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Hands on advice for successful sand reclamation

Maxion Wheels plant in South Africa recognised as among the best in the group; No retrenchments at Hillside aluminium smelter; Maxion Wheels to reduce the cost of non-quality with DataProphet’s Artificial Intelligence solution; Extension of the policy directive on the exportation of ferrous and non-ferrous waste and scrap metal; RAPDASA 20th Annual International Conference; Weir announces that upgrades are to start at Heavy Bay Foundry; Insimbi’s voluntary performance update and trading statement looking positive; DataProphet launches Artificial Intelligence computer vision system for quality control in manufacturing; Changes to board at SAIF; GIFA, METEC, THERMPROCESS and NEWCAST (GMTN 2019); South African exhibitors; Additional South African participation

Tracking trends for metalcasting; AMRC Castings enhances 3D sand printing capability; Foundry chemicals group ASK put up for sale – sources;

Hardness testing of metal components: DuraScan G5; New specialty inoculant for grey iron – Elkem; Sandman data analytics software; Sandvik additive manufacturing to advance binder jet manufacturing
Disruptive technologies – are they good for the foundry industry?

Industry in general sits on a precipice – an edge, a turning point, a revolution – one that is coming whether we want it or not. We’ve seen it before, and it has everything to do with technological advancements. They are already here, challenging old school thinking and disrupting industry in ways that force us to change our thinking. But there is a divide between those who embrace change and those who dig in their heels. The challenges of the future are not going away. Just look at how much industry has changed in the past 20 years. In order to exist rather than become extinct, we need to look at these new technologies that are taking hold in every aspect of life, let alone industry.

Take 3D printing as an example. The technology is flooding industry causing some casualties for those who have not adapted. Its hit areas like prototyping and pattern makers with devastating force. Those who didn’t update their equipment and processes are struggling, yet this is just the beginning. As the technology becomes more robust in the coming years, it will take over other areas causing more companies to close up shop. Will it take over everything? I don’t think so, not in the next five to 10 years. However, the technology is still evolving. We would do well to monitor 3D printing’s advancements and make sure not to discount it.

It is part of the ‘disruptive technologies’ era. Disruptive technologies offer major opportunities and headaches for manufacturers. A new study finds some manufacturers are ready to leverage cutting edge technologies while others are falling behind.

The MPI Disruptive Technologies in Manufacturing Study surveyed more than 400 executives at manufacturing companies around the globe and found that 88 per cent report that their industries and markets are vulnerable to disruptive technologies (29 per cent “extremely vulnerable” and 59 per cent “somewhat vulnerable”). 86 per cent report that their own companies are vulnerable to disruptive technologies (23 per cent “extremely vulnerable” and 63 per cent “somewhat vulnerable”). At the same time, these leaders have high hopes for new technologies along with concerns about how will they implement them.

With so much at stake – and with so much executive worry and hope – you might imagine that these leaders would have strategies in place to evaluate and implement emerging technologies at their firms. Yet less than half (49 per cent) have a company-wide strategy to evaluate emerging technologies, says the study. And a full 20 per cent are just now starting to develop such a strategy.

Other new technologies such as machine learning and big data are not disruptive but rather augmentations to your manufacturing business. Foundries can experience high levels of internal defects due to the complexity of the process. Embracing the digital transformation can only enhance your processes and ultimately your outcome. It is therefore encouraging to see Maxion Wheels South Africa (see stories further on in the magazine) embracing the new tools at their disposal to become leaders.

On the eve of the most important international exhibition for the foundry industry – GIFA (GMTN) 2019 – which takes place in Düsseldorf, Germany at the end of June 2019, it’s encouraging to note that the exhibition will again be well attended by South Africans. To date I have compiled a list of 102 names that I know of who have committed to attend. The amount might be down on the total number of South African visitors that attended the 2015 exhibition four years ago but it is still reassuring that so many are making the time to visit the exhibition and attend the conferences. More importantly more than half of the names on the list are those of foundry personnel.

I am sure the GIFA (GMTN) 2019 exhibitors are going to present a host of solutions that embrace these disruptive and new technologies. I can’t wait to see. The foundry industry could be on the brink of a very disruptive period in its history.

South African Institute of Foundrymen

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

Council Appointments for 2019

Chairperson – Glen Dikgale
Deputy Chairperson – Janley Kotze
Treasurer – Vacant
Other Directors – Enno Krueger, Nigel Pardoe and Didier Nyembwe
Elected Members – Kevin van Niekerk, Andrew McFarlane, John Taylor, Murray Speed, Nigel Brains

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Website: www.foundries.org.za

Executive Secretary
Tel: +27 (11) 559 6455;
Fax: +27 (11) 559 6526; email: mbiljon@uj.ac.za

Western Cape:
Phiwe Nene - Cell: 072 606 0913;
email: phiwe@live.com

Dates for future SAIF activities
07 June 2019 - SAIF Annual Award Gala Dinner
18:00 pm – 23:30 pm at Emperors Palace
14 November 2019 - SAIF Annual Golf Day for SAIF Members
09:00 am – 20:00 pm
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Sand and reclamation has become a necessity in no-bake operations, particularly given the current challenges regarding the cost and availability of new sand. Foundries can no longer afford to operate with new sand alone and most are exploring how best to economically integrate sand reclamation systems into their processes.

For a reclamation plant to realise the full value of a sand reclamation system, it must operate at optimal efficiency. Without the careful monitoring of outputs and control parameters in place, the foundry could risk an unacceptably high level of casting defects as well as lost production – and thus revenue.

What is ‘dry reclamation’

There are three main types of reclamation systems: Wet, thermal, and mechanical. For the purpose of this editorial, the focus is on mechanical reclamation of silica sand, specifically for ester-cured alkaline phenolic systems. Dry reclamation is fast emerging as the most accepted way to reclaim no-bake systems. There are nearly as many dry reclamation processes as there are individual manufacturers of dry reclamation equipment. Operating and installation costs vary widely, depending on what equipment is used and the ton per hour reclaimed.

The most popular techniques include the use of dry pans, jaw crushers, pneumatic scrubbers, vibratory screens, shot blasts, and fluidised beds, and many combinations thereof. Crushing and scrubbing operations are generally followed by an exhaust step to remove fines. Then a mechanical device is used to separate large particles, metallics, and various tramp materials.

A word of caution:
Although reclamation equipment may appear dusty or dirty, it is not a garbage disposal; it functions as a piece of processing equipment. Unfortunately, many foundry workers regard the sand heap as a convenient location to discard all sorts of trash. Reclaimers are not designed to remove garbage and this debris can result in clogged sand orifices, equipment malfunctions, and casting defects.

Factors to consider:

Resin content
Quite simply, the lower the resin content, the easier it is to reclaim the sand. This is because the more resin there is to remove, the more difficult it is to clean the sand. Operating with the lowest binder percentage (that still assures breakage-free core and mould handling) results in minimum material costs, maximum reclaimer efficiency, and the best possible casting.

Sand to metal ratio
The more binder burned off the sand by the casting operation, the easier it will be for the reclaimer to operate at maximum efficiency. Sand is an excellent thermal insulator. It transfers heat at a surprisingly slow rate and establishes very wide thermal gradients in the resin-bonded sand core or mould. As a result, heat from the metal rarely penetrates the sand to decompose the binder more than a couple of centimetres from the mould-metal surface. It is not unusual for sand less than 50mm away from a heavy casting section to be completely intact at shakeout.

While a sand-to-metal ratio of about 2.7:1 is considered optimum, this might not always be achievable. Ideally, foundries should aim to use as little chemically bonded sand as possible to produce the casting.

High pouring temperatures (excessive superheat), types of metals that are slow to solidify, thick casting sections, and configurations that naturally produce a low sand to metal ratio all decompose the binder to a greater extent – thus assisting in the reclamation process.

Type of sand
Certain sands reclaim better than others. For example, resin coatings are stripped more easily from round-grain sands than from angular grains. However, the scrubbing and grinding...
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inherent to the reclamation process tends to round off sharper types of sands (e.g. angular silica, olivine, and chromite). The newly created, less angular grains have a reduced surface area – that in turn requires less binder.

### Table 1

<table>
<thead>
<tr>
<th>Screen (micron)</th>
<th>Surface Area (g/m2)</th>
<th>Grains/435g (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/20</td>
<td>77.14</td>
<td>X1</td>
</tr>
<tr>
<td>20/30</td>
<td>108.88</td>
<td>X3</td>
</tr>
<tr>
<td>30/40</td>
<td>153.8</td>
<td>7</td>
</tr>
<tr>
<td>40/50</td>
<td>217.76</td>
<td>20</td>
</tr>
<tr>
<td>50/70</td>
<td>306.62</td>
<td>56</td>
</tr>
<tr>
<td>70/100</td>
<td>434.54</td>
<td>158</td>
</tr>
<tr>
<td>100/140</td>
<td>616.65</td>
<td>451</td>
</tr>
<tr>
<td>200/270</td>
<td>861.75</td>
<td>1265</td>
</tr>
<tr>
<td>270/pan</td>
<td>1132.72</td>
<td>2838</td>
</tr>
</tbody>
</table>

As indicated in Table 1, fine grains (i.e. typically those smaller than 140 mesh) have far more grains per kilogram and will have a much larger surface area than a kilogram of coarse particles. This means additional resin will be required. By keeping fines to a minimum, foundries can reduce the possibility of gas defects, which are the result of a combination of issues including reduced permeability, increased resin content, and higher Loss of Ignition (LOI).

**Additives**

Most additives, including iron oxide, kaolinite, clay, zircon, and olivine flours, serve a refractory function. But as they help break the resin coating away from the grain, they produce a dusty material, high in binder content as a result. This must also be removed, increasing the load on the reclaimer’s dust collector.

**Type of binder systems**

In order to examine how specific binder properties influence reclamation capabilities, it is useful to classify no-bake binder systems according to their chemical characteristics. The two main systems are acid-catalysed furans and ester-cured phenolics and phenolic urethanes (e.g. cold box and PepSet).

1. **Acid-catalysed furans and phenolics**

   How easily the acid-catalysed furans and phenolics are to reclaim depends primarily on how much resin is used to bond the sand and how much resin is burned away by casting operations.

   Experimental data and experience indicate that both furans and phenolics are quite thermally stable. Since phenolics tend to resist decomposition more than furans, they should be more difficult to reclaim. However, the phenolic coating is more brittle, so both the intact and partially burned binder chips away from the grains easier than the furans. The net result is that furans and phenolics dry reclaim equally well.

2. **Phenolic-urethanes**

   Phenolic-urethane resin systems are diluted (extended) with a solvent, which lowers viscosity. When used at their recommended levels, only a very minimal coating is placed on the sand grains. Since some of the solvent evaporates after coating, this reduces the already low percentage of resin that needs to be removed. This type of coating is also rather brittle, so it chips away easily from the sand grain surface. The combination of the extremely low binder content and the brittleness of the coating makes this group of noble resins extremely easy to reclaim via mechanical techniques.

**Silica sand mixed with other sands**

When chromite sand is reclaimed (or is present in the reclaimed silica sand system) it requires special attention. Chromite sand is normally used in combination with silica sand to produce surface chill or to promote directional solidification. During the recycling steps of the reclamation process, the chrome and silica become thoroughly blended, unless some separation device is used.

The amount of chromite present in the silica system varies. Anything between <1% to more than 50% chromite are the normally encountered extremes found in chrome-silica mixtures. Research in South Africa several years ago reported that when fine particles of silica are mixed with chromite sand at silica levels from 1% to 7%, the refractoriness of the blend is lowered considerably and the defect of sand burn-in occurs on the casting surface. Fortunately, since chromite is the smaller portion of the usual system, the opposite situation (i.e. with low concentrations of fine particle silica) is unlikely to cause the silica-chromite burn-in.

Elemental iron (Fe) accounts for about 20% by weight of the chemical composition of foundry-type chromite sand. At elevated temperatures, and in an oxygen containing atmosphere, Fe oxides and chromite sand increase in weight. Because of this increase in weight during the LOI test, standard LOI testing cannot be run on chromite sand or chrome-silica mixtures. This change partially makes up for some of the weight loss because of the binder being burned off.

One final aspect of reclaiming mixtures of silica with chromite, zinc, or olivine is that these minerals are denser than the silica sand. This often results in the sand’s fines being more difficult to remove from the mass by standard exhaust techniques. The density of the mixture of non-silica minerals and silica sand goes up as the proportion of the non-silica sand to silica increases. This greater density mixture generally requires a lower resin percentage by weight to completely coat the grains.

**What you should be measuring**

Even though each foundry is unique in its operation, the types of castings used, and mould making procedures, the fundamentals are still the same. It is imperative that each foundry keeps track and records its unique reclaimed sand specifications. The quality of any new sand also plays an important role as ‘garbage in’ definitely equals ‘garbage out’.

The following parameters are all factors to consider during the reclamation process as they each impact on the reclaimed sand’s suitability in the production process.

**Return sand temperature:** Heat from the molten metal and the reclamation process itself increases sand temperature. Before sand can be coated again, this must be lowered to a reasonable level. Any temperature in excess of 35°C complicates the recoating operation significantly. As the temperature of the sand increases above the ideal operating temperature (as listed in Table 2) these problems become more and more serious. Many people will not accept a recoating temperature higher than 10°C degrees above ambient (or average room temperature).

### Table 2

<table>
<thead>
<tr>
<th>Resin System</th>
<th>Temperature degrees C</th>
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<tbody>
<tr>
<td>Furan Acid</td>
<td>26.7 - 29.4</td>
</tr>
<tr>
<td>Alkaline Phenolic</td>
<td>20 - 29</td>
</tr>
<tr>
<td>Phenolic Urethane</td>
<td>23.9 - 26.7</td>
</tr>
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</table>
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**Screen analysis:** The screen distribution for reclaimed sand will usually show that the very coarse and the very fine particles have been removed. Ideally a plot of the screen distribution should appear similar to that shown in Figure 1, when compared to the original sand. Fines (grains less than 140 mesh) should be held to less than 1%. Agglomerated or compound grains (found on the 40 mesh or above screen) should be less than 3%.

**pH:** The pH (negative log of the hydrogen ion content) is a kind of chemical shorthand that uses numbers to express the acid, neutral, or basic state of a material. pH also indicates just how acidic or basic (alkaline) it is. As shown in Table 3 a pH of 7 is neutral. Less than 7 is acid: The lower the number the more acidic. More than 7 is basic: The higher the number the more basic.

**Reclaiming for quality and cost control**

It’s important to treat reclamation as an on-going process. Things can – and do – go awry quickly. This makes monitoring and testing of reclaimed sand crucial to ensuring consistent quality. These tests also enable individual foundries to establish a unique ‘fingerprint’ of the reclaimed sand that works best for their specific operations.

For many foundries, the principal objection to any no-bake system is the comparatively high cost of coated sand. Reclamation can offer significant savings, especially when implementing a combination of the practices already suggested.

ChemSystems is well ahead of the curve when it comes to resin system stability. Its alkaline phenolic system is exceptionally robust when it comes to fluctuating sand conditions in terms of LOI.

ChemSystems also understands and actively promotes the value that comprehensive sand testing and monitoring can deliver to local foundries. It currently provides a comprehensive sand service to its customer base, conducted in its state-of-the-art sand lab. Here, all relevant tests can be performed as well as development for foundries needing assistance on different TBC additions, tensile, transverse, AFS, LOI, clay, work time, strip time, bend tests, cold-box core tests, conductivity tests and dog bone tests.

For further information contact ChemSystems on TEL: 011 922 1600 or visit www.chemsystems.co.za

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**Table 3**

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<tr>
<td>acids</td>
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<td>neutral</td>
<td>alkalis</td>
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With the advent of reclamation, the term pH has gained special significance. This is because the surface chemistry of sand is drastically altered by the amount of the resin-catalyst coating remaining on sand grains after the reclamation process. These residual acid or basic components of the binder system now dictate the surface chemistry of the sand and must therefore be measured.

Determining the pH of sand, new or reclaimed, is a straightforward process. By placing a known amount of sand at a controlled temperature in deionised water the pH can be measured with a pH meter or a piece of pH paper. The presence of silicates, oil urethanes, and phenolic urethanes will render reclaimed sand basic, while furans and phenolics cause the reclaimed sand to be acidic.

**Tensile strength:** This is affected dramatically by the amount of high surface area carbon left on the sand after it has been exposed to the elevated temperature in the metal casting process. Tensile strength is also affected by the screen distribution, the grain shape of the sand (which is made rounder with each pass through the reclaimer), and many other factors. Tensile strength should not vary by more than 12% once the system is running smoothly.

The oft-asked question of ‘how much tensile strength’ generally depends on the strength necessary to handle the core or mould and withstand the Ferro static pressures necessary to produce acceptable castings. In ferrous castings, the acceptable minimum tensile strength is usually about 140 psi. However, this numerical value will be unique to each operation, machine, and operator.

**Point impact penetration test, scratch hardness, and heat distortion tests:** There are many tests that offer insight into how well the coated sand will hold up to the casting process. Tensile strength is the most common qualifier, as many other tests will correlate with tensile strength.

However, if the time is taken to run a proper battery of tests, they will generate a great deal of intelligence regarding the type of casting that can be obtained with the sand being tested and about the sand system itself.

**Magnetism:** The magnetic content for ferrous-type metals is determined by stirring a magnet through a known weight of dried sand and weighing the amount of material removed. A typical reclaimed sand magnetic value is about 0/2%. The maximum value should generally run about 25%. Good cores, moulds and castings have been achieved with a magnetic level of >10%.

**Microscopic analysis:** A great deal of information can be obtained by frequent microscopic examination of the sands in use - coated, raw, and reclaimed sand. A 40 to 100 power microscope is probably the best choice. Unfortunately, becoming familiar with what ‘good’ sand looks like requires a great deal of time before one is experienced enough to conduct a visual assessment of sand quality with confidence.

---

**Figure 1**

Loss of Ignition (LOI): To determine loss of ignition, a small sample of sand (generally weighing 5-10g), is heated to between 870°C and 980°C for one hour. The combustible material that has been burned away represents the ‘loss on ignition’ or LOI. The lower the LOI the better. Just how low the LOI must be depends upon the type of metal being cast; less than 2.5% is usually satisfactory for iron while 2% or less is preferred for non-ferrous and steel. The larger the size of the casting, the lower the LOI must be in order to guard against excessive gas evolution.

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8 castings sa vol 20 no 1 June 2019
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The Maxion Wheels aluminium wheel manufacturing plant in South Africa was recently recognised as being one of the most technically advanced in the international group when senior executives, including Marcos Oliveira, President and CEO of Iochpe Maxion, Pieter Klinkers, CEO Maxion Wheels and Juan Lorenzo, President, Europe, Africa, Asia, visited the plant in Arode, Gauteng to see the recent developments at the plant and to hold executive meetings.

Maxion is a division of Iochpe-Maxion S.A., a leading Brazilian company in the production of wheels and structural components for light and commercial vehicles. Maxion Wheels comprises 20 manufacturing plants in 12 countries on five continents.

Maxion Wheels and its subsidiaries have been supplying OEMs with wheels and innovative technologies for over 100 years. With an international network of strategically located engineering, technology and production facilities, Maxion is one of the few wheel manufacturers who can deliver on a global platform in the true sense. This allows the company to reduce logistical costs and eliminate duplicate processes.

A world leader in the light-weight wheel market, the company currently supplies aluminium passenger car wheels to every major automotive OEM in the world. Maxion Wheels produces cast aluminium wheels at multiple plants throughout the world with a high degree of styling flexibility and an endless selection of coatings, finishes or claddings.

The company produced more than 58 million wheels in 2018, had US $2.1 billion in sales in 2018, employs more than 10 000 employees around the world, and one out of every eight OEM wheels in the world is a Maxion wheel.

“This is the first time that the senior executives of Maxion Wheels have visited the plant in South Africa,” explained Milos Despotovic, Plant Manager for South Africa.

“We have been investing substantially in our plant, equipment, processes and people over the last four years. In 2016 we spent R60 million on a quality expansion programme, in 2017 and 2018 we spent R90 million on capacity expansion for the manufacture of 19” and 20” wheels and so far in 2019 we have spent R30 million on automation and equipment upgrades,” continued Despotovic.

“This included installing x-ray inspection upgrades, a new paint plant, upgrading equipment in both the foundry and machine shop, installing numerous robots to automate material handling and installing a conveyor system to eliminate as much as possible the human handling element.”

“As a result our flow lines within the plant, from melting of metal to casting in the foundry and then on to heat treatment, machining, painting and finally dispatch, have improved dramatically.”

“Over and above this was the beginning of our programme with implementing Industry 4.0 and AI and our accelerated move towards becoming a smart factory.”

“The capacity expansion programme was two-fold. On the one side we extended our capacity to respond to the volume demand from the local OEMs while at the same time we took into account increased export requirements.”

Moving from 15/18” wheels to 15/20” wheels

“However, you can’t just judge it on production figures alone because there are many variables at play. Our expansion programme included moving from just manufacturing 15” to 18” wheel sizes to adding 19” and 20” wheel sizes. We now manufacture the biggest size wheels in the group and one of the most complicated, a factor that makes us stand out.”

Maxion Wheels South Africa’s business is all about manufacturing and supplying OEMs with aluminium wheels - some more complicated than others
Staff wellness

“All through this expansion and upgrade programme we have not neglected our staff. Money has been spent on a brand-new canteen and they can now enjoy subsidised meals in a very pleasant environment, which they did not have before.”

“But it is not just about keeping the tummies full. Training and mentoring are a high priority in the company. This includes both local training and travelling abroad to our other group plants. Additionally, we are working on our own training academy that will be Merseeta recognised.”

“We believe that we have to provide the tools and the environment that will attract the best, whether it is an operator on the floor or an engineer in the design department. A combination of this culture and our expansion programme has seen us having a stable and secure working environment.”

“This is despite all our automation investment, which includes the deployment of 80 robots across the manufacturing process.”

“The senior executives wanted to come and see for themselves what made our plant start to be recognised within the group. The Turkish plant has been winning most of the internal awards in recent years and now suddenly South Africa is up with them. We are very proud of this.”

History

NF Die Casting was founded in 1965 by the Anglo American group as a general-purpose non-ferrous foundry. The foundry focus was on aluminium production in high pressure, low-pressure, gravity and sand castings before the introduction of low-pressure die-casting for wheels in 1979 for the South African automotive OEM market. The first export of alloy wheels was for the E30 generation BMW 3 Series to BMW AG in November 1985.

A new wheel plant was constructed in 1990 and since 1992 has been linked to Hayes Lemmerz through a technology agreement. In 1998 Hayes Lemmerz acquired a 35% stake of NF Die Casting and upped this to 76% in February 2000 before acquiring the remaining 24% of the shares in May 2002. The company had previously been acquired by the Industrial Development Corporation of South Africa from Anglo American.

A name change - Hayes-Lemmerz South Africa - took place in 2004 before the Brazilian company Iochpe Maxion acquired Hayes-Lemmerz in 2014, forming Maxion Wheels. In 2016 the South African plant began its upgrading towards manufacturing 19” and 20” wheel production and the first of these wheels were delivered in 2018.

“There has been a worldwide trend towards OEMs using bigger wheels on their vehicles and we have had to respond to this trend.”

Aluminium alloy wheels manufacturing processes have developed a great deal since the 1970s. Due to sophisticated wheel design, casting has become the dominant manufacturing process. Alloy wheel material has evolved too. Car wheel alloys now contain 7 to 12% silicon content, and varying contents of magnesium in addition to aluminium, in
order to meet the demand for metal mould casting properties, corrosion and fatigue resistance.

The aluminium alloy wheel usually has better heat conductivity, anti-corrosive properties and is much lighter than the steel wheel, making it the best option for passenger vehicles. Aluminium alloy wheels are manufactured using the casting and forging process. Less weight on the wheel creates less stress on the tyre, and so a balance is created. Aluminium and alloy wheels are largely corrosion-resistant, but prone to galvanic corrosion. They also enhance performance by manipulating handling and suspension and add a brilliant appearance to the vehicle.

Furthermore, high thermal conductivity of aluminium allows heat to dissipate faster and improves braking performance in highly demanding driving conditions that lead to over-heating related brake failures. Hence, wheels constitute nearly 15% of the average aluminium content in passenger cars and light trucks with aluminium wheels on approximately 50% of the vehicles produced today.

Their main advantages, when compared to steel wheels are a high styling versatility, weight (equal or less than steel without styling), dimensional accuracy (mass distribution), recycling ability and static and dynamic behaviour.

The foundry
At the heart of the manufacturing process at Maxion Wheels’ South African plant is its foundry, although the wheels that you see on your car today cannot exist without the other down-stream operations and processes.

The foundry department is the biggest department within the South African subsidiary, which includes melting, degassing, low-pressure die-casting, x-ray inspection, sprue removal and heat treatment.

There are numerous low-pressure die-casting machines in the foundry, all of them with their own Fanuc robot for material handling and each having its own holding furnace.

New Striko furnace
Initial melting of ingot and scrap metal before degassing is done on two Striko tower furnaces before the metal is transferred to the individual low-pressure die-casting machines.
There is also a third melting furnace, which melts shavings and chips from the machine shop once they have been degreased, dried and preheated.

This shaving recovery or chip melting furnace is in the process of being replaced by a new Striko tilting furnace, which has a large holding capacity to accommodate the 2-ton an hour melting capacity. This new furnace is being supplied by Ceramic & Alloy Specialists.

Two of the power sources for the low-pressure die-casting machines are now fully Industry 4.0 compliant and are supplying data to DataProphet, a Cape Town-based machine learning company, for AI and machine learning analysis.

Processing after casting

After casting, wheels are 100% x-ray inspected and then eventually heat-treated prior to machining. This step is followed by a pressure tightness testing. After a cosmetic inspection wheels are then painted or varnished. This operation includes a pre-treatment (degreasing, phosphating and/or chroming). 3D dimensional controls, dynamic balance checking, bending and rim roll fatigue as well as impact tests are also usually performed.

“The wheel industry continues to evolve and has for many years. The main story had been the substitution of aluminium for steel in many applications. This continues to be the case, but in recent years lighter materials have been gaining, though limited to certain niches on account of cost and other factors. Reports estimate that the global wheel market was at US $81.7 billion in 2017, up from US $64 billion in 2012, and they anticipate a robust growth of 8.7% per year through to 2022, when the market will approach US $124 billion,” noted Despotovic.

For further details contact Maxion Wheels South Africa on TEL: 011 617 4700 or visit www.maxionwheels.com
DataProphet, a global leader in Artificial Intelligence (AI) for manufacturing, and Maxion Wheels, a leading wheel manufacturer, are working together to significantly reduce the cost of non-quality in the production of aluminium wheels. DataProphet’s AI solution aims to achieve a substantial reduction in non-quality incurred at casting. Aluminium casting plants can experience high levels of internal defects due to the complexity of the process. The South African contingent of Maxion Wheels lead the charge in driving digital transformation with DataProphet to enhance its

Maxion Wheels to reduce the cost of non-quality with DataProphet’s Artificial Intelligence solution

In addition to voluntary separation and early retirement packages, a salary freeze for the next three years has also been agreed.

Retrenchments at South32’s Hillside smelter will be avoided as an estimated 400, some say 500, employees have opted for voluntary separation and early retirement packages.

In a statement on South32’s website, the mining and metals company said the consultation on the restructuring of the business, had concluded with an agreement between all parties which would be ratified in the coming weeks.

According to Hillside Aluminium’s vice-president of operations, Calvin Mkhabela, in addition to the voluntary separation and early retirement, a salary freeze for the next three years had also been agreed and would provide certainty on labour costs. The smelter would also continue to implement other cost-saving initiatives.

In February, under Section 189 of the Labour Relations Act, the company notified workers it would embark on a restructuring process at the smelter and estimated more than 500 jobs were at stake.

Cornelius van Leeuwen, sector coordinator for the metal and engineering industries for trade federation Solidarity, said that about 400 employees had applied for voluntary separation and early retirement, although he said the union still awaited the final numbers.

Although a forced retrenchment process has been averted, the voluntary exit of workers will significantly reduce the number of employees at the Hillside smelter, which had a headcount of 1 370 prior to the conclusion of the consultation process.

In an interview with Business Day earlier this year, South32 COO Mike Fraser said the smelter had been burning cash in the six months ended December last year.

“The decision to restructure Hillside was not taken lightly. However, it was a necessary step to ensure Hillside’s long-term sustainability as a business and for all those in Richards Bay and surrounding communities whose livelihoods depend on the smelter,” said Mkhabela.

Hillside supplies 120 000 tons of liquid metal to the Isizinda project at Bayside and provides material to aluminium supplier, Hulamin. South32 has estimated that some 29 000 jobs in the wider value chain are dependent on the smelter.

Solidarity’s deputy general secretary of the metal and engineering industry, Marius Croucamp, said that although retrenchments were avoided the reduction in headcount was not a good outcome for labour. He, however, noted that the circumstances faced by the smelter had to be considered.

“We have to live with it for now and take it from here. Hopefully, Hillside is now on the path to sustainability.”

The smelter, however, faces another threat to its sustainability as it continues to renegotiate its power supply deal with Eskom. The smelter’s existing power supply deal has been controversial. Because it is linked to the aluminium price, it’s seen as favourable for the company but detrimental to Eskom, which is in financial crisis.

The agreement made sense when it was originally entered into in 1997 because South Africa had surplus power at the time. Now, however, the utility is struggling to meet the country’s power needs. While South32 has recognised that a new power supply contract for Hillside is necessary, CEO Graham Kerr said in February that a good power deal was crucial to ensure the smelter’s future.

Is the sun setting on South32’s Hillside?

No retrenchments at Hillside aluminium smelter
plant productivity. The implementation and data extraction started in South Africa and Brazil in early 2019. If successful, DataProphet and Maxion Wheels hope to continue the relationship to benefit global plant operations.

“Our partnership creates synergy by combining a mix of our automation knowledge, innovation drive and engineering experience with DataProphet’s sophisticated data scientists, software and development engineers,” said Milos Despotovic, Plant Manager at Maxion Wheels in South Africa.

“The exchange of knowledge across our team is phenomenal and will be a driving force in developing the future of manufacturing, both locally and internationally.”

DataProphet’s solution creates a unified learnt digital twin, using Maxion Wheels’ historic plant data, consisting of 780 million measurements. The machine learning solution will continuously make the best decisions for the current plant state, whilst being mindful of the processes up and downstream of them.

“DataProphet has immense experience and a good understanding of data that governs the complex plant processes in the foundry and automotive industry. We are excited to see how artificial intelligence will bring real quantifiable results to our plant delivery,” continued Despotovic.

DataProphet Prescribe, also known as OMNI, is the only machine learning solution that can prescribe optimum parameters through a customised single model approach, while taking into account higher order effects. Through deep learning, DataProphet will navigate Maxion Wheels through each minor shift in its journey to being a smart factory and reducing the costs of non-quality.

“Great to see South African manufacturers leading the way in artificial intelligence and innovation in manufacturing. We are excited to over deliver on the KPIs that Maxion Wheels is looking to achieve,” said Frans Cronje, CEO, DataProphet.
On 10 May 2013 the Minister of Economic Development (the Minister) issued a Trade Policy Directive to the International Trade Administration Commission of South Africa (ITAC) in terms of section 5 of the International Trade Administration Act 71 of 2002 (the ITA Act) on the exportation of ferrous and non-ferrous waste and scrap metal.

The Policy Directive set out the policy in terms of which ITAC was to exercise its powers under the ITA Act in administering the exportation of ferrous and non-ferrous waste and scrap metal.

ITAC thereafter issued Export Control Guidelines, which give effect to the Policy Directive. ITAC amended the Export Control Guidelines by publishing the Amended Export Control Guidelines in Government Gazette number 37992, Notice number 714, dated 12 September 2014.

The Directive stated that the policy will be in place for five years. It further noted that “at the end of this period, it will be reviewed to determine whether it should be terminated or extended for a limited period, with or without amendment.”


In the Budget Speech of 20 February 2019, the Minister of Finance stated that the National Treasury will work with the Department of Trade and Industry and the Department of Economic Development to explore the introduction of an export tax on scrap metal.

Extension

The Minister is considering extending the Policy Directive for a period of nine months from 30 June 2019 until March 2020, to enable the National Treasury, the Department of Trade and Industry and the Department of Economic Development to explore the introduction of an export tax on ferrous and non-ferrous waste and scrap metal and its implications for the Directive.

This notice is issued for comment by interested parties and stakeholders before the Minister decides whether to extend the Policy Directive. Stakeholders and interested parties are invited to submit representations and comments regarding the proposed extension of the Policy Directive.

Representations and comments must be submitted to the Minister of Economic Development for the attention of Dr Molefe Pule, email: Ministry@economic.gov.za, Economic Development Department, Private Bag X 149, Pretoria, 0001 or hand delivered at 77 Meintjies Street, Block A, Utangamiri Building, 3rd Floor, Sunnyside, 0132.

The Rapid Product Development Association of South Africa (RAPDASA) will hold its 20th Annual International Conference from 6 to 8 November 2019. The conference will be hosted by Central University of Technology, Free State (CUT) and will be held at the Emoya Estate, Bloemfontein in the Free State province.

Additive Manufacturing (AM), better known as “3D Printing”, has matured from a prototyping technology into a fully-fledged manufacturing technology. AM products are increasingly being used as final products in the aerospace, automotive, medical, consumer product and other industries. Internationally, unprecedented innovation has been seen in the field of AM and South Africa is certainly contributing to the advancement of AM as a manufacturing technology.

Conference theme

The conference theme this year will be Creating the Future of Manufacturing – Layer by Layer. The organisers have also added a sub-theme of Establishing the 3D Printing Process Chain.

The conference and exhibition will offer many opportunities for participants from industry, R&D institutions,
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.

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For service, calibration or spare parts for your existing +GF+/DISA equipment contact service.de@.simpsongroup.com.
academia and government to gain insights from world experts in this field and for the South African AM community to showcase the cutting-edge work carried out in this country.

This year the organisers are running a special track on Biomimetic Engineering for Additive Manufacturing at the conference. You are invited to submit your industry or technical paper. Further information is available on the RAPDASA website at https://site.rapdasa.org/wp-content/uploads/2019/05/specialist-track-rapdasa-call2.pdf.

The conference will be preceded by a preconference seminar “Design and Additive Manufacturing of Titanium Parts” to be held on Tuesday 5 November 2019 at Central University of Technology (CUT) in Bloemfontein. The first call for papers and further information is available at https://site.rapdasa.org/pre-conference-seminar.

The conference will cover sectors such as Aerospace, Medical and Bio-medical, Automotive, Sport and Leisure and Architecture. Apart from these, papers will be presented on topics covering all aspects of the rapid product development chain, such as CAD, product engineering, reverse engineering, simulation and modelling, process modelling, structural analysis, materials selection for design, materials engineering, materials processing, tooling design and development.

Confirmed international speakers

Confirmed international keynote speakers Dr Terry Wohler of the USA, Prof Paulo Bartolo of the UK, Prof Ian Gibson of the Netherlands, Prof Alain Bernard of France and Prof Nataliya Kazantzeva of Russia.

Conference package

The conference will be hosted at Emoya Estate in Bloemfontein, South Africa. On-site accommodation is limited, but arrangements with nearby hotels and guesthouses have been made. The conference fee of R6 100.00 per delegate excludes accommodation, which will have to be booked and paid by delegates. The conference package includes: Full conference participation, lunch and dinner, refreshments (tea/coffee breaks), welcome function and the gala event. The conference attendance fee for bona fide full-time postgraduate students is R4 350.00 (maximum of 5 students per institution and proof of registration must be provided).

For further information please contact Mrs Jenny van Rensburg at info@rapdasa.org
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Weir announces that upgrades are to start at Heavy Bay Foundry
Fourth moulding bay to be commissioned.

In line with its oil sands business growth, engineering solutions provider Weir Minerals Africa has received capital expenditure approval worth R30 million for upgrades at its Heavy Bay Foundry in Port Elizabeth, in the Eastern Cape.

Significantly, the foundry supplies castings across the globe both to Weir Minerals operations as well as direct customers.

Weir Minerals GM of operations Danillo van Eck said in a recent report that this approval will lead to the company opening its fourth moulding bay, which it plans to have commissioned at the end of June this year.

Van Eck explained that the moulding bay will be able to produce four castings of 18 tons each in a month, using the company’s largest box size of 4.5m by 4.5m.

This will enable the foundry to reach 100% capacity, with the plant currently only operating at between 60% and 70% capacity.

The Heavy Bay foundry has the capacity to produce about 500 tons a month of castings, but with the fourth bay, Van Eck notes that Weir Minerals intends to ramp this up to about 630 tons per month, which would subsequently require a three-shift system to be implemented by adding a shift from 22:00 to 06:00.

Van Eck noted that this would result in employment for 50 people, in addition to the 140 personnel already working on the existing three bays.

While quality control calls for inspection at the end of a process, quality assurance focuses on redesigning the elements of a process to ensure that the quality of the product is 100% when it reaches the client, he pointed out.

Other recent investments in the foundry include the installation of a R10-million Giesserei Umwelt Technik (GUT) secondary sand reclamation plant last year.

The investment is aimed at improving the reclamation and reusability of the sand used in the moulding process, thus reducing the impact on the environment while improving the quality of the product at substantially reduced production costs, Van Eck explained.

The GUT plant is a pneumatic conveyor system that is operating at 14 ton per hour. The plant consists of three 70 ton silos that store the facing sand, reclaimed sand and new sand, cooler-classifiers, rotary scrubber and magnetic separator.

Although the foundry has ISO 9000 accreditation, it is transitioning to the new standard, ISO 9001 accreditation.

“Quality is a central philosophy at Weir Minerals and its quality strategy has brought about a fundamental shift from quality control to quality assurance,” said Van Eck.

The Heavy Bay Foundry in Port Elizabeth was acquired by Weir Minerals Africa in 2013, and it is there that all castings larger than one ton are cast. This foundry, which has received significant upgrades since it was acquired, can accommodate individual castings of up to 18 tons. There are currently three floor moulding lines at this operation with the expected completion of a fourth moulding line in June.

The fourth line will double Weir’s large casting capacity, and enable them to improve delivery to their existing customers as well as to expand further.

The foundry at Weir Minerals Africa Isando manufacturing facility comprises three foundry lines and that produce castings of up to one ton.

An important investment at this foundry was the carousel system, which has enabled an efficient production line process for small castings. The carousel is used for single or multi-cavity moulds, and allows Weir to produce high volumes and facilitates high variability requirements. This is important not only for meeting local supply requirements, but also improves Weir’s capacity for international supply.

Heavier castings, between 150kg and 350kg, are produced on the fast loop line at the Isando site.
The Insimbi Group’s results for the year ended 28 February 2019 will be published on or before 29 May 2019 (too late for this publication). However, management considers it appropriate to provide shareholders with a brief voluntary performance update on the business.

“Economic and political volatility persisted across most of our markets during the 2019 financial year. The US China trade stand-off and Brexit impacted negatively on markets and commodity prices although most of these rebounded in the 4th financial quarter, which bodes well for the financial year ahead. Industrial action also affected output at four of our plants for sustained periods, suppressing profitability at our plastics operation in particular. Inconsistent power supply further hampered operations with the increase in the price of fuel having a significant impact on road transportation costs.”

“Insimbi continued their strategy of growth through acquisition and having considered a number of targets concluded the acquisition of Group Wreck International Non-Ferrous Proprietary in November 2018. The synergies that exist between this operation and the rest of the Group are expected to have a positive and value accretive impact on the Group’s results in the 2020 financial year and beyond.”

“Despite the challenging economic environment, Group revenue for the year under review is expected to be more than 30% up on the comparative period. However, due to the reasons mentioned above, gross margins were negatively impacted and at 8.3% were approximately 1.6% lower when compared to the 9.9% achieved in the previous financial year.”

Normalised earnings

“Notwithstanding the lower margins achieved in 2019, the increased revenue has offset this negative impact and normalised profit before tax for the year is expected to be on a par with that achieved in the previous financial year ended February 2018.”

Trading statement

“Shareholders are advised that both earnings per share ("EPS") and headline earnings per share (HEPS) are expected to be between 15.10 cents per share and 15.80 cents per share representing a decrease in: EPS of between 14.5% and 18.3% compared to 18.47 cents per share for the period ended 28 February 2018; and HEPS of between 14.4% and 18.2% compared to 18.45 cents per share for the period ended 28 February 2018.”

“If the once off costs associated with acquisitions (including legal fees, additional facility fees and due diligence costs) and other non-recurring expenditure related to IT security upgrades EPS and HEPS would have been approximately 2.0 cents per share higher. The national strike in the plastic industry affected our plastic segment negatively and we may decide to impair goodwill as a result. This has not been incorporated in the above.”

Cautionary announcement

In a cautionary announcement issued by Insimbi on 20 March 2019 and renewed on 18 Apr 2019 shareholders were advised that the Company had entered into negotiations regarding a potential strategic acquisition which, if successfully concluded, may have a material effect on the price of the Company’s securities.

The full impact of the potential strategic acquisition is still being determined and accordingly, Shareholders are advised to continue exercising caution when dealing in the Company’s securities until a full announcement is made.

Shareholders were advised that the strategic intent of the envisaged transaction is to expand the Group’s presence and product base in the metal recycling, beneficiation and trading business. Accordingly, shareholders are advised to exercise caution when dealing in the Company’s securities, until a detailed announcement is made.
DataProphet launches
Artificial Intelligence computer vision system for quality control in manufacturing

DataProphet Inspect uses machine learning and Artificial Intelligence (AI) to significantly improve quality control for Industry 4.0.

DataProphet, a global leader in Artificial Intelligence (AI) for manufacturing has announced the launch of DataProphet Inspect, a cutting-edge machine vision system to enhance the effectiveness of human quality control operators.

Through AI, DataProphet Inspect improves continually and can locate and classify defects on components that the computer system has never seen before. Unlike other machine vision solutions, DataProphet Inspect does not use template matching to detect defects but instead relies on proven machine learning algorithms to flag manufacturing defects.

“DataProphet Inspect combines consistent quality control with unparalleled traceability and consistency. It is the most comprehensive visual QC solution for Industry 4.0,” said Michael Grant, CTO at DataProphet.


DataProphet Inspect is available immediately and can easily be customised if required. It is offered as a stand alone solution or can be combined with DataProphet Prescribe, previously known as OMNI. DataProphet’s AI solution suite is proven to reduce defects and scrap by at least 50 per cent and improve plant efficiency.

For further details contact DataProphet on TEL: +27 (0) 21 300 3555 or email info@dataprophet.com or visit www.dataprophet.co.za

Changes to board at SAIF

Following the South African Institute of Foundrymen’s 55th AGM held on Tuesday, 14th May 2019 at Reading Country Club no new directors were elected to serve on the board of the SAIF for the following year (2019/2020) as no proposals or nominations had been received.

Continuing on as Chairperson will be Glen Dikgale and Janley Kotze as Deputy Chairperson.

Other Directors include Enno Krueger, Nigel Pardoe and Didier Nyembwe.

However, it was noted that Justin de Beer had resigned as a director and his position as treasurer. No new treasurer was elected.

The MOI of the SAIF requires that the Board of Directors will consist of not less than three (3) and not more than seven (7) directors, one third of whom will retire each year in rotation.

It was also noted that the Executive Director Sagen Naicker had resigned in October 2018, after only having been in the position for 19 months, and no new person had been contracted to fill his position.

It was noted that although the SAIF incurred substantial losses during the last two financial years, large amounts of this loss can be attributed to depreciation costs of capital equipment.

The Annual Financial Statements have been prepared on the basis of accounting policies applicable to a going concern. This basis presumes that funds will be available to finance future operations and that the realisation of assets and settlement of liabilities, contingent obligations and commitments will occur in the ordinary course of business.

For further details visit www.foundries.org
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GIFA, METEC, THERMPROCESS and NEWCAST (GMTN 2019) to be held in Düsseldorf, Germany

From 25 June to 29 June 2019, the Düsseldorf Trade Fair Center will play host to the trade fair quartet comprising GIFA 2019, International Foundry Trade Fair with WFO Technical Forum, METEC 2019, 10th International Exhibition for Metallurgical Technology with Congress, THERMPROCESS 2019, 12th International Trade Fair and Symposium for Thermic Production Processes, and NEWCAST 2019, the 5th International Trade Fair for cast products.

Planners of GIFA and its companion trade shows acknowledge that the global industrial marketplace has changed in the four years since the last staging of the International Foundry Trade Fair, but they’re counting on that fact to heighten interest. Exhibitors have ideas and information to convey, and metal casters have a pent-up need to invest in and improve their operations.

Early data suggests this may be true. Bookings for GIFA 2019, the 14th International Foundry Trade Fair, along with Metec, Thermprocess, and Newcast 2019, are on track to set new records.

The four metallurgy trade fairs with the motto “The Bright World of Metals” will once again be providing a complete picture of the international market.

Registration has been excellent, so far the number of exhibitors and space bookings are at a similarly high level to four years ago - in spite of a number of mergers in the industry. GIFA will be covering almost 43 000m², Metec will also be its usual large size at 20 800m² and Thermprocess has grown somewhat to a size of 10 100m². Newcast is still slightly below the level reached at the previous event.

The main players within the industry as well as smaller, innovative companies will be returning to Düsseldorf in 2019.

“This scope, providing near total market coverage in terms of both supply and demand, is GMTN’s secret to success. Over half of the 78 000 visitors to the GMTN 2015 were top executives and decision makers. In addition, over half of our visitors came from outside Germany. The top 10 countries in terms of foreign visitors included Brazil, China, Iran, India, the USA, France, Italy, Austria and the UK,” explains Friedrich Kehrer, Global Portfolio Director Metals and Flow Technology at Messe Düsseldorf GmbH.

The quartet of trade fairs also addresses and focuses on current and significant topics, such as Industry 4.0, e-commerce within the steel and aluminium industries, lightweight construction for the automotive industry and additive manufacturing. These topics provide important stimuli and require additional investment.

The second significant factor in the success of the “Bright World of Metals” is the supporting programme, which includes international congresses and industry meetings such as the GIFA Conference, the European Steel Technology and Application Days/ESTAD, the European Metallurgical Conference/EMC, the THERMPRESS Symposium and the NEWSCAST FORUM. Awards ceremonies will take place such as the NEWCAST Awards and special shows, like the one that the Research Association of Industrial Furnace Manufacturers in the VDMA/FOGI puts on for the various industries.

Special show for additive manufacturing

The special show for additive manufacturing will make its premier at GIFA in Hall 13. Whether you work in pattern and die making, in core making or in direct metal printing, additive manufacturing provides foundries and their suppliers with great potential for growth/business.

“We wanted our special show to provide a platform to unlock this potential. GIFA will provide a powerful boost for the industry, particularly in e-mobility and lightweight construction in the automotive industry. This was recently proved in a study on the influence of electromobility on the foundry industry and its products initiated by the Confederation of German Foundry Industry (BDG). According to the study, alternative drive concepts such as hybrid and electric drives require increasingly high casting quantities in comparison to those for single drives on a combustion motor, and this will continue to be the case up until to 2030,” explains Gerrit Nawracala, Deputy Director for Metals and Flow Technology at Messe Düsseldorf GmbH.

It is probable that the peak in demand for casting will only
be reached in 2030, according to the study from the BDG, thus providing optimal conditions for GIFA 2019.

**GIFA: A hotspot for technological highlights**

GIFA has been a hotspot for technological highlights and innovations for the entire value-added chain in casting technology for decades, and will prove itself once more in 2019. Over 900 exhibitors, from all over the world, will be present in Halls 10 to 13 and 15 to 17. World market leaders have already confirmed their presence, notably Bühler AG (Switzerland), Kuka Deutschland GmbH (Germany), Loramendi S. Coop (Spain), the Sinto Group (HWS - Heinrich Wagner Sinto/Germany) and Vesuvius GmbH (Germany). As was the case in 2015, a great number of industrial players from China and Italy have also already registered for this trade fair.

“We are currently conducting intense agreement talks with the companies. They are all certain that they will be present at GIFA, so the questions that need to be answered now are how big will their presence be, and where do they want to present,” says Janike Rotthoff, Senior Project Manager.

“I’d recommend that companies who are interested to participate in GIFA register as soon as possible, so that they can still get a good stand location.”

**METEC 2019: The 10th edition is set for success**

In its 10th edition, the International Metallurgical Trade Fair with Congresses will continue to build on its success from 2015. In concrete terms, this means that over 500 exhibitors...
from around the world will present systems for manufacturing iron ore, steel and non-ferrous metals, or for casting or moulding steel and equipment and components for metallurgical plants, rolling mills and steelworks in Halls 3, 4, and 5.

“The industry’s interest in METEC is very positive. Many of the international market leaders have already confirmed their attendance, and we’re currently discussing the details with others,” explains Senior Project Manager Marcus Müllers.

The following companies have already confirmed that they’ll be exhibiting: Inteco (Austria), Primetals Technologies Ltd. (UK), RHI Magnesita (Austria), SMS Group (Germany), Tenova S.P.A. (Italy) and Sinosteel (China). Forged components will be displayed at METEC for the first time ever. Up until now, these had been part of NEWCAST, but they now fit in better with the themes of the metallurgy trade fair as they have grown in significance and popularity.

“Our indications show that trade visitors can expect to see products from around 300 exhibitors,” states Dübelt.

NEWCAST: The most international trade fair

“NEWCAST has matured into an internationally significant trade fair,” says Caroline Schmidt, Junior Project Manager for NEWCAST. The whippersnapper in the metal trade fair quartet was brought to life in 2003 and its popularity has been growing ever since. Producing cast parts has really developed on an international scale over the last decade, and that is reflected at NEWCAST.”

In 2019, over 400 exhibitors are due to present their latest products in Halls 13 and 14. NEWCAST is also studded with the shining stars of the international market, including Bosch Rexroth AG (Germany), GF Casting Solutions AG (Switzerland), GOM GmbH (Germany), Kimura Foundry Co., Ltd. (Japan), Kutes Metal Inc. (Turkey) and Finoba Automotive GmbH (Germany). Another striking factor in this trade fair are the large amounts of participants hailing from China, India and Turkey.

No South African National Pavilion

For the last six occasions of the GIFA (GMTN) exhibition there has been a South African National Pavilion where South African companies have collectively exhibited. Unfortunately, due to various reasons, there will not be a South African National Pavilion at this year’s exhibition.

For whatever reason that the dti deems it not necessary to promote the South African foundry industry on an international stage, there will nonetheless be many South Africans that will still visit the exhibition, as they have done so over the years. This year is no exception.
South African exhibitors

The following companies from South Africa will be exhibiting.

**DataProphet – Hall 16 Stand G01**

Frans Cronje and Michael Grant will be attending and you can find them on the pour-tech AB stand. For further details contact DataProphet on TEL: +27 (0) 21 300 3555 or email info@dataprophet.com or visit www.dataprophet.co.za

DataProphet Artificial Intelligence in manufacturing

DataProphet will showcase how Artificial Intelligence (AI) can improve quality and yield in manufacturing for Industry 4.0. Through advanced machine learning, its AI solution suite is proven to reduce defects and scrap by at least 50 per cent and improve plant efficiency.

DataProphet Prescribe aims to achieve zero defects in manufacturing. Using advanced predictive and prescriptive machine learning capabilities, the solution can predict defects and quality errors and prescribe the ideal parameter settings for shifting processes to achieve higher yields. The company delivers actionable and measurable results for continuous improvement in production.

DataProphet Inspect will be launched at GIFA 2019, with a demonstration available on the stand. The solution inspects surface defects to increase quality control. The cutting-edge machine vision system, which unlike other inspection solutions, does not use template matching to detect defects but instead relies on proven machine learning algorithms to flag manufacturing defects. The solution combines consistent quality control with traceability and consistency. It is a comprehensive visual QC solution for Industry 4.0.

**pour-tech AB – Hall 16 Stand G01**

pour-tech AB specialise in automatic pouring systems for iron foundries.

### Casting your ideas everyday

**SG iron castings only …..We go to the extreme for you**

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- Pump & valve specialist

Tel.: 012 719 8860 • Fax.: 086 239 2597
E-Mail: ukuthela@live.co.za
Independent Mineral Distributors (Pty) Ltd – Hall 13 Stand B62

IMD (Pty) Ltd was founded in 1988 to market industrial minerals and chrome ores. The company serves the local and export market with both bulk and containerised shipments. IMD (Pty) Ltd is focused on the supply of raw materials (minerals, alloys, metals, and chemicals) used in the abrasive, foundry, refractory, steel and paint industries.

IMD (Pty) Ltd and its affiliated companies enter into long-term supply agreements and/or exclusive marketing arrangements with its principal producers. IMD (Pty) Ltd sources materials for the local market from mines or by importing from major producing countries such as China. The company also supplies customers in export markets by sourcing materials from South African producers. Proudly run and owned this family concern continues to go from strength to strength.

Graham Evans and Ernest Mberi will be at GIFA in Hall 13 stand B62 and will co-exhibit with Tymo Mineralien GmbH.

For further details contact Itshe Resources (Pty) Ltd on TEL: 011 706 0322 or email info@imdza.com or visit www.imdza.com

Lauds Foundry Equipment GmbH – Hall 16 Stand A43

Lauds Foundry Equipment GmbH is a technology leader supplying state of the art technology and equipment into the foundry industry. Lauds has been operating in the industry for 18 years, building a track record to prove that their systems are built to withstand the demanding environment of the foundry. The company has a team of specialists with years of experience in the running of foundries and have specialised knowledge on foundry design and advanced technology. Where others have failed, Lauds has paid attention, ensuring that the company develops machines that can stand the test of time.

Originally starting in South Africa, Lauds designed and developed a range of foundry equipment that has enabled the company to launch into the global market with confidence. Lauds opened operations in Germany in 2014, moving all IP into Germany with the view to improving a good product range into the best it could possibly be. The company can confidently state that they are achieving this. All their equipment is CE marked. This accreditation has allowed Lauds to focus on market share knowing that each set of systems delivered from their facility in Germany comes with a stamp of German approval and superior engineering.

State of the art technologies have become standard practice when designing their vast range of equipment. Their systems are continuously improving as they take heed of their clients’ requests and implement changes immediately to best suit their requirements. Lauds is focused on being the supplier of choice. Lauds considers every client a long-term partner. Investing with Lauds is investing in your future.

Lauds is currently focusing on a global recycling drive, involving Waste Management and Sand Reprocessing. With their Secondary Reclamation range as much as 90% of your used foundry sand is cleaned and returned to you to process, thus reducing new sand and dumping costs and rendering any waste sand and fines as non-toxic.

Lauds will be exhibiting a 12TPH Pivotal Continuous Sand Mixer and an LSR2.5TPH Secondary Reclamation System.

Kevin van Niekerk, Richard Conradie and Andre Ziemski will be present on the stand.

For further details contact Lauds Foundry Equipment on sales@laudsfe.com

To download an electronic version of the company brochure visit www.laudsfe.com
Thos Begbie & Company – METEC Hall 3 Stand G02

Thos Begbie was established in Johannesburg in 1887 as a Foundry and General Engineering business and in 1907 relocated to Middelburg, Mpumalanga. Today Thos Begbie is one of the few fully integrated foundry and general engineering operations in the country, supplying all major sectors of industry.

Pyrometallurgical component manufacturer
This division is equipped to produce a comprehensive range of copper and copper alloy castings. The annual capacity is in excess of 1 100 tons of finished product with a maximum cast mass of around 14 000 kg. These products are supplemented by an extensive range of copper-based alloy components.

General engineering
The general engineering division primarily provides foundries with machining capacity. It includes a CNC machining center, grinding machines, milling machines and power saws. They also operate the largest horizontal CNC milling machine and vertical mill in the region, which provides for machining of abnormally sized components. It also provides services to the local mining, power generation, paper processing, steel mills and ferro alloy producers.

Technical services
These include pattern making facilities, a metallurgical analysis laboratory, technical customer liaison and, methoding with computerised Solstar Solidification Modelling.

Graphite Freezeline Solutions (GFS)
In April 2018 the company established a new technical division, which caters to the refractory needs of the pyrometallurgical industry. Being on the same site as Thos Begbie & Co, makes the company a comprehensive supplier of foundry products that include graphite refractory, carbon component solutions as well as installation of various refractories all in-house.

Site work and installations
Analysing the market conditions, the company saw that there was a need not only for the manufacturing of components for the pyrometallurgical industry but also the installation of these components. Thos Begbie have established a site-work team that will be able to cater to these needs. Services include installation of furnace components, repairing of furnace equipment and alterations as per plant requirements.

Quality assurance
Thos Begbie’s quality management system complies with the requirements of SABS ISO 9002, which was awarded to the company in 1990. In 2018 the company was certified for ISO 9001:2015.

Thos Begbie is a privately owned company. The exhibition stand will be manned by Esli Bantjes and Hercules van der Merwe.
For further details contact Thos Begbie on TEL: 013 246 9100 or email esli.bantjes@thosbegbie.com or visit www.thosbegbie.com

University of Johannesburg Metal Casting Technology Station – Hall 13 Stand C38
The Metal Casting Technology Station (MCTS) is a technology transfer partner for the metal casting industry pioneering development research and technology support. The MCTS is an initiative funded by the Department of Science and Technology (DST) through the Technology Innovation Agency (TIA). The MCTS is hosted by University of Johannesburg (UJ) and operates in partnership with the Department of Metallurgy in the faculty of Engineering and the Built Environment. The MCTS’s core services are: Technology demonstration, technology development, material and processes development, moulding systems analysis and troubleshooting. MCTS is ISO 9001 and SANAS ISO 17025 accredited.
For further details contact Kulani Mageza, Station Manager on TEL: 11 559 6952 or email kmageza@uj.ac.za or visit www.uj.ac.za.
Simulation as a design tool

Altair Inspire Cast is a software tool that enables designers to gain valuable information about their designs early in the product development cycle, without the need for expert knowledge. Offering the complete casting simulation in five easy steps through highly intuitive user experience, Inspire Cast allows designers and foundry engineers to visualise and correct typical casting defects, validate their design, and improve the quality of the final cast product. Casting simulation with Altair Inspire is fast, easy, affordable and it provides accurate results enabling designers to assess whether a concept design can be manufactured, compare concept designs to others with respect to manufacturing, reduce manufacturing tryouts by creating design guidelines, assess placements of gates, vents, risers and runners and validate the detailed design near the end of the development cycle.

Opportunity to learn more about Inspire Cast

To learn how Inspire Cast can help to ensure the manufacturability of casting products in the early concept phase, Altair offers designers and foundry engineers to GIFA, the opportunity to learn more about Inspire Cast.

Ametex

Andrew McFarlane will attend. For further details TEL: 083 3061867 or visit www.ametex.co.za

Magma GMBH – Hall 12 Stand A19/20

At GIFA 2019, Magma GMBH will present a new generation of trendsetting solutions for virtual casting, tooling and process optimisation.

Simulation evolves into autonomous engineering

Magma will demonstrate how autonomous engineering is replacing conventional casting process simulation. MagmaSoft autonomous engineering supports casting design, robust process layout and optimised casting evaluation even before the first part is produced. By making use of the fully integrated capabilities of virtual design of experiments and genetic optimisation, MagmaSoft easily and reliably finds the best solutions, from the first casting design to improvement of a running production layout.

As a world premiere, visitors will experience autonomous engineering live in 4D in a captivating Holo-Theater performance.

MagmaSoft - The Digital Foundry Process

Magma has been developing powerful solutions for digitising foundry processes for over 30 years. With the "Virtual Core
Start Your 15 Day Free Trial Today!

Altair Inspire Cast offers complete casting process simulation in 5 simple steps through a highly intuitive user environment with powerful geometry creation and editing capabilities. Users have the ability to create runners, risers, chillers, over-flows and sleeves and modify them instantly. Complete your solidification simulation in a single click with the help of Inspire Cast’s guided templates for gravity sand and die casting, investment casting, high and low pressure die casting.

Learn More at altair.com/TryInspireCast
Shooting Machine™, the company showcases an innovative Industry 4.0 application together with leading industry partners. A direct coupling between process simulation, core box design, moulding material and a core shooting machine enables the real-time optimisation of the complete core shooting system for the first time.

With the “Virtual Die Casting Die”, Magma demonstrates how to simultaneously realise and reliably evaluate a robust tooling design and an optimised production window simultaneously within the shortest possible time for high pressure die-casting processes.

Moreover, MAGMA introduces numerous new capabilities for virtual optimisation of all casting processes and alloys, heat treatment and the complete core production process. In cooperation with leading partners from the supplying industry, new developments for digitising moulding materials and for quantitative prediction of core distortion, degradation behaviour of binder systems and core gas related defects during the casting process will be presented.

Ease of communication internally and with customers
MagmaInteract, the new and innovative visualisation programme for MagmaSoft results, supports communication internally within a company as well as a fast exchange of information with both customers and suppliers. Using real castings as examples, Magma will interactively show how easy it is to use information from MagmaSoft with Magmainteract.

MagmaAcademy
The MagmaAcademy will present its offering of comprehensive opportunities for further education for foundrymen, casting designers and casting consumers. The “Foundrymen’s Playground 2.0” will playfully show how easy it is to virtually optimise casting designs today. Here, visitors can interactively run their own simulations in a virtual test field, while simultaneously pursuing different quality and cost-related objectives. As part of a competition against MagmaSoft autonomous engineering, visitors will lay out their own casting on an electronic drawing board in just a few minutes.

Magma will also be presenting its innovative solutions for process optimisation in continuous and ingot casting at its own booth at METEC (Hall 4, Booth E 29). Here, too, the company will showcase state-of-the-art solutions for the virtual optimisation of conflicting objectives regarding productivity and quality, as well as for establishing robust process windows.

With its Student Camp, Magma once more shows its commitment to recruiting young professionals for the foundry industry. The young visitors will be shown in a fun and playful manner how interesting and innovative the foundry world is.

ASK Chemicals – Hall 12 Stand A22
Jacques Swanepoel will be on the ASK Chemicals stand.
For further details TEL: 011 922 1600 or visit www.chemsystems.co.za

ASK Chemicals is one of the world’s largest suppliers of foundry chemicals and consumables, with a comprehensive product and service portfolio of binders, coatings, feeders, filters, and release agents, as well as metallurgical products including inoculants, Mg treatment, and inoculation wires and master alloys for iron casting. Core manufacturing and development of prototypes, as well as a broad offer of simulation services, complete the range of supply.

With research and development in Europe, America, and Asia, ASK Chemicals sees itself as the driving force behind industry-specific innovations and is committed to offering customers a consistently high level of quality. Flexibility, quickness, quality, and sustainability, as well as cost-effective products and services, are of key importance.

Ask Chemicals will present solutions for optimising environmental protection and occupational health and safety while increasing productivity.

Innovative technology platforms, such as Ecocure Blue and Inotec, as well as product packages, such as the Low Formaldehyde System (LFS), offer answers to typical challenges of the foundry industry regarding emissions, will be presented.

New PU no-bake reduces phenol emissions
Modern foundries are increasingly relying on the Pep Set process due to the processing properties, the better casting results and higher productivity. ASK Chemicals has recognised this trend and is now presenting a new solution at GIFA for reducing phenol emissions in the PU No-Bake process: The new generation of the self-curing Pep Set binder system on a polyurethane basis – Pep Set Silver.

Veino Ultra 2000 additive reduces release agent application and increases tool availability
The increase in material efficiency - that is the ratio of
production quantity to material input - is an important factor in reducing production costs and increasing competitiveness. New product developments can contribute to increasing efficiency, that is to say achieving the same or higher performance at lower dosages, or they offer the additional benefit of saving other materials in the process or reducing their consumption.

The new additive Veino Ultra 2000 offers an excellent release effect. Moreover, the new hybrid additive combines the well-known advantages of organic and inorganic additive solutions with significantly reduced odour and emission loads: It has a very good anti-veining effect and makes it possible to replace expensive special sands partially, or completely. The new hybrid additive was developed especially for use in the cold box process.

**New low-formaldehyde system for cold box production**

German foundries are faced with the challenge of reducing formaldehyde emissions in the exhaust gas flow of their existing plants from 20 mg/m3 (mass concentration) to 5 mg/m3 by February 2020 at the latest. At GIFA 2019, ASK Chemicals will present a specially designed binder-additive-coating package that allows foundries to comply with this new limit value without investing in additional secondary measures.

With the application of the Ecocure Blue LFS binder, Miratec LFS coating and Veino LFS additive tailored to the specific requirements, the LF system meets the legal formaldehyde limits with pinpoint accuracy.

**ASK Chemicals launches innovative Exactpore 3D filter generation**

With its innovative Exactpore 3D filters, ASK Chemicals offers investment casters as well as iron and steel foundries new and more efficient filtration options for the highest casting quality. Thanks to their particularly sophisticated and well thought-through design, Exactpore 3D filters provide the highest structural integrity and thus safety and efficiency in use.

**Ceramic & Alloy Specialists**

TEL: 011 894 3039 or visit www.ceramic-alloy.co.za

**Elkem Foundry Supplies – Hall 13 Stand C40**

Producer of Ferro Silicon Magnesium and Inoculants for the ferrous foundry industry.

**Hoesch Metallurgie – Hall 13 Stand E60**

Manufactures a wide range of master alloys, grain refiners, metals, alloys, ceramics and their well-known Dursalit fluxes.

**Mammut-Wetro Schmelztiegelwerck – Hall 10 Stand H60**

Manufacturers of crucibles and related hot metal products.

**Newform Foundry Products – Hall 10 Stand F77**

Supplier of Mica slip-plane for re-lining of induction coil furnaces, Mica and other thermal and electrical insulation products.

**Progetta S.r.l. – Hall 16 Stand H12-1**

Grey and ductile iron foundry molten metal treatment and automation systems.
Schafer Chemische Fabrik – Hall 12 Stand B43
Manufacturers of fluxes, and non-ferrous molten metal treatment products.

Selee Corporation – Hall 12 Stand B44
Design and manufactures porous technical ceramics and metals for a wide range of industrial applications.

StrikoWestofen GmbH – Hall 11 Stand D38
Designers and manufacturers of melting, holding and casting furnaces for the aluminium, magnesium and zinc industries.

REMET – Hall 15 Stand H22-04
Material technology supplier to the precision investment casting process.

Cerefco
Scott Melville will be on the Inductotherm Group stand. For further details TEL: 011 845 3263 or visit www.cerefco.co.za

Inductotherm Group – Hall 10 Stand D42
Inductotherm Group is a fully global manufacturing group of companies providing value to the metals and materials industry through production machinery, process knowledge, engineering excellence, and advanced technology. Product brand names include Inductotherm, Radyne, Inductoheat, Consarc, Thermaool, Inductoscan, Inductoforge, IRoss, Alpha and Banyard.

Clariant Functional Minerals – Hall 12 Stand C13
The Business Unit Functional Minerals (BU FM) is a leading provider of specialty products and solutions based on Bentonite and synthetic minerals to enhance products and processes in various industries. Headquartered in Munich, Germany and operating on a worldwide scale, the Business Unit comprises the activities of the former adsorbents division of Süd-Chemie. Key markets served by the BU include edible oil refining, foundry, cargo and device protection, sediment management, aromatics and jet fuel treatment, civil engineering, feed additives, waste water treatment, clay specialties and paper, detergent and plastic additives.

Environment focused foundry additives
To have a chance of surviving successfully, foundries must excel at juggling challenges. There’s not just the crucial need to improve emissions and working conditions, tomorrow’s customer wants high precision complex ready-to-install parts, just-in-time delivery, at a reduced cost. The pressure is on to embrace digitalisation and other technologies to up moulding speed and quality, produce more parts quickly, with much less energy use and waste. The company does not claim to have all the answers but their LE+ Technology for green sand casting certainly makes a big difference to operations.

Clariant will present their Geko and Ecosil natural moulding sand additives used for high precision, smooth processability and easy shake-out for iron and steel castings. Geko is an effective booster for foundry productivity and perfect castings and Ecosil is a carbon former that adds the finishing touch, ensuring easy mould separation, improved surfaces and increased mould stability.

Clariant’s unique eco-friendly technologies, Ecosil LE and Geko LE, drastically reduce emissions and help foundries comply with highly demanding environmental regulations and standards. This is Clariant’s two-tiered Bentonite solution to provide a one-of-a-kind efficient moulding system.

Functional Minerals has fully integrated the complete value chain from exploration, mining, and processing and refinement of natural Bentonite to tailored industry and customer specific solutions. An experienced management team makes sure that anticipating and meeting customers’ expectations are the top priority for the whole organisation.

A total of 1 800 employees serve customers across all regional markets. BU FM is part of Clariant’s Business Area Natural Resources.

For further details visit www.clariant.com

Durrans RMS
Mike Robinson and Clifford van Eeden will attend. For further details TEL: 011 917 0702 or visit www.durransrms.co.za

James Durrans Ltd. & Sons - Hall 12 Stand A40
James Durrans Ltd. & Sons was founded in the British town of Penistone in South Yorkshire over 150 years ago (1863–2013) and since its foundation, the company has never strayed from its manufacture of carbon-related products. The materials contribute towards or form part of many things we take for granted in our daily lives. Durrans products play a part in producing everything from basic iron and steel castings to the brake linings and brake pads used in millions of cars and trucks to filters for cooker hoods, white paint pigments and even jet engines.

Today the group has annual sales of nearly £63 million, employs some 200 people and has nine manufacturing sites worldwide. Four of the latter can be found in the UK, at Thurston in South Yorkshire, Bliston in West Midlands, Brancepeth in County Durham and Scunthorpe in Lincolnshire. Each site has a particular specialisation and together they make a range of products, including recaarbonisers and refractory coatings, metallurgical and petroleum cokes, coal and anthracite blends, synthetic and natural graphites, forging lubricants and machined graphite components.

A global network of agents and distributors is backed up by the support of experienced manufacturing and technical staff. Today the Durrans Group is one of the world’s leading producers of carbonaceous materials.

Endeco Omega Sinto Foundry Machinery
Rui Dias and Victor Dias will attend. For further details TEL: 011 907 1785 or visit www.endeco-omega.co.za
Take hold!

HÜTTENES-ALBERTUS conducts intensive research to combine the special foundry chemistry knowledge acquired over many decades, with completely new approaches. Our international specialists work hand in hand with the foundries to create the most economical and environmentally friendly casting processes. Our team is at your service.

SI Group
The Substance Inside

www.siigroup.com
Sintokogio Ltd – Hall 17 Stand B20

The holding company stand will include its associated companies such as Laempe Mössner Sinto and Omega Sinto Foundry Machinery.

Sinto’s lineup alone consists of green sand moulding, tight-flask moulding, flaskless moulding, v-process moulding machines and related equipment, aluminium casting systems for tilting gravity and low pressure die-casting, finishing such as shot blasting equipment and abrasives and environmental equipment such as dust collection, exhaust gas purification systems and hoods for fumes. They even manufacture polishing machines and compounds.

Sinto and its associated companies manufacture equipment for the whole foundry process, from sand treatment to surface treatment finishing, which includes shot blasting equipment, as well as offering blasting abrasives and peening media, core moulding technology and 3D printing.

Sinto’s lineup alone consists of green sand moulding, tight-flask moulding, flaskless moulding, v-process moulding machines and related equipment, aluminium casting systems for tilting gravity and low pressure die-casting, finishing such as shot blasting equipment and abrasives and environmental equipment such as dust collection, exhaust gas purification systems and hoods for fumes. They even manufacture polishing machines and compounds.

Omega Sinto designs and manufactures equipment for sand mixing from 1 to 100 tons per hour (pivotal, articulated and mobile models); mould handling - fast-loop systems and carousels to accommodate mould sizes from 800 x 600 to 3000 x 2000mm; reclamation - mechanical attrition units from 1 to 20 tons per hour, thermal from 1 to 3 tons per hour and secondary attrition units from 3 to 10 tons per hour; core making - 2.5 to 100 litre jobbing and semi-automatic core shooters for gas hardened and heat-cured processes, as well as turnkey project services.

The company will present its product portfolio at GIFA focussing on the key topics of data transparency, digitisation and overall efficiency.

Foseco – Hall 12 Stand 12A01 and A02

Enno Krueger, Warren Zandberg and Stephan Coomans from Foseco South Africa will be on the stand. For further details TEL: 011 903 9500 or visit www.foseco.com or alternatively www.foseco-at-gifa.com

Foseco Foundry Division

Due to its strong commitment to research and development and by working closely together with customers in developing new applications and solutions, Foseco will be showcasing 14 new product and equipment technologies at GIFA 2019.

In feeding systems, Foseco will feature the new, patented range of Feedex K spot feeders for ductile iron castings, SCK modular feeders for spot feeding of large jobbing iron and steel castings, and Feedex NF1, the first exothermic feeders for aluminium casting.

The highlight in filtration is the new Hollotex Shroud application for large, high value steel castings. The system, which combines the proven benefits of steel filtration with a novel shrouding system to protect the metal stream from the air, offers unparalleled levels of inclusion removal and reoxidation reduction, resulting in significant improvements in casting quality and reduced rework.

In the coatings area, the latest developments in automotive coatings offering the highest levels of internal casting cavity cleanliness will be featured alongside Acticote coatings for compacted graphite castings and the Intelligent Coating Unit coating control system that ensure consistent coating application time after time, reducing coating related scrap and coating consumption and improving productivity in the core room.

In the iron and steel melt shop, Foseco will feature the newly developed Ferrolab V thermal analysis system for iron foundries. Easy to install and simple to run, the system delivers real savings from reduced scrap and increased casting quality.

A new range of Viso multi-life nozzles for steel ladles will be displayed together with the recently launched Triad Z range of no cement castables for iron and steel applications and a new generation of multi-life Kaltek cold-start insulating ladle linings.

Finally, for aluminium foundries, Foseco will be promoting the latest generation of SmartT melt treatment stations and degassing units that deliver enhanced hydrogen level control, superior inclusion removal and optimised grain refining; Dycote Safeguard coatings that can increase die coating life by up to 300% offering significant improvements in productivity and casting quality and new crucibles with a Thermacoat external coating layer offering enhanced insulation and reduced power consumption in induction furnace applications.

In addition to the large number of new technologies on show, Foseco will also highlight novel applications of existing products through the use of case studies, Magma simulations and casting exhibits.
The Backbone of Ceramic Fibre

- Ceramic Fibre Blanket
- Ceramic Fibre Modules
- Ceramic Paper
- Insulation Boards
- Calcium Silicate Boards
- Vacuum Formed Products
- Mixes, Cements & Coatings
- Textiles - Cloth, Rope, Braids & Tape
- Silicon Carbide
- Insulating Bricks
- Crucibles
- Refractory Castables

Experience counts

Resistant Materials Services
Website: www.rmsproducts.co.za
Email: rms@rmscc.co.za
Tel: +27 (11) 917 0702

Cape Refractory Industries
Email: info@caperef.co.za
Tel: +27 (21) 962 7484

Natal Refractories (Pty) Ltd
Email: info@natalrefractories.co.za
Tel: +27 (31) 914 0100

Contact the company closest to you.
Successfully implementing new solutions, optimising processes, improving economic efficiency and environmental compatibility. These are the key issues facing foundries all over the world and under the motto ‘Foundry Inside’, Hüttenes-Albertus (HA) will present a holistic concept for partnership and cooperation with its customers.

**Joint development and exceptional service**

“Time to market” has long become a major competitive factor in the foundry industry. With the promise of accelerating the pace of innovation and optimising foundry processes, Hüttenes-Albertus (HA) operates its HA Center of Competence (CoC) in Bad-deckenstedt near Hanover, Germany. At GIFA 2019, the company will be showcasing the exciting possibilities offered by this unique platform for innovation and cooperation.

The CoC is equipped with pilot and industrial plants, which reproduce almost all of the process steps within a foundry, including mould making, core shooting, casting and more. It allows hands-on testing of new concepts and solutions for all mould and core production processes without having to interrupt the customer’s processes.

3D printing of cores is another future-oriented topic HA is keen to talk about with its customers at GIFA. For example, the company has developed coatings with special properties that are perfectly adapted to additively manufactured moulds and cores. Furthermore, the installation of a specially configured 3D printer from ExOne in the Center of Competence enables HA to work with its customers in this field.

**A major step towards foundry 4.0**

HA will be taking centre stage with two of its partners to outline their joint vision for implementing digital core production, which represents a major step towards foundry 4.0. Three leading technology providers in their fields, Magma GmbH, a specialist in the virtual optimisation of foundry processes, HA as a supplier of foundry chemicals, and the core shooting machine manufacturer Laempe Mössner Sinto GmbH will be presenting their unique concept of a virtual core shooting process.

**Advanced binder technology**

Ever stricter environmental requirements represent an increasing challenge for foundries. HA’s efforts to further develop cold box binders have focused not only on technological optimisation but also on improving environmental properties. The company has successfully pursued this path in product development, for example by creating different cold box series to meet individual customer needs.

Inorganic binder systems are also delivering efficient, high-quality results, although their development is far from over. HA foundry specialists and chemists have succeeded in further improving these products. At GIFA 2019, the company will be presenting its latest innovations, including the optimisation of storage stability and solutions for using inorganic binder systems in iron casting.

**Productivity and cost-efficiency gains**

The company also has some exciting news about feeder technology; Chemex Foundry Solutions GmbH, an HA Group company, is proud to present its latest product innovations. These include a new generation of exothermic side feeder inserts for vertical moulding machines. These products enable foundries to exploit the benefits of exothermic feeders in a segment that has traditionally been dominated by natural feeders.

Chemex has also further optimised its aluminium sand casting feeder technology. In addition to cylindrical sleeves, the company now offers cold box bound telefeeders with a special formulation for the non-ferrous sector. The insulating feeder material is specifically designed for applications in aluminium casting. Thus, the intelligent functional principle of the two-part tele(scope) feeder can now also be used for the benefit of aluminium foundries.

**IMP Scientific and Precision**

Donald Osmond will be on the Bruker stand on Friday 28 and Saturday 29 June 2019. For further details TEL: 011 916 5000 or visit www.imp.co.za

**Bruker GmbH – Hall 11 Stand A39**

A manufacturer of scientific instruments for molecular and materials research, as well as for industrial and applied analysis.

Bruker will exhibit the recently launched the new G6 Leonardo, an inert gas fusion (IGF) analyser for oxygen (O2), nitrogen (N2), and hydrogen (H2) concentration.
measurements in inorganic samples.

The G6 Leonardo extends Bruker’s line of high-precision, compact analysers by introducing its SampleCareTM into IGF-analysis for metals and ceramics. The G6 Leonardo with SampleCare technology deploys the reliable Smart Molecule Sequence for robust and precise elemental analysis of O2, N2 and H2.

With its pre-calibrated standard methods and argon (Ar) carrier gas instead of helium (He), the G6 Leonardo addresses the needs of industrial process and quality control for easy and cost-effective operation.

In addition, Bruker will show their Elemental.Suite 2.0 software, brand new software available for spark analysers, including the Total Materia database from Key to Metals. There are many new features in the software for visitors to experience first-hand.

**Insimbi Alloys**
Dudley de Beer, Samantha Le Roux, Coleen Singh and Helen Fernandes will be attending. You can contact them via Dudley De Beer on 083 285 0741 or visit their suppliers’ stands. For further details Tel: 011 902 6930 or visit www.insimbi-group.co.za

**Frenzelit – Hall 09 Stand C58**
A manufacturer and supplier of gaskets, technical textiles, expansion joints, insulation and new materials.

**Refratechnik – Hall 5 Stand F03**
Manufacturer of refractory bricks, prefabricated material, monolithic refractories, tundish and ladle cover material and synthetic slag.

**Scottish Chemicals – Hall 11 Stand 11B10**
Manufacturer and exporter of hexachloroethane, degasers, grain refiners, foundry fluxes, coatings, (Ti & Sr) modallloys, (Mn, Cu, Fe) adal tablets, AlTi5B1 coils, boron hardener, magnesium, ingots, fast melting silicon, ceramic foam filters, crucibles and castables.

**Seeif Ceramics – Hall 12 Stand A21**
Producer of shaped and monolithic refractories.

**SNAM – Hall 13 Stand 13C49**
Manufacturer of ferro silicon, ferro silicon magnesium and ferro silicon-based inoculants.

**Wire d.o.o – Hall 13 Stand B28**
A cored wire producer.

**Keegor Meltech**
Bruce Hansmeyer and Eddie Short of Keegor Meltech, an official distributor of Morgan products in Southern Africa, will be on hand to assist with local enquiries.
Morgan Advanced Materials – Hall 11 Stand A04
Morgan is bringing together three businesses under the ‘One Morgan’ exhibition stand.
Molten Metal Systems (MMS), Thermal Ceramics and Haldenwanger are co-exhibiting.
MMS will be presenting the VAluStar crucible, which has a significantly improved service life, resulting in lower labour costs and time savings in handling compared to all other crucibles in the global market.
MMS offers a complete range of premium quality crucibles and accessories for the melting, holding, treatment and casting of ferrous and non-ferrous metals and metal alloys. Manufactured from a wide range of high-quality raw materials using advanced technologies, crucibles are available in a comprehensive range of sizes and shapes, for optimum performance in individual applications.
MMS also offers individual machined components such as degassing rotors (dgrs), nozzles, continuous casting crucibles for the foundry and primary aluminium industry that combine the already proven performance of a Morgan material with the precision and complexity of a CNC machined work piece.
Thermal Ceramics manufacture and install a wide range of thermal insulation products that significantly reduce energy consumption and emissions in a variety of high temperature processing applications. These include fibre boards and shapes for use as back-up insulation or installed as hot face application solutions and high temperature insulating bulk fibre materials for use directly as thermal insulation or for the base material.
Morgan Haldenwanger is a leading global producer of high-tech ceramics. They offer a comprehensive product range of oxidic and non-oxidic materials, primarily for use in demanding thermal, chemical and mechanical applications.
The Keegor Group (Pty) Ltd specialises in supplying furnaces, machinery, allied hardware and consumables. The Keegor Group includes Leonard Light Industries (Pty) Ltd, Keegor South Africa and Keegor Meltech (Pty) Ltd.
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.

LTM Mulondo Holdings
Hardus Visagie and Francois Oosthuysen will be attending and you can find them on the Vesuvius/Foseco stand Hall 5 Stand D19. For further details TEL: 016 450 4332/4021 or visit www.ltmholdings.com

Mineral-Loy
Hans Joubert and Phillip Steenkamp will attend. For further details TEL: 011 802 4050 or visit www.mineral-loy.co.za

FerroPem Foundry Products – Hall 13 Stand A52
Manufacturer of inoculation and nodularisation techniques to use within the iron foundry industry.

KBM Affilips – Hall 13 Stand B60
Manufacturer and marketer of master alloys for use in the aluminium and investment casting industries.

Rio Tinto Iron and Titanium – Hall 13 Stand B62
Manufacturer of Sorelmetal pig iron, zircon and rutile for use in the iron foundry and welding consumables industries.

Mineral Zone
Brendan Homann, Claude du Toit and Adrian Pearson will attend. Mineral Zone represents Capital Refractories Ltd, Elkem Refractories Products, LKAB Minerals and Amava Mining. For further details TEL: 010 599 2442 or visit www.mineralzonesa.com

Capital Refractories Limited – Hall 15 Stand H22-08
Capital Refractories specialises in supplying refractory linings and associated products to metal melting, foundry and cement industries around the world. Capital Refractories manufactures a wide range of dry vibration rammable products for lining coreless induction furnaces, vacuum coreless induction furnaces and channel induction furnaces for the melting of steel and high temperature alloys, iron, copper, bronze, aluminium and masteralloys.

Elkem Refractories Products – Hall 13 Stand C50
Elkem offers products for the production of advanced refractory and ceramic products including microsilica, silicon powders and complementary products.

Mondeco Solutions
Peter Petersen will attend. For further details TEL: 079 448 1277, peter@mondeco.co.za or visit www.mondeco.co.za

Norican Group – Hall 11 Stand A74 and A78
Home to leading, globally operating technologies: DISA, Italpresse Gauss, StrikoWestofen, Wheelabrator and Norican Digital.

Clansman Dynamics Ltd – Hall 16 Stand C24
Handling solutions for the after-cast area. Product range includes automatic degating, handling and grinding manipulators, hammers and wedges for
casting separation, gating cutters.

SiiF SAS – Hall 15 Stand H30
Foundry finishing equipment and solutions for iron, aluminium and steel castings such as fettling, trimming and decoring.

Simpson Technologies – Hall 17 Stand B60
Foundry and process mixing technologies including green sand moulding sand preparation, sand coolers, batch and continuous mullers, sand laboratory instrumentation.

GIFA 2019 will be the first tradeshow where Simpson Technologies, Webac Gesellschaft für Maschinenbau mbH and Wesman Simpson Technologies Pvt. Ltd. will exhibit together. The show theme will be “Better Together - Innovation through Collaboration”. The MC-25 is the smallest of the seven Simpson Multi-Cooler models and is typically used in 20 t/h sand systems

Simpson Technologies will be displaying the entire Simpson Analytics sand testing product line. The display will be divided into two sections with one section dedicated to green and clay bonded sand testing and the second section dedicated to chemically bonded sand testing for no bake, cold box, and shell sand processes

Nederman-MikroPul Filtration – Hall 16 Stand B24
Dust extraction systems and filters for a wide range of applications.

A1 Roper Limited Ladle Works – Hall 15 Stand H22
Design and manufacture of ladles and ladle gearboxes.

Otto Junker GmbH – Hall 10 Stand H41
Melting, casting, heating and heat-treating equipment for the aluminium and copper industries, as well as melting and casting equipment for iron and steel foundries.

Mingzhi Technology Co. Ltd – Hall 15 Stand E01
Core making machines, core shop design.

O.M.LER S.r.l. – Hall 16 Stand F11
Italian manufacturer O.M.LER S.r.l specialises in pneumatic systems for vibratory de-coring of grey iron and aluminium castings. O.M.LER S.r.l. was established by the Lerda family in 1974 as a production company. In 2001, it became a proprietary company and starting from October 2014, it changed articles of association once again, becoming a commercial, proprietary and production company.

From this date, it specialised in marketing the de-coring hammer products for foundries under the brand name of O.M.LER 2000.

In 2017, the company expanded to a new factory of some 2 000m² for the development of new complete and off-the-shelf equipment and lines besides the hammer systems they already supplied to foundries. A qualified and specialised staff divided into assembly and production areas, allows the company to be in step with modern technology.

For further details contact O.M.LER SRL on TEL: +39 0172/457256, email omiersrl@gmail.com or visit www.omlersrl.com

Silca South Africa
Alexander Saam will be on the stand. For further details TEL: 060 972 7505, email alexander.saam@enthalpie-sa.com or visit www.silca-online.com

Calsitherm Silikatbaustoffe GmbH – Halle 09 Stand F40
A manufacturer of high performance, asbestos free calcium silicates, in a density range of 200 to 1 100kg/m³. The products are used worldwide in industrial plants like petrochemical, cement and power generation, domestic and commercial fire protection solutions, metallurgical and process industries and other engineering industries.

Spectro Analytical Instruments — Hall 11 Stand H21
Pierre Strydom and Lionel de Jager will attend. For further details TEL: 011 979 4241 or visit www.spectro.com

Spectro will present their metal analysers Spectrolab, Spectromaxx and Spectrocheck that were developed to meet the divergent metal analysis needs of the industry. They are also going to introduce a new compact automation solution for foundries in cooperation with their partner Herzog. You can also experience the latest technological OES developments at the stand.

Furthermore, you will have the opportunity to extensively test their mobile metal analyser Spectrotest, the portable metal analyser Spectroport as well as the XRF handheld Spectro xSORT. Both Spectrotest and Spectroport utilise a new, more-advanced readout system, which is a prerequisite for the introduction of iCAL 2.0 - a consistent enhancement of the instrument’s proprietary iCAL calibration logic system. iCAL 2.0 enables the mobile analyser to deliver unsurpassed stability, even in the face of ambient temperature changes.

Spectro manufactures advanced instruments and develops solutions for elemental analysis in a broad range of applications.
Tracking trends for metalcasting

What shapes the future for foundries and diecasters? Follow these five areas of development to know what’s important to the technologies and the businesses.

GIFA 2019 has been circled on many calendars as the time and place for announcing new business plans, introducing new process technologies, and unveiling new projects in design and research. But other ideas and issues will already also be on the agenda, and in the minds of metalcasters attending the 25 to 29 June 2019 event, in Düsseldorf, Germany.

GIFA 2019 will be 14th International Foundry Trade Fair with Technical Forum, and is set to host more than 900 exhibitors (2 100 for GMTN 2019) from around the world, including all of the most notable suppliers of melting, moulding, coremaking, sand treatment, and vibratory and finishing machinery for foundries and diecasters.

The organisers of GIFA are mindful of the trends shaping metalcasting, and have highlighted five trends that are influencing the business and technologies:

1. Aluminium displacing steel. There are numerous reasons for this: The auto industry, as already in aerospace, requires lighter components. However, the stability of aluminium is also a major factor. In mechanical engineering, this material is also used for demanding tasks. In 2017, approximately 6% more aluminium was produced than in 2016, and the cost of the finished product is decreasing due to advanced manufacturing methods.

2. Automation in place of skilled workers. Fewer and fewer people are working in foundries, and further declines are to be expected. In order to remain competitive, metalcasters rely on semi-automated or completely autonomous systems to maintain (or increase) their output. Employees are able to invest more time designing or testing, and this should increase the interest of younger workers in metalcasting careers.

3. Digitisation and Industry 4.0. Sensors, connected machines, and Smart controls are at home in metalcasting: Numerous operations are already connected. And foundry customers and potential customers benefit from the data. Processes can be optimised with Big Data and possible bottlenecks and errors in the system can be detected early. Manual adjustments in the operating procedure are less necessary.

New technologies like virtual reality help metalcasting businesses to present themselves to the larger world. Thanks to augmented reality, technicians can easily adjust or repair machines with a superimposed virtual image. And, virtual learning becomes easier with the new technologies. CAD programmes and 3D glasses can make prototyping more efficient.

4. Environmental protection. Foundries are considered to be among the most energy-demanding industrial operations. A study by the German Federal Environment Agency demonstrated that the majority of foundries could get their energy requirements from renewable energies. For this, however, energy storage devices are necessary that can meet the enormous requirements for 24/7 operation.

The use of more efficient casting moulds may reduce raw material requirements, and energy requirements may be further reduced by more efficient furnaces, making the entire industry more environmentally friendly.

5. Additive manufacturing. AM/3DP soon may begin to encroach on metalcasting markets, particularly for smaller cast products, as more 3D printers are able to produce commercial-grade metal parts.

These technologies are already being used in projects that require only a small quantity of the finished product. Also, structures that would not be possible in normal casting pose no problem for additive manufacturing. For larger quantities and parts with larger dimensions, no change in the need for castings is expected soon.
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AMRC Castings enhances 3D sand printing capability

As one of the first foundries to take advantage of large-scale 3D sand printing technology, the AMRC Castings Group has recently enhanced both its capacity and physical envelope.

Capable of producing complex moulds and cores for oil, gas, aerospace and automotive without the need for dedicated tooling, the technology has been exploited for complex sand cores and moulds in silica sand which is more suitable and cost-effective for aluminium and cast iron alloys. It also benefits from a larger build envelope of 1500mm x 1000mm x 700mm and two ‘palletised’ job boxes, allowing rapid set-ups outside of the printing process and hence reduced lead times.

“As before, both machines print 3D sand printed moulds and cores for use in the foundry industry. However, due to further investment in process enhancements we have been able to increase capacity, accuracy and further reduce lead times,” said the Casting Group’s Anthony Kenney.

Anthony explains that due to the moulds and cores being made as single pieces, castings with a high degree of both accuracy and geometrical relationship can be produced to DCTG7 (casting dimensional tolerance) flexibly, quickly and accurately. Aside from the more obvious benefits, the hydrodynamic balance attainable from this technology is unrivalled.

“This means, regardless of size, moulds and cores can be made with an accuracy of plus or minus 0.3mm and, depending on the print density, the typical turnaround time is between 12-24 hours printing for the SMax and between 24 and 50 hours for the S15. This can be transformational for clients, who typically invest tens-of-thousands of pounds in dedicated, inflexible tooling that takes longer alone to manufacture than it takes us to deliver a finished casting. Furthermore, we can easily incorporate minor design revisions without any further costs being incurred.”

“As well as utilising this technology to produce high value-add castings, we operate a bureau service, printing moulds for casting by others, directly from their 3D CAD model. The typical lead time for a mould, dependent upon the current production schedule, is five to 10 working days. Cti (the commercial arm of the group) can also consult and advise on design and methoding using 3D sand printed moulds and cores, if a foundry has no, or limited previous experience,” added Anthony.

For further details visit www.amrc.co.uk

R&D, pre-production and full-scale production volumes at the University of Sheffield Advanced Manufacturing Research Centre (AMRC).

AMRC Castings, which is part of the AMRC and is based on the Advanced Manufacturing Park at Catcliffe, South Yorkshire, England, now has two of the additive manufacturing machines for the printing of one-piece 3D sand moulds and complex cores that would ordinarily require significant capital investment in pattern equipment and multiple core-boxes to be made and assembled.

The ExOne S15 digital mould and core making system has recently been upgraded by the Castings Group to incorporate a new, advanced operating system, which increases the speed at which printing takes place. This machine has also been modified to run on 100% Cerabead – suited to higher temperature alloys and boasting a build envelope of 1500mm x 750mm x 750mm.

It’s sister printer, the ExOne SMax, produces highly accurate sand cores and moulds in silica sand which is more suitable and cost-effective for aluminium and cast iron alloys. It also benefits from a larger build envelope of 1500mm x 1000mm x 700mm and two ‘palletised’ job boxes, allowing rapid set-ups outside of the printing process and hence reduced lead times.

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For further details visit www.amrc.co.uk
SK Chemicals, a manufacturer of chemicals used in foundries, has been put up for sale by its private equity owner amid a flurry of dealmaking in the chemicals sector, people close to the matter said, it has been reported by Reuters.

Buyout group Rhone Capital is working with Citi on the deal, which may value the Germany-based supplier of binders, additives, feeders, filters and metallurgical products at up to 500 million euros ($559 million), the report indicated.

Rhone, which bought ASK Chemical from former joint owners Clariant and Ashland for $350 million in 2014, was expected to send out information packages to potential buyers in mid May, they added.

Rhone and Citi declined to comment.

Rhone is expected to market ASK Chemicals to peers such as Vesuvius, Imerys, RHI, Huettenes-Albertus as well as private equity firms, the report stated.

“ASK is heavily geared towards foundries, typically suppliers to the auto industry. So the question will be whether they want to increase their exposure to that sector,” one of the sources said.

ASK is expected to post earnings before interest, tax, depreciation and amortisation of about 65 million euros this year and may be valued at 7-8 times that based on past deals in the sector, the sources said.

The sale comes as chemicals groups such as BASF and Clariant are shedding non-core assets specialising in products for the construction industry or for makers of paints and coatings, and after Evonik struck a deal to sell its methacrylates plastics unit.

**Thos Begbie & Company's long history has resulted in it excelling in a vast range of cast machined engineering products for the mining industry in general.**

The company’s vast foundry, heavy engineering works and pipe manipulation divisions, give it the versatility to cope with the demanding mining and pyrometallurgical industries’ requirements. Often, burn-throughs on contact shoes, furnace linings, launder & runners and other unforeseen catastrophes need urgent reaction from a supplier of these components. As luck would have it, most mining and smelting operations are remote and often difficult to get to, resulting in having to airfreight 100’s of tons of cast and machined copper components in all types of climatic conditions.

Graphite Freezealive Solutions (Pty) Ltd (GFS) is the latest addition to the Thos Begbie Holdings Group.

GFS offers products and solutions to customers requiring efficient and heat-resistant refractory materials in both Carbon and different grades of Synthetic Graphite machined to tight tolerances to suit customers’ requirements. Various Carbon-based products are also manufactured in our workshop catering to all fields in the foundry industry.

We offer a 24/7 emergency operation 365 days-per-year, and considering that customers are situated across all the time-zones, the sales and engineering staff are always on duty. Customers in 20 countries across the globe have been given excellent service by Thos Begbie and their dedicated team.

**Graphite Launder**  **Furnace Cooler Assembly**  **Launder Assembly**  **Furnace Assembly**  **Skimmer Blocks**

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www.thosbegbie.com
With the DuraScan G5 family, all Vickers, Knoop and Brinell test tasks in the load range between 0.25gf and 62.5kgf can be performed efficiently, flexibly and reliably. All model versions excel with the innovative user guidance system of the ecos Workflow operating software. The test cycle from setting the indent through to displaying the hardness value is always performed fully automatically, thereby eliminating operator effects to the greatest possible extent.

Precision and a broad spectrum of applications

The pioneering standard load range of the DuraScan G5 from 10gf to 62.5kgf expands the application range of the hardness tester enormously. This can be extended optionally to the range from 0.25gf to 62.5kgf, even subsequently at any time! The force is thereby continuously and precisely monitored electronically using a series of electronic force measuring sensors.

Innovation in image evaluation

The 10 Mpix camera employed in all devices of the DuraScan G5 series sets new standards in image quality. The intelligent use of the high-resolution camera chip allows a 3x zoom without having to accept any loss in quality due to interpolation. This innovative solution allows a broad range of applications to be covered with a small number of lenses. In order to make full use of this potential, the DuraScan G5 uses only lenses that offer maximum optical resolution. The proven fully automatic evaluation reliably regulates the brightness of the image and automatically evaluates the indentation.

Thanks to the patented rapid traverse for the height adjustment, the height of the test head can be adjusted at 10x speed. This saves valuable time when switching to samples at different heights. The hardness tester is equipped with a 10 MP camera, which allows the user to cover more applications with each lens. As a result, fewer lenses and therefore lens changes are needed overall and the investment and tooling costs are reduced.

The manufacturer promises a high degree of precision and reliability through use of state-of-the-art measurement and regulation technology, as well as precise results and repeat accuracy. The intuitive user interface of its ecos Workflow operating software reduces the familiarisation time and the number of operating errors. All classic functions of hardness testing are possible here with a small number of clearly structured work steps. The operating software guides the user step-by-step through the measuring process right up to the data backup. The XChange interface included as standard and well documented in all DuraScan G5 devices allows the import and export of test parameters and results to be automated and hence accelerated.

Data management / template function

A measurement data group can be created and selected before the test. All test results are collected in separate lists, allowing them to be represented clearly, exported or saved as a report at any time. Use grouped measurement data management to assign test data to individual users or user groups, components, batches or departments. In addition, frequently used test parameters can be assigned to the measurement data group in the form of templates (method, conversion, geometric correction). This significantly reduces the amount of work for the operator and the possibility of incorrect operation.

For further details contact IMP on TEL: 011 916 5000 or visit www.imp.co.za
New specialty inoculant for grey iron – Elkem

High-aluminium foundry additive maximises chill reduction, reduces casting porosity, and increases the tensile strength of grey iron castings.

Elkem has launched a new high-aluminium inoculant that, according to the experience of foundries maximises chill reduction, reduces casting porosity, and increases the tensile strength of grey iron castings. The new Superseed® Extra Al inoculant contains a special combination of aluminium, strontium, and zirconium that eliminates chilled white iron in thin sections and corners, increasing the machinability of grey iron castings.

This new inoculant also achieves strong chill reduction without relying on calcium, as in other inoculation practices. As a result, this low-calcium inoculant generates very little slag, reducing the slag build-up in iron being transferred to pouring equipment and minimising the possibility of casting defects.

This inoculant is a 75% Si-based ferroalloy especially designed for use in grey iron. It contains balanced additions of strontium and zirconium, which are powerful in promoting type A graphite and reducing the risk of nitrogen blowholes respectively. By producing the inoculant with a deliberately low aluminium and calcium content, the likelihood of hydrogen pinholes and slag generation are minimised.

Superseed® Extra inoculant is produced at the Elkem Bremanger plant in Norway and the Elkem Chicoutimi plant in Canada, using special production methods to ensure maximum uniformity of composition and structure throughout the product.

Elkem’s specialty inoculants, nodularisers, cover conditioners, pre-conditioners, and ferrosilicon products help foundries achieve superior-quality castings that meet user requirements, including chill-free iron, improved graphite structure and mechanical properties, lack of porosity from shrinkage, and lower total costs.

For further details contact Ceramic and Alloy Specialists on TEL: 011 894 3039 or visit www.ceramic-alloy.co.za
Indian company MPM Private Limited, based in Chennai, has recently introduced its Sandman software product to the South African market.

The data analytics software presents the state of green sand parameters, its process control and correlation to related rejections. Sandman provides a tool to understand the dynamic and continuous state of process optimisation of the sand system and predicts the corrective action required to control the sand parameters. The resultant optimisation would lead to reduction in rejection and improving casting outcomes, thereby saving repetitive losses and improving profitability. The achieved lower rejection can be maintained sustainably, dynamically and scalably with continual use of Sandman, say the developers.

Sandman has been developed by Deepak Chowdhary, who has devoted the entire 40 years of his career in understanding the complexities of the green sand moulding process and its control in ferrous foundries. The consequence of which, Sandman is one of the world’s first data analytic software programmes for optimisation of green sand with a view to reducing repetitive casting defects and optimising additive consumption.

Sandman’s predictive analytics will suggest optimal values of the sand properties with a view to reducing casting defects. Sandman’s prescriptive analysis further provides dose-by-need additive recommendations to operate around the optimal condition.

Sandman identifies the key sand parameters critical to sand related casting rejections, prescribe an optimal operational range for the sand properties, provides tools for monitoring sand properties to track the effect of actions taken on the green sand system, gives a dose-by-need additives prescription for each load to achieve optimal sand properties and avoids over-dosing and under-dosing of the system resulting in optimised additive consumption.

For further details visit mpminfosoft.com

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The ExOne Company, a global provider of three-dimensional (“3D”) printing machines, 3D printed products, and services to industrial customers, announced a further strengthened material collaboration with Sandvik Additive Manufacturing, a division in the high-tech global engineering Sandvik Group.

With more than 150 years in the metals industry, Sandvik has unique and leading expertise across the additive manufacturing (AM) value chain, from metal powder to finished components. The material collaboration leverages ExOne’s knowledge of binder jetting print machines and processes with Sandvik’s leading capabilities in materials technology, metal powders, different AM processes for metals and world-leading post processing technologies like machining and heat treatment. The purpose of the collaboration is to create a leading edge process solution that can be offered to a broad industrial customer base.

The material collaboration will focus on qualifying and optimising Sandvik’s Osprey metal powders with ExOne’s binder jetting machines. The collaboration will include studying powder and binder interactions, developing 3D machine process settings, and creating post-processing heat treatments for various materials, initially including stainless steels, tool steels, and nickel alloys.

“We are excited to announce our material collaboration partnership with Sandvik Additive Manufacturing. Sandvik is a world-class engineering company with extensive knowledge of materials and their applications to various industries. We look forward to advancing ExOne’s binder jetting process with this new collaboration and creating new solutions that enable broader customer adoption,” said John Hartner, Chief Executive Officer of ExOne.

“This material collaboration will strengthen our ongoing R&D cooperation with ExOne even further. It also offers great opportunities to qualify our leading OspreyTM metal powders for the ExOne platform, to enhance end customer productivity and product performance,” said Mikael Schuisky, VP and Head of R&D and Operations, Sandvik Additive Manufacturing.

Sandvik has multiple ExOne binder jetting machines. Sandvik is also a beta customer for ExOne’s new X1 25PRO™ production machine.

For more information, visit https://www.additive.sandvik/en/ or https://www.home.sandvik/en/
WE HELP WITH THE MANUFACTURE OF COUNTLESS PRODUCTS EVERY DAY.

By helping to ensure that sufficient raw materials can be processed further - with the help of our products and experts.

We cannot do without castings, particularly in the construction of machinery and pump housings for the petrochemical industry.

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FOSECO. Your partner to build on.
Some things are very good at absorbing moisture...

...your mould should NOT be one of them

Novaset 745 & 700

Excessive mould moisture in Alkaline Phenolic binder systems can lead to the generation of hydrogen gas, a major cause of gas defects in castings. Applications with thin-walled castings, high sand to metal ratios and high temperature castings are particularly susceptible to this kind of defect. In many cases defects are only found later, after fettling, machining and/or X-ray testing wasting both time and money.

The range of Novaset resins from ChemSystems has proved time and again to substantially reduce moisture absorption in the mould, and that translates into far lower scrap and rework rates.

Now there is no need to risk wasting time and money - Novaset resins from ChemSystems can enhance your bottom line and give you the competitive edge.