. There are many kinds of surface preparation, such as peening, deburring, cleaning, hardening, paint stripping, roughening or sand removal. Best suitable applications for all those kinds for preparing work pieces are wheel and air blasting technologies.

Wheel blasting - a wheel uses centrifugal force to propel the abrasive against the surface of an object. It is typically categorised as an airless blasting operation. Wheel machines are high-powered high-efficiency blasting operations with recyclable abrasive (steel or stainless steel shot, cut wire or similar). The machine size and the number and power of the wheels depends on the parts to be blasted as well as on the expected result and efficiency.

Air blasting - this special operating technology is more focused on highly sensitive parts and work pieces. Often used in the automotive industry for its special small dimensional components (gear parts or shafts) or even inside cleaning for engine blocks. This kind of machine works with air blast nozzles in different versions and flexible handling. The nozzles are made for really precise cleaning and peening in all directions of a work piece.

Both wheel and air blasting are reliable, repeatedly proven methods of treatment offering decisive economical and ecological advantages. In addition to wheel blast and air blast equipment, the Pangborn Group offers complete air blast rooms to handle large and difficult pieces. All air blast rooms are completely self-contained incorporating their own abrasive recycling and environmental control systems.

Pangborn Group’s engineers are able to design for all of the before mentioned techniques and purposes customised and tailor made machinery. It doesn’t matter if the dimension of wished solutions is huge or small or to integrate into an existing production line or as a standalone process. Pangborn Group’s engineers just need to know which kind of work piece should be prepared. Depending on what kind of solution the customer needs then the engineering process can begin.

For further details contact Mondeco Solutions on 079 448 1277 or visit www.mondeco.co.za or www.pangborngroup.com
Installation of dosing furnaces with Insural*

The solution for a dosing furnace is completely dry installation with Insural*. Precast shapes and high insulating backing materials offer huge energy savings, no sintering, low density index of the melt immediately and easy cleaning,” says Arndt Fröscher, Foseco Europe and Jens Ohm, Foseco Germany.

Quicker availability

A market analysis amongst Foseco customers showed clearly that there is a strong need for optimisation in terms of cleaning and avoidance of corundum growth. To solve these problems, extended trials with different Insural recipes have been made.

Foseco now offers a completely dry installation with Insural precast shapes that provide a number of benefits:

- Installation in the foundry is possible
- No sintering process needed
- The desired density index of the melt can be achieved much quicker
- The growth of corundum is reduced to a minimum
- Easy cleaning
- Huge energy savings

To the precast shapes belongs a launder, which holds the molten metal and two roof plates, two heating element plates and six tubes for the heating elements. All elements will be assembled without plaster or glue. Untrained operators could undertake the installation within 65-70 working hours (depending on circumstances). There is no need for special tools.

The area of the heating elements with separated plates and tubes is no longer sensible for cracks. The changing of heating elements is simplified.

The Insural precast shapes are installed together with a high insulating backing material. High insulating plates are installed on the inside of the steel shell. The gap between the plates and the Insural piece is filled with a high insulating bulk material. The heating is separated with plates.

As no plaster is in use, parts of the backing materials can be reused in the following installation. After the installation, the furnace can be switched on and is ready to use after achieving the desired working temperature.

Depending on the quality requirements, the density index of the melt plays an important role. Due to the dry installation, the required density index can be achieved much quicker than usual.

The use of the Insural material provides a minimised corundum build-up and easy cleaning due to its non-wetting ability.

An alloy change in the furnace is possible at any time. The only need is a cleaning process with only one flushing batch.

As Insural has a good insulating property, it is the basic material for the concept. A case study shows that a dosing furnace with a capacity of 650kg can be heated up to 720°C within 11 hours.

Measurement of the power consumption shows the reduced energy requirement (up to 17 per cent). The heating element stays on the lowest level for 98 per cent of the time (positive for low corundum growth). This fact also reduces the energy consumption in the standby stage (on weekends etc.).

Another case study with a dosing furnace with a capacity of 1050kg shows an energy saving of approximately 80kW/h per day. This high value is obviously caused by the high melt temperature of 780°C.

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

* Insural is a Trade Mark of the Vesuvius Group, registered in certain countries, used under licence.
Proceq has introduced its Equotip® Live IoT-based hardness tester that leverages smartphone and wireless technology to access data stored in the Cloud.

The new generation wireless impact device and mobile app — Equotip® Live — with real-time data sharing and cloud backup creates a new industry standard in portable hardness testing.

The world’s first full Internet of Things (IoT)/Industry 4.0 portable hardness testing solution, Equotip® Live, is the biggest innovation in hardness testing since the launch of the Equotip in 1975 says the company. Equotip Live has been developed for the Internet of Things by leveraging smartphone technology, today’s standard for powerful productivity apps and wireless technology, to eliminate the need for cables. It harnesses the cloud where data is stored and accessible from anywhere, just like with e-banking.

Equotip Live is simple to use and redefines intuitiveness in portable hardness testing. Reports can be shared immediately via the app or the secure Proceq Live cloud using any internet browser. Data can also be shared by email.

This Industry 4.0 NDT hardness tester also features centralised report template and profile management, along with full data traceability, logbooks and continuous cloud backup to prevent data loss.

For more information, contact your nearest IMP Branch, Gauteng TEL: 011 916 5000, KwaZulu Natal TEL: 031 764 2821, Western Cape TEL: 021 852 6133, Eastern Cape TEL: 041 364 2544, Free State TEL: 018 293 3333, email info@imp.co.za or visit the website www.imp.co.za.

Hardness testing reinvented with the Internet of Things.
Spectro introduces new Spectroport portable arc/spark OES metals analyser

Delivers advanced OES technology in a unit as easy to use as a handheld.

Spectro Analytical Instruments has introduced the new Spectroport portable Arc/Spark Optical Emission Spectrometry (OES) metals analyser that delivers advanced OES technology in a unit that is as easy to use as a handheld analyser.

Spectroport delivers many advantages of Spectro’s flagship mobile Spectrotest OES analyser in a smaller, lighter unit featuring effortless point-and-shoot performance for fast, ready response, flexible portability, intuitive ease of use and minimal standardisation efforts.

Spectroport is as fast as a handheld XRF, with many analyses taking only a few seconds. But unlike the handheld XRF, it accurately analyses elements such as carbon, sulfur, phosphorus, boron, lithium, beryllium, calcium, silicon, magnesium, and aluminium at low and critical levels. Its new optical system covers a wide range of elemental wavelengths, displaying excellent precision, stability, and robustness without additional heating.

Spectroport offers flexible options to maximise mobility, including large and small transport trolleys plus portable batteries. For testing in difficult-to-reach places such as analysis of installed or small parts, thin wires, curved surfaces, or concealed welding seams, or for infrastructure control tasks Spectroport can be used cordlessly with a rechargeable battery pack.

Data management with Spectroport is flexible and comprehensive. Advanced tools accurately and definitively verify, record, and document complete testing results. Data can be delivered to a wide variety of devices via WebApp and PC connections from WLAN/LAN to USB.

Spectro’s Spark Analyser Pro software enables Spectroport users to quickly and easily define different testing modes, sample identification fields, and more. New preset applets perform much of the work and eliminate most errors. Simplified, predefined operator views eliminate unnecessary selections. Users are presented with clear choices for tasks such as pass/fail sorting and grade identification, via dedicated toolbar buttons.

Moreover, the need for repeated calibrations and their resulting delays are eliminated with predefined calibration packages and the new Spectro exclusive iCAL 2.0 calibration logic system that also helps maintain the same standardisation regardless of most temperature shifts.

Amecare services, available to Spectroport users, help ensure uninterrupted performance and maximum ROI over the life of Spectro spectrometers. Optional machine-to-machine (M2M) support allows proactive alerts, backed up by client connection with a remote Spectro service expert’s PC.

Spectroport is surprisingly affordable, features a continued low cost of ownership, and delivers all the reliability of Spectro, a leader in metals analysis, with more than 40 000 spectrometers worldwide. Spectroport is available from Spectro Analytical Instruments. For more information, visit http://www.spectro.com/spectroport or email spectro.info@ametek.com

For further details contact Spectro Analytical South Africa on TEL: 011 979 4241 or visit www.spectro.com
Future of casting

 Casting and forging measuring can be laborious and time consuming in the field unless new technologies are embraced and used. Optical measuring systems are at the forefront of new technologies in the industry and can save time and effort, while returning accurate information.

One of the latest innovations comes from optical measuring specialists, GOM, in Germany with the introduction of the ATOS 3D Digitiser. Using advanced camera technology in casting applications the ATOS allows full field measuring and fast validation of the object’s complete and complex surface rather than collecting a few points with a probe and leaving large unknown areas.

Local supplier

“The technology is based on the principle of triangulation and projects fringe patterns onto the object which are recorded by two cameras. The computer automatically calculates the 3D coordinates for each camera pixel of the scanned surfaces with very high precision and resolution,” says Aurelio Grech-Cumbo, CEO of RGC Engineering, the sole-distributor for GOM and Mitutoyo CMM’s in South Africa.

“Each individual measurement takes approximately 1-2 seconds and is automatically transformed to a common object coordinate system using previously applied reference points. During measurement, the software checks online for system calibration, sensor movement or any ambient changes that might affect the measurement.”

Data on the move

The ATOS 3D optical digitiser is mobile and can simply be transported to an object, so that heavy casts, tools and models can be easily inspected right away on-site in foundries, tool- and die-shops. Due to its design, the sensor head is built to perform in harsh and adverse production environments.

As a non-contact optical measuring device ATOS is also ideal to check sensitive sand cores before the casting process.

The measuring volume can be adapted to specific measuring tasks and object sizes within a few minutes by interchangeable lens sets. Due to this flexibility, the ATOS system is able to measure objects of various sizes, from filigree injection-moulding components to a complete aircraft. Turntables, robots or multiple axis motion units are available for automated measurement of multiple parts.

Software

A software suite called ATOS Professional Software is supplied with the ATOS Scanner and provides a number of functions essential for the casting industry. In addition to full field 3D shape and dimension analysis against CAD the software allows calculation of material thickness in order to check material allowance for further processing. It is possible to control size and position of basic primitives and also virtual calipers. Inspection sections with tolerance bands are available for small to large objects.

For documentation and further processing the ATOS Inspection Software includes enhanced reporting and documentation functions and interfaces in order to generate standard or customised 3D measuring reports or traditional tables with CMM points. Results and deviations can be exported to various formats such as Excel, HTML, Word, etc. For recurring measuring tasks the software evaluation can be automated using macros and scripting language.

GOM also provides a free GOM 3D inspection Software GOM Inspect and such measuring results can be easily shared with customers or colleagues from other departments.

Touching and probing

In the past, evaluation of optically hidden surfaces such as water jackets, cooling holes, deep pockets and deep cylinders, had to be measured on classical CMM’s, a process that is very time consuming due to necessary fixing and alignment of the parts.

The GOM Touch Probe as an Add-On to the ATOS 3D Digitiser helps to overcome this obstacle. The handheld Touch Probe enables the user to switch between 3D full-field measurement and online tactile probing of specific single points. A time consuming modification or rebuild of the sensor setup is not necessary.

The GOM touch probe is a calibrated set of point markers that are optically tracked by the ATOS 3D Digitising system measuring the online 3D coordinate of the calibrated probe tip.

A live inspection of points and primitives is available. Tactile probing of geometries such as planes, spheres, cylinders and cones as well as circular, slotted and rectangular holes and borderline segments is also possible. The Touch Probe allows fast point based probing against CAD to determine deviations to reference data also in difficult to access areas.

Lightweight

The Touch Probe allows effortless measurement over long periods and for larger measuring projects. A constant rigid mounting of the part such as on CMM’s is not necessary. Due to the dynamic referencing either part or sensor can be freely moved to find comfortable positions. The ATOS Software allows various alignment strategies at any time, while the mechanical and cable-free probe can be operated via a remote control.

An audio-feedback signals probed points and elements to guarantee a safe workflow and different touch probe sizes are available for small to large objects.

The modular concept of the GOM Touch Probe allows an adaption for many different applications via fast interchange of probe heads and extenders. In addition the user can create customised touch probes for specific tasks.

For further details contact RGC Engineering on TEL: 011 887 0800 or email: aurelio.grech-cumbo@rgcengineering.co.za
Oxford Instruments has launched Vulcan, the fastest metals analyser with the most advanced reporting tools on the market, the company says. Vulcan is an ergonomic, balanced handheld LIBS (Laser Induced Breakdown Spectroscopy) analyser with a simple user interface. Vulcan has been designed for the rapid identification of a wide range of alloys in manufacturing plants within multiple industries and the scrap metal processing/recycling markets worldwide.

Fast, accurate, durable
Oxford Instruments says its new Vulcan is the fastest metals analyser available, taking just one second to measure metal alloys — that’s faster than any XRF (X-ray fluorescence) analyser or any other laser product on the market. In quality control and quality assurance this means that large inventories of incoming raw materials or finished parts can be checked very quickly. Large quantities of scrap metal can be sorted in scrapyards easily and fast.

Vulcan offers high performance and guarantees very high accuracy and precision for its analysis results. For example, when analysing aluminium, it not only provides the commercial grade of aluminium but also its accurate chemical composition. As Vulcan is so simple to operate, possible user error has been significantly reduced if not almost completely eliminated, so the results obtained from analysis will be reliable and consistent.

Designed to be rugged and durable, Vulcan is splash water and dust proof (IP54 certified). In addition, Vulcan’s measurement window is protected by strong sapphire glass, meaning no punctured detectors and no expensive repairs.

The instrument has been designed to withstand harsh environments and is tough enough to be used in a scrapyard. In fact it is so strongly built that it complies with the MIL-STD-810G military grade standard for ruggedness.

Advanced, flexible data management
Vulcan uses the most advanced reporting tools on the market. Connection via Wi-Fi, to the Oxford Instruments OiConnect cloud service allows secure storage of results and reports. Alternatively, data can be downloaded to a computer or laptop on a USB stick. This means that all your data including measurement results, measurement tags, camera images and more can be saved in one safe location and accessed from any computer, anytime, from any location.

“Vulcan is a true revolution in the handheld metal analyser market. It delivers unparalleled speed, ease of use and ruggedness while still providing accurate and precise results for all common alloy types. Vulcan combines Oxford Instruments’ decades of experience in developing mobile and handheld elemental analysers with our market leading knowledge about handheld LIBS analysis,” said Mikko Järvikivi, Product Manager, Oxford Instruments.

Lower cost of ownership — no X-rays
XRF analysers require strict licensing and certification for training. As Vulcan is a laser tool, there is no need for staff to attend expensive and time consuming radiation classes meaning that users can start working with Vulcan quickly and easily. Running costs are also much lower than traditional handheld XRF units as there is no costly X-ray tube or detector replacements.

Smart cost-effective option
Vulcan Smart is a cost-effective option for the identification of steels and nickel alloys. It has been designed for ferrous applications and its performance is limited to stainless steels, tool steels, low alloy steels and nickel alloys. However, Vulcan Smart can be upgraded to include cobalt, copper, lead, tin, titanium and zinc calibrations.

For further information contact Jaco le Roux of United Scientific on 082 338 0193, email jaco@united-scientific.co.za or visit www.unitedscientific.co.za or www.oxford-instruments.com
Keep the inventors on your side

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Getting the most from your sand?

Today’s foundries are under increasing pressure to reduce costs and also lessen their impact on the environment. Omega’s Sand Reclamation processes for chemically bonded sand systems can help you with both.

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