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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.

**Fees**

- Individual Member (local) – R625.00
- Individual Membership (country) – R380.00
- Junior Member – R100.00 – must be enrolled as a full schedule student, in an accredited educational institution in the Metals Industry as a trainee, and who has not reached his 23rd birthday.
- Retired Member – R250.00
- Company Member (local) – 1 to 150 foundry related employees – R2 550.00
- Company Member (local) – more than 150 foundry related employees – R5 265.00
- Company Membership (country) 1 to 150 foundry related employees – R1 525.00
- Company Membership (country) more than 150 foundry related employees – R3 100.00

All of the above fees include VAT and are per annum.

**Council Appointments for 2012/2013**

- President - Enno Krueger
- Vice President - Takalani Madzivhandila
- Treasurer - Bruce Crawford

**Constitutional Members**

- Immediate Past President - Luis Dias

**Elected Members**

- John Davies
- Ndione Maluwa
- Janley Kotze
- Jaco Grobler
- Nigel Pardoe
- Mpho Mabotja
- Justin de Beer
- Adrie El Mohamadi
- Andrew McFarlane
- Coenie de Jager

**Western Cape**

- President - Mike Killain
- Training Coordinator - Anthony O’ Brien
- Financial & Technical Speakers - Dean Horne & Sean Stadler
- Administration - Kevin Missenheimer
- Social Co-ordinator & Technical Speakers - Mike Killain

**Address Details**

- University of Johannesburg
- Metal Casting Technology Station - Metallurgy Room G101, John Orr Building, Corner Siemert and Beit Street, Doornfontein, Johannesburg, Gauteng.
- Postal Address: P.O. Box 14863, Wadeville, 1422.

**Contact details for Western Cape:**

- Tel: 021 573 7311; Fax: 021 573 7296; Cell: 072 313 8375

**Website:** [www.foundries.org.za](http://www.foundries.org.za)

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**EDITOR’S COMMENT**

**Moving forward with the SAIF**

This month marks the changing of the guard at the SAIF, so to speak. New President Enno Krueger (previously Vice President) takes over from Luis Dias, who has held the position for the last two years. Supporting him will be Takalani Madzivhandila, who has been elected as Vice President. There are also a number of new faces that have been elected to serve on the SAIF council, joining some of the tireless regulars. We thank Luis for his valuable input during his tenure as President and wish Enno and the ‘new’ team all the best for the next year.

These changes come at a time when, in the relatively short history of the SAIF, the Institute has never been so active in promoting and improving the conditions and working environment of all its members and those involved in the South African foundry industry. Under the stewardship of the CEO John Davies great strides have been made on a number of fronts to put the industry on a new path of success and sustainability, which I believe is not recognised or supported fully by industry.

Fundamentally the objectives and actions of the SAIF are to be involved in the advancement of the sciences related to the manufacture and utilisation of metal castings through education and the dissemination of information for technology and research in the practice of founding.

However change and progress for improvement for the entire industry was recognised by the SAIF executive and council members, at the time, when the first CEO of the Institute was appointed just over two years ago. Simultaneously government funding was approved, which sadly has been abused by consultants, to uplift the industry to international standards so that the industry would be in a position to deliver in support of the government’s planned multi-billion infrastructure programme. Nevertheless the SAIF took ownership in presenting and running training courses in the form of short courses. To date over 500 students have attended these highly recommended courses in the past two years.

But this has not been the only initiative that the SAIF has been involved in. The list is lengthy resulting in the SAIF being recognised by government, industry and like-minded associations as the industry organisation to deal with. Notable mentions are the custodianship of the training foundry in the Western Cape and now the proposal to formalise The Gauteng Foundry Training Centre, a joint initiative with the Gauteng Department of Economic Development, the National Foundry Technology Network and the Ekurhuleni East College for FET (more details can be found further on in the magazine). There is also the BRICS Foundry Forum, which is scheduled to take place in South Africa next year with a number of delegates from Brazil, Russia, India and China attending.

For those of us serving on the SAIF executive and council, we realise that we still have a long way to go. So I urge you to become members, both company and individual, and participate in the Institutes activities. Without you this momentum will be abruptly halted.
For over 10 years we have been supplying the South African molten metal industry with a range of Ferro alloys, cored wire, aluminium alloying additions, ceramic castings and filters, minor and special metals and minerals.

These include master alloys and alloys, fluxes, coatings, insulation materials (boards, blankets, wool, cloth, bricks and other textiles), filters, inoculants and nodulisers, hollowware, tin, mercury, linings, ceramic pre-cast shapes, crucibles, slide gate systems, filtration and degasser systems, furnaces, core shooting machines, moulding plants and systems, metal treatment and automation systems.

Our international affiliation includes:

- ICP (Industrial Ceramic Products): ceramic gating components
- Selee Corporation: filters for metal filtration
- HOESCH: grain refiners, master alloy’s
- Schaefer: non-ferrous die coats, fluxes
- Strike: aluminium furnaces
- Foundry Automation: core shooting machines
- IWF: turnkey moulding plants and systems
- Mammut: crucibles
- Progelta: molten metal treatment and automation systems for grey and ductile iron foundries
- Kennecott: FeMo
- Elkem: inoculants and nodulisers
- Ceralcast: local ceramic production facility
- CEDIE: cored wire
- RATH: refractory materials

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Local foundry, industrial and mining equipment manufacturer and distributor of international equipment Lauds Foundry Equipment’s MD Kevin van Niekerk reflects on the company’s progress during the past year, since exhibiting at the GIFA 2011 exhibition, which took place in Dusseldorf, Germany at the end of June 2011. “Overall the exhibition was very good for us and as a result the company has moved forward considerably in the past year,” said van Niekerk. He explains:

SABS ISO 9001:2008

“We have completed our second successful audit for SABS ISO 9001:2008 certification. Since the initial implementation of our ISO certification, our quality of design, manufacturing and service delivery of all our products, whether it be new machinery, replacement parts or response to clients requirements, have improved tenfold due to the structures and procedures implemented by us in following though from a simple request to handing over of a major contract.”

“As an OEM we firmly believe that if you want to be taken seriously or recognised by any major players on a global scale, the audited quality control management systems have to be implemented. Without these, from a manufacturing point of view, we cannot see how you can guarantee a quality product. Our ISO program has enabled us to greatly reduce manufacturing time and enabled us to manufacture our products at a very competitive rate, which has resulted in a major increase in sales over the last year. ISO is a rigorous system which has to be implemented religiously on a day to day basis, and personnel resources have to be committed to the success of the continued implementation,” says van Niekerk.

Contracts awarded

“We were awarded a prestigious contract to design and develop a mixing, processing and manufacturing plant, on a turnkey basis, for a laboratory consumables company in the gold industry. This was a company who found us at GIFA and we signed the contract in November of last year with the Benoni based client. On signing the contract and agreeing on the equipment selection, we were also awarded the exclusive rights to supply their global expansion over the next five years,” continued van Niekerk.

Agents selected

“GIFA also opened up the lines of communication for companies operating in Eastern and Middle Europe, which led to the signing of the exclusive rights to market our broad range of equipment in these areas. These agents support our entire range from a marketing, technical and service point of view and this has now thrown us into the global market on a much larger scale than we ever anticipated. We are now stretching our horizons into the USA and are in discussions with a major player in the foundry and industrial sectors there,” explained van Niekerk.
THE POWER OF 2

The world is full of great double acts. Our technology and your foundry, for instance, to make premium-grade casting products. Or your castings in the hands of engineers who produce great technology that serves us every day.

Our locally based teams of foundry specialists are on hand to help you develop innovative solutions to suit your coating needs.

Our products, services and expertise coupled with your skills and process knowledge can unlock the full potential of your foundry operations.

As a reliable and trusted supplier, Foseco can help you to optimise surface finish, eliminate defects, reduce application times or perhaps improve the working environment.

Whatever your foundry requirements are, talk to us.

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New shotblast equipment range
“Together with all of this we have launched a new range of shotblast equipment. We are currently in a joint venture bringing in the major components and doing all structural, manufacturing and electrical controls for this vast range of shotblast equipment for the local market. The range extends from hanger and rumbler type machines through to the rotary drum type which are installed at the end of fully automated moulding lines.”
“We believe that this new range will bring us closer to becoming the complete solutions provider and equipment supply company, covering all aspects required for a complete foundry, with the exception of induction melting furnaces.”

Richards Mining Equipment (A Division of Lauds)
“Richards Mining Equipment, a division of Lauds, has been trading extensively in the mining sector for the past three years and has been responsible for a major part of our growth. We have been supporting, on a hundred per cent export basis, mines directly involved in alluvial mining, from diamonds, copper to gold and tin. We have a full product range of Yuba jigs, (skid based and portable) which are serviced and supported directly by us. We have been supporting clients from Ethiopia, DRC, France and Canada. We also source and supply any mining related components. For further information please visit our website: www.richardsminingequipment.com.”

Investment in CNC manufacturing equipment
“Lauds took the decision last year to become a major manufacturer in the mining, industrial and foundry sector and in order to do this and to ensure a reduced turnaround time, with an increased quality product, we moved over from an antiquated manual system to a fully automated CNC operation. As a result we have been able to reduce our manufacturing time dramatically. These times were reduced even more when we invested in a new CNC plasma cutter. Every item from a structural point of view is processed on our CNC plasma giving us final machine dimension accuracy from machine to assembly and welding.”
“In addition to this we designed and built our own roller in order for us to equip ourselves better from a rolling perspective - whether it be bulk silos for material storage through to ducting on our filtration systems.”
“We are currently looking at our machine shop and will be investing in CNC vertical machining centres and CNC lathes. This will propel Lauds Foundry Equipment into one of the most sophisticated state-of-the-art manufacturing facilities, which is in line with our vision to become leaders in manufacturing equipment for the industrial, foundry and mining sectors.”

Preferred supplier to Pefco Foundry
“We have just completed phase one of a project with KwaZulu Natal based Pefco Foundry with an investment value
of R9 million. Together with the owner, Paddy O’Doherty, his dedicated team and ourselves, we assessed the current foundry known as MP1 which was an antiquated, very restricted green sand plant. We had a look at the broad range of products that were to be manufactured and the demographics of the existing facility and decided to uplift and remove the entire green sand plant, thus opening up and modifying the entire foundry to accommodate a brand new chemically bonded sand system."

"The new plant consists of a 12 TPH continuous mixer, a full reclamation plant with sand storage totalling 200 tons and fully automated sand delivery lines feeding either the core shop or continuous mixer storage facility. Additional work would be the full refurbishment of six core machines, installation of a fully automated Vertimix high speed batch mixer and automated sand delivery system for each core machine thus ensuring a continuous ‘on-demand’ feed to each core machine."

"This takes the level of this foundry into the 21st century with a fully mechanised multi-loop system with casting and cooling lines able to handle moulds of 1500 x 1200 x 1000 mm on a continuous basis comprising core-making, moulding, casting, cooling and automatic feed into the new reclamation under one roof."

"This system will also enable Pefco to manufacture a large range of components without restriction. A major part of this investment was the material handling system, vibratory feed conveyors and a heavy duty pneumatic riser knock-off unit ensuring the maximum efficiency and throughput of the new facility is achieved. We are now in the process of implementing phase two and have been elected the sole supplier to Pefco Foundry now and in the future."

"Lauds Foundry Equipment would like to take this opportunity to thank all our existing and new clients for all the support they have shown us over the years in the industry. We promise to give you an improved quality product and service delivery for your every requirement. Without the support of the industry, we would not have the privilege to offer this service and we realise we are all partners in every endeavour. We see ourselves as playing a role in the success and growth of each client company we provide a service to. We are in for the long haul and our main commitment is to improve our service to our clients," concluded van Niekerk.

For further details contact Lauds Foundry Equipment on TEL: 011 824 1238, email sales@laudsfe.com or visit www.laudsfe.com
Anglo American sells Scaw to IDC-led group in R3.4 billion deal

Diversified miner Anglo American announced in April the final stage of the $1.4 billion Scaw Metals Group divestment with the sale of integrated steelmaker Scaw South Africa to an investment consortium led by South Africa’s State-owned Industrial Development Corporation (IDC).

Included in the R3.4 billion ($440 million) IDC-led deal are Anglo American’s Scaw South Africa partners Izingwe Holdings, Cyril Ramaphosa’s Shanduka Resources and the Southern Palace Group.

The debt-and-cash-free transaction follows the sale of Scaw’s international businesses, Moly-Cop and AltaSteel, to Onesteel in December 2010 for $932 million, also on a debt-and-cash-free basis. In aggregate, the total consideration achieved from the sale of all Scaw’s businesses has amounted to $1.4 billion.

The sale of Scaw brings the total announced proceeds from Anglo American’s divestments of noncore assets to $3.7 billion since 2010.

Anglo American CEO Cynthia Carroll is particularly pleased that the acquisition contributes positively to the South African government’s industrial development objectives by enabling the IDC to play a meaningful role in the strategically important steel industry.

IDC CEO Geoff Qhena says that steelmaker Scaw South Africa is positioned to take advantage of long term growth trends in the mining industry, as well as in the railway and power generation sectors, and is aligned to the IDC’s primary objective of creating balanced, sustainable economic growth in South Africa and across the African continent.

“In this regard, Scaw South Africa is well positioned to take advantage of long term growth trends in the mining industry, as well as in the railway and power generation sectors, and is aligned to our primary objective of creating balanced, sustainable economic growth in South Africa and across the African continent.”

Sipho Pityana, Chairperson of Izingwe Holdings (Pty) Ltd. and representing Anglo American’s partners in Scaw South Africa, said: “This transaction provides an excellent platform for the strategic positioning of a BEE player in the manufacturing sector, in line with the new and emboldened approach of government, and affords us an opportunity to gradually increase black participation in the asset.”

“We commend Anglo American for demonstrating a readiness to embrace the above transformation vision by allowing us, as their partners in Scaw, to buy their interest in the business with suitable partners and we are grateful to the IDC and the government for their strong support.”

The transaction is subject to customary closing conditions such as regulatory approvals in South Africa including but not limited to competition clearance, and is expected to be completed during the course of 2012.

Scaw produces consumables for the mining, rail, power, offshore oil and gas, construction and industrial sectors, such as high chrome and forged grinding media, steel wire rope, chain, wire and strand, cast steel products and low and high carbon long steel products.

The business includes half ownership of Consolidated Wire Industries, a joint venture (JV) with ArcelorMittal South Africa; a 31% interest in the GSIL JV with Lucchini SpA, and 100% of Haggie North America, Haggie Reid, African Wire Ropes, Haggie Zimbabwe, PWB Anchor (now Scaw) and Afrope Zambia.
Temperature measurement from the leaders in process automation

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Loop powered field indicator RIA16 with large LCD display. Freely programmable, with digital limit switching and hazardous area certification. Industries include oil & gas and petrochemical, in areas such as system and apparatus engineering, lab facilities and process data acquisition and monitoring.

Panel meters / indicators

The RIA45 is a digital panel meter with a control unit for monitoring and visualising analogue-measured values in control rooms and cabinets, laboratories, and process control environments, among others.

The RIA46 has similar functionality to the RIA45, but can be used in the field.

Foundation Fieldbus™ indication

Configurable indicators R1D14 and R1D16 for field installation, using Foundation Fieldbus™ protocol.

Probes for the harsher environments

RTD assemblies in thermowell with spring loaded insert and enclosure for all types of process industries, including harsh environments. Areas of use include chemicals, petrochemical, power plants, refineries and offshore platforms. Produced locally.

Multi-protocol output and input signal conversion

The TMT162C thermocouple thermometer comprises a measuring insert with a type J or K thermocouple and an electronic field transmitter with HART®, FOUNDATION Fieldbus™ or PROFIBUS® PA protocol.

The TMT85 is a dual-input temperature head transmitter for the conversion of different input signals into digital (Foundation Fieldbus™) output.

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People for Process Automation
Since the existence of the ANSYS simulation community in the early 1970's, FEA and CFD engineering tools were only accessible to large companies and expert engineers. Through years of development, the exponential growth of the software industry and the even more rapid improvement of computer hardware, more advanced analysis tools have become available to the desktop engineer and designer. In the past 8 years we have seen design validation software in all major CAD programmes in the form of structural and fluid simulation. These tools were intended for the designers to validate their ideas before starting production. The designer of today has fundamental knowledge and experience of the simulation process, optimization and parameterization.

Furthermore, a designer or engineer can very easily run large models on his desktop and achieve accurate results within minutes. Parametric studies can be performed to fully understand the behaviour of their products and designs. Designers are able to make better decisions in a shorter time resulting in a more efficient engineering environment.

But designers and engineers reached the ceiling in the simulation capabilities available in CAD programmes in many cases. With the introduction of the ANSYS Professional licenses, designers and engineers have a FEA license available to them that will solve more complex problems more accurately. Features such as the fully automated meshing inside ANSYS enable designers to have more functionality available to them at an affordable price and a robust geometry interface with their CAD system (SolidWorks, Autodesk Inventor, SolidEdge, Pro Engineer/Creo Elements, NX) that natively works on the CAD geometry.

ANSYS introduced the Confidence by Design seminars to introduce their simulation tools to the manufacturing community. The Confidence by Design workshop is a complimentary session that teaches you how to leverage ANSYS tools to ensure that your designs will work the first time, before any prototypes are built and tested.

Qfinsoft is hosting these series of seminars. Seminars will be held in the form of a morning event where ANSYS presentations will be followed by product demonstrations. Both Structural and Fluid tracks are available. The first of these events are being held at the Stone Cradle Restaurant in Pretoria on 20 July 2012 and everyone is welcome to register. For more details visit the Qfinsoft website or contact them on TEL: 012 345 1917.
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Contact the company closest to you.
Twenty years on and it is still the hotter the better for Hi-Tech Elements

Twenty years ago Shaun Bester and André Goosen (now retired) launched Hi-Tech Elements, a company that has entrenched itself as a custodian of important heating-element technology that is needed across the length and breadth of the Southern African industry.

But it wasn’t always that way.

In fact, the background to the start-up of Hi-Tech Elements is one of the most unusual entrepreneurial stories ever told. Imagine this. Goosen and Bester are left stranded because their former boss absconds to escape gambling debts.

A large corporate rival buys the leaderless company out of liquidation and Goosen and Bester are given jobs in a new corporate environment.

As the months wear on, they find corporate business life unbearable and hanker for the fast and free business style that they had experienced under their former boss, Hennie Schwartz.

After seven months, they plucked up enough courage to quit the corporate world.

The year is 1992; the month May and Hi-Tech Elements is launched, after the partners scraped together R60 000 and exchanged flashy company cars for clapped-out old jalopies.

Goosen, Bester and two partners, who have since left the business, began by making and selling heating-element spares, fortunately having among their clients the State-owned Atomic Energy Corporation, which paid bills at 14-day intervals and boosted the new company’s cash flow.

Year by year the company grew, reaching a point where, today, the 50-employee firm in Boksburg, Gauteng has progressed into the world of sophisticated turnkey heating solutions.

Hi-Tech’s customers today include some of the bluest of South Africa’s blue-chip companies, involved in some of the largest and most prestigious multibillion-rand contracts in Africa.

But the road to business achievement has been a rocky one. Both Goosen and Bester had tough childhoods; both experienced foster care during their formative years and were forced to leave school before matriculating. But both were also quick to put their unstable pasts behind them and to grasp the opportunity of becoming entrepreneurs.

Goosen’s story is an amazing one. He was managing a men’s outfitters store in Johannesburg and sold apparel to the multimillionaire who later became his boss and fled to escape gambling debts.

Schwartz took a liking to Goosen’s management style and offered him the position of production manager at a then thriving heating-element manufacturing business he had inherited from his father.

At first all went well at the then Heating Elements Engineering, but while Goosen was in Cape Town opening a new branch, he received the shocking news: Schwartz had suddenly left South Africa.

But shock was ultimately turned into a highly respectable company and, today, the impressive Hi-Tech product catalogue tells a story of the extent to which the company has advanced.

In telling the Hi-Tech story it is important to go beyond the products themselves and to show how these products are now being mixed and matched to provide world-class heating solutions. More and more, the company is succeeding in the big league of lump-sum turnkey contracting.

International contracts

It was fourteen years ago that Hi-Tech took the large leap to export further afield when a European competitor failed to beat them in a bid, and the company is now regularly beating international rivals on price, know-how and delivery.

One example of this are the ladle-heating systems Hi-Tech has produced for BHP-Billiton’s Mozel aluminium smelter in Mozambique. The company was so successful with the initial offering at Mozel I that they won the order for Mozel II.

More recently the company has completed a contract to supply 30 electric column paste heaters to a Chinese smelter Group in Golmud, Haixi, Qinghai China. Further business to the same region has resulted from this contract. The opportunity to export to China arose when Hi-Tech Elements’ longstanding Canadian turnkey engineering client contracted them to supply the electric column paste heaters directly to China.

Shaun Bester, the MD and now sole owner takes up the story. “In a time when there are numerous complaints about products of all types manufactured in China flooding the South African market, it is very refreshing to reveal that we have had considerable success in supplying equipment that...”
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For 90 years, SCAW, a South African industry leader, has been a leading supplier of cast products to industries that are the backbone of our South African economy. When safety and productivity are at stake, customers depend on SCAW’s 90 years of experience and expertise to design and manufacture castings to the highest international manufacturing, safety and environmental standards.

With one of the largest foundries in the Southern Hemisphere, SCAW produces an extensive range of products cast, machined and delivered to customer specifications or under international licence. Customers, both nationally and internationally, continue to choose SCAW products and expertise.

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The Scaw Metals Group is a South African company serving international markets.
There is a widely-held perception that South African manufactured products are increasingly uncompetitive when compared to products manufactured in territories such as Asia. But we are defying conventional wisdom and have increased our exports to, of all places, China, which is meant to be emerging as the world’s workshop.

With its product proudly being used in Mozambique, Zambia, Zimbabwe, Botswana, Tanzania, Angola, China, Australia, the UK, America, Canada, the Far East as well as some European countries, Hi-Tech and its subsidiary companies have become a very competitive manufacturer with specialised abilities to service clients’ needs.

**The heating specialists**

From maker of spares, Hi-Tech Elements has become a designer and manufacturer of complex heating technology and temperature measurement and control systems, embracing industrial heating elements, thermocouples, control panels, The Hot Rod®, trace-heating, furnaces, ovens, conveyor ovens, batch ovens, water and air heaters, ladle heaters, short and medium wave infra-red reflector panels and a host of other heating pursuits.

Established in 1992, the company is based in a 2 800 m² factory on a 3 200 m² site in Boksburg, on the East Rand. Fixed assets employed at the factory include lathes, a press brake, guillotines, welding machines and various heating equipment manufacturing machines.

In addition, the company adds value by installing programmable logic controllers, associated switchgear and temperature sensing equipment.

The company benefits from the fact that heating is the starting point of most industrial activity.

There is hardly a piece of equipment or product that does not involve a heating process, be it in the fields of metal, plastics, ceramics, oil, paint, textiles, vehicle manufacture and the food industry.

Focusing on industrial heating, the company’s main comparative advantage is its ability to design, manufacture and install tailor-made solutions rapidly, at short notice.

The local content of Hi-Tech’s range of products is high, with design at 100%, manufacture at 100% and the local content of materials at 55%. The remaining 45% of these are imported, including all the nickel-chrome and iron-chrome wire and strip, mica, incoloy tubing and vitreous-enamel glass.

As nearly half of the raw materials required have to be imported, a weak rand does have an impact on the company, which has to hold its prices over long periods on large turnkey business. Both iron chrome and nickel chrome are imported and these materials feature in virtually every electrical element that is manufactured.

The core of an element is its resistive nickel chrome wire and strip generally in the ratio of 80% nickel and 20% chrome. For higher temperatures iron chrome wire and strip is used.

The company exports 70% of its production into Africa and has never once sought any form of export incentive from the government. The company has working relationships with the likes of Eskom, the Nuclear Energy Corporation, the CSIR and universities, and has been involved in communicating the benefits of conversion to electrical heating from other heating forms.

Many academics seek practical assistance from Hi-Tech Elements during their research and development into aspects of heating.

Bester laments the fact that understanding of heating’s intricacies is limited because no tertiary institutions teach the subject in any depth or take into account its application-specific nature.

It is only through practical exposure that newcomers are learning how, when and where to use electrical heating elements. As a result, the company regularly encounters inappropriate and often dangerous use of heating elements, including instances of off-the-shelf domestic geyser elements being used to heat oil, with disastrous consequences.

Electrical elements can last between six months and ten years, depending on application and whether they are used properly, and failure is mostly due to poor maintenance and incorrect application.

Currently the market is such that the supply of equipment to large capital projects has lost some of its previous...
buoyancy and the company finds that most of its business is involving the supply of normal bread-and-butter business, involving the sale of spares into the replacement market.

Bester has detected a discernable trend towards the use of electrical heating as an alternative to diesel, paraffin and gas heating, experiencing growing appreciation that electrical heating is cleaner and far easier to gauge and measure than other forms of heating despite the recent rise in the cost of electricity.

Typically, the company works in the temperature range up to 1 300 °C, the range in which the bulk of heating takes place in industry.

Bester also reports a growing use of short-wave infra-red heating. Much like microwave heating, infra-red heating is used in applications where intense heat is required to be delivered very quickly. Unlike convection heating involving curing with the use of fan-driven hot air, infra-red heating cures through direct radiation and is being used increasingly in the powder-coatings field.

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Bester also emphasised the fact that Hi-Tech Elements is very much a jobbing business, with each product made to order.

"It takes as long for four people to manufacture a single band heater as it does for a single person to fabricate a large vessel, which fetches 20 times the price."

"Therefore getting it right first time, every time is absolutely crucial. One mistake results in a loss of profit," Bester says.

This is why Hi-Tech's move into turnkey project work has had such a significant influence on the company's fortunes – it has been a way of adding maximum value to heating elements which, if sold in isolation, generate a low return, but, when sold as a system, realise realistic value.

More recently the company has manufactured one of the largest galvanizing plants in South Africa. This included fabricating nine chemical cleaning tanks, one tank for the zinc galvanising and one tank for the final process of passivity. This project involved the entire production and installation process, including the heating elements.

The dimensions of the tanks are 12 metre by 1.2 metres by 2.5 metres with capacities of 35 000 litres and 250 tons for the zinc tank. They are all made from mild steel with some having a polyprop inner lining, depending on their use.

On another project they produced two acid storage tanks
each with a capacity of 75 000 litres and the entire piping system. They also included a thyristor control to manage the electrical system. The total working time for this task was 12 weeks from design to end.

The company’s in-house manufacturing facilities make Hi-Tech about 85% self-sufficient, and they are one of only three companies in South Africa (Africa) with the ability to manufacture tubular sheathed elements. In addition they have all the other facilities pertaining to the manufacture and construction of heating and control products.

The Hi-Tech Elements group of companies comprises Hi-Tech Elements, Howford Manufacturing (purchased and incorporated in May 2003), a manufacturer and supplier of The Hotrod® range of chemical immersion heaters and associated products, and Eastern Controls (purchased and incorporated in August 2003), a manufacturer and supplier of all types of temperature sensors and temperature control equipment.

The company boasts the ISO 9001:2008 DEKRA Quality Management System certification as well as the CE mark for The Hotrod® products.

20th Anniversary

With the company celebrating its 20th anniversary in May it has taken the opportunity to give a fresh look to its branding. “We have changed our logo and all our marketing and sales material to give us a more modern look with an emphasis on the fact that we are ready for the next 20 years and more. Officially we will launch at Electra Mining later this year,” explained Bester.

“Equally we have embarked on upgrading and modernising all our manufacturing equipment, which will realise more efficiencies and increase our capacity. Our efforts thus far have put us in a position to improve quality, turnaround time and service to our clients”.

“Although it has not been easy over the last two years we have managed to keep our head above water and can now see growth in the company. This Chinese contract also proves that South African companies can and do have the ability to export internationally.” concluded Bester.

For further details contact Hi-Tech Elements on TEL: (011) 894 3937
The Gauteng Foundry Training Centre (GFTC) is a joint initiative of the Gauteng Department of Economic Development (GDED), National Foundry Technology Network (NFTN) and Ekurhuleni East College for FET (EEC) and the South African Institute Foundrymen (SAIF).

The strategic goal of the GFTC is to create a hub for foundry related skills training and technology transfer in the greater Gauteng region, offering facilities and infrastructure for both theoretical and appropriate practical training.

Training Centre Manager

There is an opportunity for an individual to apply for the position of Training Centre Manager. Based at the EEC Kwa Thema Campus, Springs, Gauteng you will manage and coordinate all activities of the GFTC with specific reference to the provision of foundry skills training, administration of the Centre and project management.

Qualifications and skills

- A degree/diploma or equivalent qualification. Five to ten years’ relevant experience.
- Technical or industrial background would be an added advantage.
- Ability to manage projects and contracts through the entire project life-cycle.
- Proven negotiations skills.
- Key stakeholder management skills.
- Excellent people and communication skills.
- Must be a highly motivated self-starter who is able to work independently and has a strong track record of delivery and personal leadership.

This will be a three year contract to manage the GFTC, with the option to extend the contract after the contracting period. We are looking for a dynamic and competent person.

Call for an expression of interest to supply plant and equipment

The GFTC presents an opportunity for the supply and installation of plant and equipment required for the GFTC.

The major items of plant and equipment will comprise the following:

1. Melting plant: Induction furnace 50kg capacity for ferrous materials including all support services and refractory lining. 100kg electric furnace for aluminium.

2. Moulding plant: Chemically bonded sand moulding plant comprising a continuous sand mixer (1to 3 ton an hour), an auto blending unit, a Sand storage and feeding system and a vibratory compaction table.

3. Green sand - Bentonite bonded sand mixer

4. Coremaking plant: A 25-50kg “Cold-Box” core sand mixer
A five litre coremaking machine including all support services including extraction system

5. Sand testing equipment: A full range of sand testing equipment for all the conventional laboratory and plant tests for both chemically and bentonite bonded sands

6. Materials laboratory: Metallurgical sample preparation and inspection equipment for metallographic and mechanical testing

7. Temperature measuring: A portable immersion temperature measuring device

8. Compressor: one 5m³/min compressor

Any parties interested in participating in this project are requested to contact the SAIF for the appropriate tender documents. Contact John Davies on email: jdavies@uj.ac.za or Tel: 011 559 6468/55

Closing date: 06 July 2012
Kiran Global launches sodium silicate plant in South Africa

Kiran Global, a leading sodium silicate producer in India, has recently launched its very first plant in South Africa.

This is the third venture outside of India for the company that has 33 manufacturing facilities in India, having first set up a dissolving plant in Dubai, UAE in 2004, and a complete manufacturing and dissolving plant in Egypt at the Suez Canal in 2010.

“Various forms and grades of sodium silicate are used in many different industries. These include the detergent and soap manufacturing industry, ceramics, pulp and paper, automotive, textile, paints and coatings, petroleum processing, mineral beneficiation pigments, fine chemicals such as silica gel and precipitated silica, the manufacturing of titanium dioxide and of course in the foundry industry as a binder, to name a few. Recently sodium silicate has been used more widely in the filtration of water,” explained Shikhar Singh Harnwal, Vice President – Middle East and Africa: Kiran Global Chems Limited, the holding company of Kiran Global Silica SA Pty Limited.

“In simple terms sodium silicate (also known as water glass or liquid glass) is manufactured by combining water, silica quartz sand and soda ash. This formula bonds into a sheet of glass which is then broken up into lumps for transportation before being energised again into a liquid. Certain chemicals are added during this process, depending on what grade is needed and for what industry it will be used in,” continued Shikhar.

Established by the current Chairman, MS Jain, in India in 1979 as a small scale manufacturing unit with the manufacture of a single product, sodium silicate for making detergents, today the company has since increased manufacturing quantities multi-fold and has recently reached the 300 000 ton per year mark, making it the largest manufacturer of sodium silicate in India.

The company, which takes its name from the Chairman’s wife Kiran, has also increased the number of products it manufactures and trades in. The manufacturing portfolio now includes potassium silicate in both the liquid and solid format, while it trades in citric acid, paraffin and residue wax, soda ash, silica sand, quartz powder, sodium bicarbonate, sodium sulphate anhydrous, sodium tripoly phosphate and titanium dioxide.

South Africa

“...the decision to open up a dissolving plant in South Africa was not an easy one because of the stringent labour regulations and the high costs of doing business. But since South Africa has entered the BRIC grouping, relations between Brazil, Russia, India and China have been strengthened significantly,” says Shikhar.
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“Our Chairman MS Jain has an ambition to reach the global market quickly and economically and in the process become a global organisation. This, coupled with the potential to develop a new market in Africa, swayed the decision.”

“Initially we have set up a dissolving plant with the lumps being imported from both Egypt and India and then we convert them to client requirements. It is our intention in the near future to have a full sodium silicate manufacturing plant. We know that there is availability of silica quartz sand in South Africa and there is an abundance of soda ash in the SACU region. The setting up of the manufacturing plant is really a necessity because if you analyse the current situation we are transporting all the way from Egypt and India.”

“We have spent over R45 million on the current plant which only took six months to commission. Although I arrived in South Africa in December 2010, after overseeing the operations of the Egyptian plant, it has been a steep learning curve for me having never been to your country before. My knowledge of South Africa was also limited, but now I am able to give sound advice on all the various aspects you have to take into consideration when setting up a business in South Africa, to all potential investors from India and I receive calls weekly.”

“However we overcame many challenges to the extent where we now have the dti funding, approval and support.”

“The majority of the plant was manufactured in India and then shipped to South Africa, along with 18 technicians to do the erection. The reason we took this decision was the sensitivity of the equipment that is used in the dissolving process. For example, the pressure vessels are Lloyds of London approved and manufactured to our intellectual property specifications. The local cost factor and delivery time of the equipment was also a contributing factor.”

“The manufacturing equipment and structural building materials only arrived in South Africa in early November last year and we commissioned the plant towards the end of March.”

“During this period we were also training up local labour which now comprises 15 and will be ramped up to about 30 once we are in full production.”

“At the moment we have two coal-fired boilers providing our heating requirements but once we have put in the infrastructure to take gas from the council supply we will convert. This will take a while because the source is some distance away.”

“Besides the pressure vessels, we have also erected two storage tanks for hazardous chemicals and five storage tanks for the liquid sodium silicate, each of them having a 500 litre capacity. In addition there is a full laboratory to control and check the formulations as well as the quality.”

“The whole plant is PLC controlled and in combination with the facility to reuse our water and the thermal insulation materials we have used it makes it the most modern and cost efficient plant within the whole Group.”

“Having only just started production our numbers are still relatively small, however I am pleased to say that we already have a couple of foundries on our books. We have forecast to manufacture up to 5 000 tons a month and this will be increased once we have the full manufacturing plant up and running.”

For further details contact Kiran Global Silica SA Pty Ltd on TEL: 011 898 1553

Currently two coal-fired boilers provide the heating requirements

In simple terms sodium silicate (also known as water glass or liquid glass) is manufactured by combining water, silica quartz sand and soda ash. This formula bonds into a sheet of glass which is then broken up into lumps for transportation before being energised again into a liquid. Certain chemicals are added during this process, depending on what grade is needed and for what industry it will be used in.
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The Gauteng foundry training centre is a joint initiative of the Gauteng Department of Economic Development (GDED), National Foundry Technology Network (NFTN), Ekurhuleni East College for FET (EEC) and the South African Institute Foundrymen (SAIF). The vision for the Gauteng Foundry Training Centre (GFTC) is to create a hub for foundry related skills training and technology transfer in the greater Gauteng region, offering facilities and infrastructure for both theoretical and appropriate practical training.

After conducting a feasibility study in 2011 and consulting all respective stakeholders it was decided to house the training centre at the Ekurhuleni East College (Kwa Thema campus). This was a strategic decision taking into account that more than 50% of the foundries are situated in the area and that EEC is already hosting a similar centre for the tooling industry.

The projected launch of the centre is planned for March 2013. Until then the management committee of the training centre plan to equip the centre, appoint a training centre manager and build closer relations between the college and the foundries in Gauteng.

The strategic goal of the Gauteng foundry training centre is to create a hub for foundry related skills training and technology transfer in the greater Gauteng region, offering facilities and infrastructure for both theoretical and appropriate practical training.

**Training Centre Manager**

The management committee have begun the process of looking for a Training Centre Manager, as well as prospective suppliers of foundry equipment.

They are seeking a dynamic and competent person that will be given a three year contract to manage the Gauteng Foundry Training centre, with the option to extend the contract after the contracting period.

Should you be interested in the position please forward a motivation letter and your CV to the NFTN office at admin@nftn.co.za.

**Prospective suppliers of foundry equipment**

The GFTC presents an opportunity for the supply and installation of plant and equipment required for the GFTC.

The major items of plant and equipment will comprise the following:

**Melting plant:**
- Induction furnace 50kg capacity for ferrous materials including all support services and refractory lining
- 100kg electric furnace for aluminium

**Moulding plant:**
- Chemically bonded sand moulding plant comprising a continuous sand mixer (1 to 3 ton an hour), an auto blending unit, a sand storage and feeding system and a vibratory compaction table
- Green sand - Bentonite bonded sand mixer

**Coremaking plant:**
- A 25-50kg “Cold-Box” core sand mixer
- A five litre coremaking machine including all support services including extraction system

**Sand testing equipment:**
- A full range of sand testing equipment for all the conventional laboratory and plant tests for both chemically and bentonite bonded sands

**Materials laboratory:**
- Metallurgical sample preparation and inspection equipment for metallographic and mechanical testing

**Temperature measuring:**
- A portable immersion temperature measuring device

**Patternshop equipment:**
- Saws, lathes, planer thicknesser and power tools

**Compressor:**
- One 5m³/min compressor

Prospective suppliers of foundry equipment and consumables can email John Davies of the SAIF at jdavies@uj.ac.za for the tender documents.
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Crushing plant contributes to carbon recycling

The incredible versatility of the Pilot Modular range of crushers was demonstrated recently with the sale of a Pilot Modular/TRIO MJ2436 jaw crusher to waste management specialist EnviroServ Mineral Beneficiation (EMB); a division of EnviroServ Waste Management.

The crusher is being used in an innovative process developed locally by EMB, which is recycling mineral waste into valuable raw material alternatives for its blue-chip clients. This is achieved by recycling waste that would ordinarily end up in landfill. In other words EMB assists their clients to move up the waste hierarchy, and impart savings to their clients through avoiding high landfill costs through the recycling of their mineral wastes.

According to Regional Sales Manager Rasheel Sukdhoe, EMB is using the crusher to size and recycle large volumes of (amongst other streams) carbon and refractory-based wastes from their blue-chip clients and converting it into a low cost alternative raw material.

EMB’s operations have made use of Pilot Crushtec’s products in the past and when the decision was made to upgrade and increase EMB’s crushing capacity, Pilot Crushtec seemed the logical choice.

Rasheer believes that EMB’s intervention of converting waste into a re-usable raw material is a sustainable local solution to what has become a global problem.
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Stock-holders, service centres and distributors of steel where speed counts
Due to economic growth in South Africa, overall electricity consumption has been increasing at a much quicker rate than the utility’s new build programme. Naturally, this has had an adverse impact on the country’s reserve margin and means that a sudden loss in generation capacity could potentially have significant impact on the supply frequency.

Demand Market Participation (DMP) as a reserve option has been part of Eskom’s Demand Side initiatives since 2005. The instantaneous reserve, in particular, is a mechanism created by Eskom to ensure the stability of the utility’s transmission system and grid.

How it works is that contracted customers play a role in ensuring that demand is reduced within 10 seconds of a frequency-based control signal being sent. This reduction is then sustained by the customer for up to 10 minutes at a time, thus preventing the frequency from deviating to unacceptable levels.

Instantaneous reserves act as an effective buffer in managing sudden drops in frequency. For this reason, Eskom currently has contracts in place with large furnace loads as part of the organisation’s total instantaneous reserve market.

Frequency control

Eskom’s normal frequency deviation varies between approximately 49.85 Hz and 50.15 Hz and is managed through automatic generation control. However, the frequency deviation will be much more drastic during abnormal events, such as the loss of a large generator.

While Eskom uses governor control systems to control water flow in hydro turbines and steam flow to turbine blades in steam turbines to manage the deviation in frequency, this is not always enough.

Ultimately, the shortage in available reserves on the supply side is what triggered Eskom to develop a product that would provide customers with the opportunity to participate in the instantaneous reserve market – this is DMP.

Large industrial customers, especially those with furnace loads, are particularly suited to participate in instantaneous DMP. This is chiefly due to the fact that they have loads that can be reduced within seconds and, furthermore, can be maintained at the reduced level for up to 10 minutes without major temperature and production losses.
Customer participation

The nature of the instantaneous reserve option is that it requires that loads be reduced within 10 seconds. To this end, Eskom installs special equipment at the customers’ premises to manage the process. Such reserves are managed by Eskom using a Virtual Power Station to schedule, dispatch and calculate performance. Customers are then paid for successful reductions.

According to Eskom’s outline of the DMP Programme, participating customers should be able to reduce a minimum of 20 MW within 10 seconds in response to a frequency-based control signal sent.

In order to join the DMP Programme, potential participants have to prove to Eskom - at their own cost and on two occasions - that the expected load can be reduced within the required criteria after receiving the control signal from the DMP dispatch equipment.

Once contracted, the electricity supplier will, on a daily basis and before 9h00, bid the contracted and certified load into the reserve market and then notify the participant before 15h00 if they are on standby with the load for all hours the next day.

Eskom will then provide monetary compensation to those participants that successfully reduce the contracted load. This compensation will be paid for all hours they are scheduled to be on standby during the month. Compensation is paid per MW per hour scheduled.

The right equipment

The utility installs the necessary equipment itself at participating sites, thereby enabling these organisations to take part in the reserve market. This equipment comprises three main components or functions: control, metering and remote communication.

The control component consists of a Programmable Logic Controller (PLC) and/or Distributed Control System (DCS), and is wired into the participant’s control systems. This component applies to all the specific market and participant contractual rules to affect the desired control.

It is important to note, however, that Eskom does not directly control the participant’s equipment; rather, it is the participant’s responsibility to control the necessary equipment to ensure the required reduction when signalled.

The second component is metering, which effectively measures the participant’s total summated incomer load (Total Plant MW) and the supply network frequency to control and sufficiently report on the reduction events.

The third and final aspect is the remote communication component, which ensures sufficient communication between the Eskom equipment installed at the participant and the Eskom DMP Central Control System. This is achieved by the provision of near-real-time information and metered data transfer.

The DMP product has proven an invaluable tool to Eskom over the last few years, particularly when combined supply and regional network constraints have been experienced.

In particular, system frequency - where rapid supply/demand balance is required - has been strengthened by the participation of furnace loads. The almost immediate response from participating customers in delivering the full required load reduction has meant that Eskom has successfully managed to swing the supply/demand scale and prevent further network imbalance and frequency deterioration.

For further enquiries please contact Andrew Etzinger, Senior General Manager Integrated Demand Management, Eskom on TEL: 011 800 4196.
Relatively speaking 15 years is not a long time but it is quite an accomplishment in our industry,” said sole owner Fubio Ciani.

Ciani started Procor Steel and Foundry Supplies in 1998 when he was approached to purchase a sleeve manufacturing plant out of a liquidation of a well known supplier. Ciani also purchased the property from the liquidators. In doing so Ciani has realised the potential not only to improve the manufacture of sleeves coming out of the plant but in addition to introduce other foundry products into the market place.

Of Italian decent, Ciani started off his career in the engineering environment as a fitter and turner with Mather & Platt, a well known supplier of pumps and spares. “This gave me a very good insight in the foundry arena as I was dealing with a number of different foundries,” Ciani explained.

“At the time I never envisaged that I would one day become a supplier to the foundry industry but by visiting our suppliers (the foundries) I learnt how castings were made, and the trials and tribulations that foundries experienced with sleeves and other consumables used in the manufacture of a casting.”

“Today some of those foundries are my biggest customers and have been with me since the beginning.”

Ciani continued. “At first it was not easy but we have never lost focus on the needs of our customers. They have been important to the growth of the company and in supporting us in manufacturing products that are of world standard.”

“Over the years I have not been ashamed to call on experts to facilitate in the process to get our products performing to specification. Yes, we have had failures in the past but these have largely been eliminated now due to the strict production controls that we have implemented in our
plant, and in the upgrading of our equipment. Each failure enabled us to learn and improve our product.”

From small beginnings with a staff compliment of less than 10, today Ciani employs 38 and delivers his products to most foundries in the Gauteng region. “In addition we have clients in the KwaZulu Natal and Cape regions,” Ciani stated.

“Initially we concentrated on supplying exothermic sleeves but as the needs of our customers expanded into dealing with one supplier, we ventured into manufacturing other consumables such as Zircon and Graphite mould coats and castables, and to sourcing core glues, fire putties, slag agualants, powders, solvents and binders,” Ciani continued.

This has now grown into a full range of furnace/ladle mouldables and castables. More recently a range of custom made ceramic fibre products for high temperature insulation has been added to the company’s list of offerings.

To compliment this range of products, Procor have expanded into manufacturing ceramic fibre products and have invested a large amount in a new plant.

Procor can now offer a complete range of ceramic fibre products, items such as ceramic fibre boards, felt, adhesives, coatings and fire mouldables, which can be made up to any size or specification.

In addition Procor supplies ceramic fibre blankets, paper and textiles related to various applications and industries.

Hans Dachs is currently responsible for the production and distribution of the various products Procor produces locally, together with imports and has been involved in the manufacture of ceramic fibre products for over 30 years.

Dachs was previously involved in the first fibre converting plant built in South Africa.

In 2003 Procor took over the manufacturing of chaplets from Precision Chaplets, and have continued to manufacture these products.

What about the future? “The company has begun a programme of refurbishing and modernising our manufacturing equipment. This is being implemented so as not to disrupt production,” said Ciani.

For further details contact Procor Steel and Foundry Supplies on TEL: 011 740 1450.
Incentive aimed at medium-size manufacturers

The Department of Trade and Industry has aimed its new R5.75 billion manufacturing incentive scheme at developing medium-sized and downstream enterprises rather than at the giants of the economy.

Firms that charge import parity pricing, which in the department’s estimation includes ArcelorMittal SA, Sasol, Sappi and Mondi, are excluded from the scheme. Upstream manufacturers would have to have extremely good, employment-creating projects to qualify. Trade and Industry Minister Rob Davies outlined the details of the scheme in May. It was first announced in the budget in February.

Mr Davies said the rationale for the scheme lay in the importance of reviving the manufacturing sector for the benefit of the overall economy. “SA’s problem with stagnant growth can largely be explained by our performance in manufacturing. The scheme is aimed at encouraging firms to make competitiveness raising decisions now,” he said.

The manufacturing competitiveness enhancement programme has six dimensions which will allow firms to choose solutions that address their biggest problems.

They are:
- a cost-sharing grant for new investment of between 30% and 50%, up to a maximum of R50 million;
- a cost-sharing grant for investment in green technology of between 30% and 50%, up to a maximum of R50 million;
- a cost-sharing grant of up to 70% of the cost of programmes to improve enterprise competitiveness;
- a cost-sharing grant of up to 70% to conduct a feasibility study for a new enterprise;
- a cost-sharing grant of up to 80% for “cluster activities” among firms, such as collaborative marketing;
- a working capital loan at a fixed rate of 6% to fund firms in the period of pre-dispatch and post-dispatch of goods until payment.

Smaller firms will qualify for proportionally larger grants

Trade and industry deputy director-general Tumelo Chipfupa said the scheme was open to all manufacturers except for those that already benefit from sector-specific schemes — the automobile and components sector and clothing and textiles — and basic steel, chemicals and paper and pulp manufacturers.

The scheme is partly modelled on the success of the department’s competitiveness programme for clothing and textiles manufacturers.

While specific sectors were not targeted as beneficiaries, Mr Chipfupa said the department hoped the agro-processing, downstream metals and plastics manufacturers and transport and machinery equipment sectors would be the biggest beneficiaries. Taken together these sectors accounted for 45% of manufacturing employment and 33% of manufacturing value-added.

Stewart Jennings, chairman of manufacturers lobby group the Manufacturing Circle, said although the incentive was “relatively small” it was nonetheless important. “It is a step in the right direction. Most important, though, is government’s recognition of the importance of manufacturing.” It was also significant, he said, that while government incentive programmes had in the past “picked winners” by being sector specific, this one was generic and would enable manufacturers that wanted to succeed to participate.

The scheme marks a departure from the department’s approach in the past, which has favoured large, capital-intensive investments.
KEW Foundries has just completed a multi-million rand order for Gunric Valves, to cast seven valve body and disc sets for use by a large water utility.

The biggest butterfly valves that this leading manufacturer of high quality valves has supplied to the local market to date comprised of DN2500 valve bodies and discs, weighing five tons and six and a half tons each respectively, to be used on isolation duty.

With diameters of 2.5m (inside) and 3.5m (outside), each fully assembled valve weighs around 13.5 tonnes. The valves are pressure rated for 10 bar. The valve bodies and discs were cast from SG Iron, ideal for this application due to its good pressure-rating and tensile-strength and corrosion properties.

Having received the order in October 2011, KEW Foundries managed to deliver in less than four months as per the client’s requirement, despite the period coinciding with the festive season. The first four sets were provided in November, two sets arrived at Gunric Valves’ factory in December, and the last set followed in January 2012.

KEW Foundries also assisted Gunric Valves with the patternmaking for this order, and acted as consultants for the project. The two companies benefit from a long-standing, 11-year relationship built on mutual trust and respect.

“We find KEW to be very accommodating, knowledgeable and quick to respond to our requests. In a business environment like ours where late delivery penalties are at stake, this commitment is crucial to our success,” says Mark Wilson, Marketing Director, Gunric Valves.

Gunric Valves have several international projects in the pipeline, which will benefit KEW Foundries.

For more information contact John Bryson, Foundry Director, KEW Foundries on TEL: 053 841 0474.
The Foundry Technology Programme within the Faculty of Engineering at the Cape Peninsula University of Technology (CPUT) is part of an initiative supported by the Department of Science and Technology to build the technical capabilities of foundries in South Africa towards localisation of imports.

Together with the Metal Casting Technology Centre at the University of Johannesburg and the Centre for Rapid Product Development at the University of Stellenbosch, the Foundry Technology Programme at CPUT has developed an active local network of resources for its postgraduate students. Through this local network, it has been able to establish RIFT, a scholarship programme aimed at developing high-end expertise (or human capital) to support the technology and innovation capabilities of the South African foundry industry.

RIFT is driven by the opportunities for economic growth in the large procurement programmes of the South African State-Owned Enterprises as part its mandate within Government’s Competitive Supplier Development Programme (CSDP). It is therefore a critical element for the competitiveness of the South African foundry industry, and to enable it to participate in the supply chains of OEMs through its localisation obligations.

Five students have been recruited as part of the CPUT component of the initiative, to undertake a joint Masters programme between CPUT and the international partners, and are currently undergoing an interim preparatory semester before departing for Europe in September 2012. The preparatory programme includes a dedicated training programme on the use of Magmasoft for casting simulation, as well as using Catia for mould and component design. The students are mainly mechanical engineering graduates, and will contribute to the design and simulation capacity of the industry.

RIFT has two key international partners for education and research in Advanced Foundry Technology: the Foundry Institute of RWTH Aachen University of Technology in Germany and the Laboratory for Aerospace Materials of Rzeszow University of Technology in Poland. Through this collaborative network, RIFT has been able to develop the comprehensive and dedicated Masters degree course in foundry technology.
consisting of a combination of coursework, industrial practice and research. The demanding nature of this programme requires a high aptitude for engineering with a well-grounded theoretical basis, obtained through a Bachelors degree in engineering (either BSc Engineering or BTech) in either mechanical or metallurgical engineering.

Students accepted on the programme had to first undertake a preparatory semester programme with the South African part of the network, to gain a fundamental knowledge of foundry related technologies. This included practicals in processes such as sandcasting as well as computational simulation of casting processes using dedicated software systems. This is particularly necessary for students who do not have a background in metallurgy.

After the preparatory semester, students will be enrolled at RWTH Aachen University of Technology for the MSc Degree in Metallurgical Engineering, to undertake a 12 month initial coursework programme. Thereafter, they will return to South Africa to undertake a research internship for the following 6 months linked to an industry partner. The final semester will require students to complete the thesis component for the degree. This will either be carried out at the Foundry Institute in Aachen or at the Laboratory for Aerospace Materials in Rzeszow, depending on the area of research. The degree, MSc in Metallurgical Engineering (RWTH Aachen) or MSc in Materials Science (Rzeszow), will be awarded from the university where the thesis is eventually submitted for examination.

Ametex (Pty) Ltd has been involved with the RIFT programme through training the students on MAGMA5 casting process simulation software.

“Currently, there is a desperate shortage of foundry engineers with the older generation of engineers approaching retirement,” said Andrew McFarlane of Ametex.

“Simulation of casting processes rapidly advances knowledge and understanding of the physics, chemistry, metallurgy and to a large extend, the visualization of these processes. The integration of simulation training for these students could possibly provide them and the foundries they may work for in the near future, the opportunity to make better use of this exciting technology.”

For further details contact Ametex on TEL: 011 914 2540

Standing centre: Andrew McFarlane of Ametex briefs students on the Magmasoft software
Aluminium 2012 is a leading B2B platform in the world for the aluminium industry and its main applications. This is where all the key industry players get together. The trade fair unites producers, processors, technology suppliers and consumers along the entire value chain - i.e. from raw materials through to semi-finished and finished products - from 2012.

The Aluminium 2012 trade fair provides an overview about the entire aluminium industry. It is the international meeting place for suppliers of raw material, semi-finished and finished products, surface treatment and producers of machinery, plant and equipment for aluminium processing and manufacturing.

More than 20 000 international trade visitors look for new solutions and technologies, not only from producers of the raw material but also processors, refiners, suppliers for the automotive or building industry such as producers of sections, suppliers of the latest technologies for extrusion, heat treatment, casting, sawing or surface refinement.

Exhibitors include those from the aluminium producing and processing industry, metal working and processing industry including surface treatment, automotive, transport (commercial vehicles, railway, ship and aircraft building), engineering, electrics and electronics, building and construction, packaging and consumer durables.

Aluminium 2012 moves from the Ruhr to the Rhine
Starting in 2012 the exhibition will be held at Messe Düsseldorf, which offers modern infrastructure, top service and is a leading location for international expertise in materials. Previously the exhibition was always held in Essen, Germany.

European Aluminium Award
The European Aluminium Award, which will be awarded for the eighth time in 2012, looks for efficient and forward-looking uses of aluminium as a material. Prizes are awarded for products and projects that use aluminium as a material in an innovative manner.

Winning a prestigious prize such as this European Aluminium Award not only recognises your innovative approach to business, but is also an important stimulus that helps to promote your company.

The categories in 2012 will be:
Consumer Products: Design and innovation
Industrial Products: Transport and automotive, building and construction, mechanical engineering

Young designers prize
For the 2nd time the “Young Designers” Prize will be given to honour motivated students and independent young designers and engineers for their creative ideas. In addition, the jury will give an overall jury award for the entry with the most striking contribution to “Environment, Sustainability & Energy Efficiency”.

New special prizes
In 2012 special prizes will be given for the categories rolling, casting, extrusion and surface treatment.

The European Aluminium Award is an initiative of the Dutch Aluminium Centre and supported by the European Aluminium Association (EAA), the GDA - the German Aluminium Association - and the Aluminium Trade Fair.

More information: www.aluminium-award.eu/2012/enter-competition or visit www.aluminium-messe.com
Introducing the new family of MTS monotonic testing solutions

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The Indian foundry industry is growing at the rate of 15 per cent annually owing to an increasing share of local manufacturing in the GDP and strong demand from international markets. However, the supply of iron ore, the principal raw material for foundries, has become a major cause for concern with mining units in Karnataka, Goa and Chhattisgarh facing severe impediments.

H Sundara Murthy, President, Institute of the Indian Foundrymen said, “For the next five years, the Indian foundry industry will be on the growth trajectory, reaching an all time high of 20 per cent. The scope for growth is tremendous,” he said but lamented that poor supply of iron ore and erratic power supply to foundry units are seriously impacting the growth of the sector.

He said that there are an estimated 5 000 foundries in India producing castings of grey iron, ductile iron, SG iron, malleable steel, non-ferrous and steel totalling approximately 9.05 million metric tons (2010) annually.

He also stated that the industry employs 500,000 people and indirectly about 150,000 people. India’s share in the global market is approximately 10 per cent of 91.67 million metric tons and India is the second largest producer of foundry-based castings while China is the market leader with 43 per cent (39.6 million metric tons) of the total output.

“The total requirement of castings is about 20 million metric tons in India per year,” he said.

ThyssenKrupp sell-off now includes “World’s Largest” iron foundry

ThyssenKrupp AG is selling its grey and ductile iron foundry group to KPS Capital Partners, LP, a private equity group, for an unreported price. TK Waupaca is often described as the world’s largest iron foundry, and operates six plants in Wisconsin, Indiana, and Tennessee, with approximately 3 500 workers. The sale is expected to be final during 2Q 2012, but remains subject to ordinary closing conditions, according to a KPS statement. The company will be renamed Waupaca Foundry Inc., and its president and CEO Gary Gigante and the current management team will remain in place.

KPS formed a new company, W Foundry International, to purchase the TK Waupaca assets in Waupaca (three plants) and Marinette, WI; Tell City, IN; and Etowah, TN. The six foundries produce castings for automakers and manufacturers of off-highway equipment, commercial vehicle, material handling equipment, and general industrial products.

“We are very excited to create an independent Waupaca Foundry,” declared David Shapiro, a KPS managing partner. “Waupaca is the largest company in its industry worldwide with the leading North American market share in each of its diverse end-markets and strong customer relationships that have been developed over decades of partnership.”

KPS has had prior experience in the metalcasting industry. KPS Capital Partners is described as the “manager” of KPS Special Situations Funds: that entity acquired the former Atchison Casting Corp. organization in 2003, and then sold it (as AmeriCast Technologies) to Castle Harland Inc. for a reported $110 million in 2006. Currently it lists no metalcasting assets, though it owns HHI Group Holdings LLC, an important steel forging group.

Shapiro went on to praise Waupaca’s assets, performance, and service, and its commitment to investing in technology and process development.

“We are thrilled to become an independent company under KPS’ ownership,” Gigante confirmed. “KPS’ commitment to manufacturing excellence and enthusiastic support of our extraordinary growth trajectory and globalization initiatives positions our company for continued success. We look forward to continuing to provide our customers with industry leading quality, customer service and innovation.”

ThyssenKrupp put the metalcasting subsidiary on the block last spring, in the course of an organizational review that was meant to “to focus the portfolio” and separate businesses for which it could find “alternative strategic options.” It said last year it would seek “the best owner” for the foundry group. At the same time it offered for sale several metal processing and automotive systems fabricating subsidiaries, some of which have been sold in the interim.

The Duisburg, Germany-based manufacturing conglomerate continues to look for ways to reduce its manufacturing losses, and now acknowledges it is seeking “strategic options” for the carbon and stainless steel plants it started up recently in Alabama and Brazil. Rumours of such a sale have spread in recent months as the company works to stem unexpected losses related to weak European demand and low steel prices.
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Induction melting has long offered many advantages, but lately it is the technology’s scalability that is getting recognition thanks to some high-capacity projects.

Proponents of induction melting have long held it ideal for foundry operations because it satisfies so many objectives: it is a low emission and energy-efficient process that maximizes the value of raw materials and alloys, and it is a scalable process that can be installed to suit a wide range of production strategies. Lately, however, the emphasis is on large-scale furnace designs.

“We now see coreless furnace orders of 35 to 85 metric ton capacity as the norm,” Inductotherm Europe Ltd. managing director Steve Hill said recently, explaining his group’s decision to build a new plant to manufacture larger vessels.

The European furnace division of the Inductotherm Group and its affiliate Consarc built a new manufacturing plant at Droitwich, in Worcestershire, England, to accommodate production of larger-capacity coreless induction furnaces, including steel-shell furnace vessels and vacuum furnace systems. The new operation has a plant floor covering more than 800 m² and a ceiling height of 14.5 m. It houses two cranes, each one capable of lifting 40 metric tons (total lifting capability of 80 metric tons.)

“With this increase in size, the existing facility in Droitwich had started to struggle with the physical size and weight of these heavy-duty steel shells,” Hill continued.

“The decision to expand production facilities is important for us as it maintains our reputation for reliability by helping us to meet current and future demand at all levels.”

Also maximizing the scale of its induction melting product line is ABP Induction, the furnace builder that last year announced a contract to build “the largest induction melting plant in the world.” The project at Taiyuan Iron and Steel Group Ltd. (Tisco), at Taiyuan in China’s Shanxi Province, is due for completion this year.

Tisco’s order called for a melt shop capable of producing 180 metric tons per hour of ferrochrome, pouring at a temperature of 1,670°C, to produce stainless steel. As ABP Induction explained, the determining factor in the design of this high-volume melt shop was the economic advantage of induction melting over arc melting (which is more common in steelmaking operations), based on significantly lower material losses as a result of the combustion process – specifically, the chromium used to produce stainless alloys

“Fifty metric tons from an induction furnace with a tap-to-tap time of 60 minutes is a tremendous achievement, and requires a lot of power,” noted Dr. Wolfgang Andree, ABP Induction’s managing director.

The furnaces to be installed include two IFM 9 vessels, from ABP’s line of medium-frequency coreless furnaces for melting and holding ferrous or nonferrous metals. Two such units will be installed with capacities of 30 metric tons, powered by 24,000-kW and a 3,000-kW induction power source. In addition, six IFM furnaces will be supplied with capacities of 65 metric tons and powered by three, 42,000-kW power supplies and three more 1,800-kW sources.

Tisco noted that the sizes of the furnaces underscored its need for reliability, energy efficiency, and automation.

ABP Induction said its melt shop design was enhanced by inclusion of the Ecotop system — a welded steel, refractory-lined furnace hood that attaches to the vessel with a floating system to seal the melt from the atmosphere.

A telescoping duct optimizes exhaust gas removal. “ABP Induction has a convincing overall concept for a sustainable technical solution,” according to Liu Fuxing, Tisco’s general manager.

A similarly large-scale induction melting installation will take place in India.

Nalwa Steel & Power contacted ABP Induction to build a melt shop capable of producing 700 metric tons/day of direct reduced iron. It will be one of the largest DRI operations in India. The plant melts of 85% DRI to a tapping temperature of 1,640°C, and the liquid metal is transferred to 32- and 38-metric ton ladle furnaces for refining, to produce steel.

“ABP is supplying two 30-metric ton capacity IFM furnaces with a 16,000-kW power source based on ABP’s Twin-Power concept: a single power source that distributes the energy supply “steplessly” to two induction furnaces, with no switch time losses or overheating in the melt.

The two furnaces will have the Ecotop fume-extraction system, as well as an automated slag-skimming capability. Also, ABP will provide two ladle refining furnaces, 32 metric tons and 38 metric tons, with an electrical rating of 7.2 MVA.

“The major deciding factor for the decision in ABP’s favour was its advanced automation, high-energy melt process, ABP’s Ecotop system, and the automated slag remover that reduces the number of operating personal,” Nalwa executive director P.S. Rana noted. Like Tisco’s installation, the size of the equipment designed for the Nalwa project increased the need for furnace reliability, maximized energy efficiency, and process automation.

“Thirty metric tons from an induction furnace with a tap-to-tap time of 120 minutes for 85% sponge ... requires a lot of automation,” Dr. Andree added.

This project will be completed later this year, according to the developer — demonstrating that the scalability of induction melting may be greater than previously understood.
2nd BRICS International Foundry Forum

The next forum is scheduled to be held in South Africa.

Following the success of the first BRICS International Foundry Forum, which was held in Sao Paulo, Brazil in October 2011, delegates of the foundry associations from the participating countries of Brazil, Russia, India, China and South Africa got together for the second time in May 2012 in Beijing, China. The first BRICS Foundry Forum was organised by the Brazilian Foundry Association.

The BRICS countries are reported to cover more than 60% of the world castings production. Due to this powerful position each country presented its own facts and figures, changing developments, future opportunities and forecasts.

The foundry forum, originally mooted by China, was formed to enhance the cooperation in the realm of high-tech industry among the five countries through trade, investment, technology transfer and human resource development. The foundry associations of the five countries are striving to provide a platform for information and technique exchange and to offer a unique opportunity for businesses to fulfil their goals.

BRICS countries have a wide range of common interests in the foundry industry. This forum serves to promote the friendship among them. Moreover, the associations will adopt more practical policies as guidelines to explore the potential markets and cooperate with each other, thus benefiting the development of the five countries’ foundry industry.

It is believed that this forum will strengthen economic and technical ties, market integration and the development of the foundry industry on a global basis.

The next BRICS International Foundry Forum will take place in March 2013 in South Africa, which will be organised by the South African Institute of Foundrymen.

2012 Die Casting Congress & Exposition

NADCA’s Die Casting Congress & Exposition will be held 8-10 October 2012 at the Indiana Convention Center in Indianapolis, USA.

The 2012 Die Casting Congress & Exposition is expected to be North America’s largest annual event for the die casting industry. The event will feature three days of congress sessions, technical and management presentations that will be given by experts from around the world. These presentations will expose metalcasters to ongoing research, the latest innovations, and successful management tools that will assist companies in enhancing their competitiveness.

In addition to the Congress sessions, the exposition will feature more than 100 exhibitors, the International Die Casting Design Competition, a Design Competition luncheon and a Die Casting Industry Gala Evening.

For further details visit www.diecasting.org
Fausto Romagnani’s face spread into a wide smile when he was asked about the results of the meeting of most of the west’s leading tool and mould making associations. “I’m surprised that everyone is so optimistic.” Both the strong 2011 results for the industry and the prospects of continued growth this year showed in the joyful expression of the president of ISTMA, the International Special Tooling & Machining Association, the umbrella organisation for the world’s national tool and mould maker organisations.

Individual countries reporting last year’s performance for their tool and mould makers said, in general, that they expect their industries to outpace growth rates predicted for their national economies. The worst outlooks from the national level were “stable”, a word heard much less often than “good” or “very good” at the meetings.

Boo Rundqvist, communications director at ISTMA Global Partner Uddeholm, provided an idea about metal demand: “Most of the growth that we saw during 2011 was related to Europe and the Americas,” he said.

A boomerang effect has provided some basis for the sunny disposition of mould makers. Many European nations who suffered severely under the exodus of toolmaking to India, China and other countries in Asia are now seeing a return of demand, especially for large, complex moulds, delegates noted.

Conversely, production of small, simple moulds may be gone for good. “Some products will never come back,” Romagnani told delegates. Another spur in demand has resulted from a reduction in European tooling production capacity. Some European delegates said the last downturn in the cycle drove a range of tool manufacturing companies out of business and has thinned the competition in a number of countries.

Concerns about a lack of capital for tool shops still loom large. Delegates noted that despite the European Central Bank’s continued injections of low-interest loans into the market, most tool and mould makers have yet to see the money trickle down to their level.

International tool and mould meeting offers rosy outlook for 2012

European and North American tool and mould makers expect sales to continue to grow this year, but a number of factors have changed the way they do business, according to delegates at the ISTMA World Assembly held in Lyon, France recently.
QuesTek Innovations LLC, a materials R&D ("integrated computational materials engineering") operation, recently earned a two-year, Small Business Innovation Research (SBIR) Phase II project from the U.S. Air Force Research Laboratory to design and develop a new aluminium alloy that has high strength characteristics as well as thermal stability.

"This project builds upon our past successes such as Ferrium®, C61™, C64™, M54™, and S53® alloys, developed in part with Department of Defence funding and now sold to commercial, industrial, and governmental customers by U.S.-based alloy producers under their licenses from QuesTek," noted the company’s president and CEO Charlie Kuehmann.

The objective of this research is an alloy that is stronger than the current material (alloy 2014) at both room temperature and after high-temp exposure, in combination with corrosion- and fatigue-resistance — but with manufacturing costs similar to Alloy 2014. For reference, 2014 is described as a “precipitation-hardening alloy with good strength after heat treatment,” and commonly used to manufacture aircraft structures and truck frames.

Questek — which offers a “Materials by Design” service to develop new materials that reduce capital, processing, operating or maintenance costs, or improve environmental protection — noted that Alloy 2040 offers higher strength than 2014, but it has a single source and often is a more expensive selection, in part because of the raw materials cost associated with silver addition.

According to its contract, QuesTek will computationally design the new material by using conventional aluminium alloying additions and processing techniques. Eventually, it plans to license intellectual property for the new alloy to multiple alloy producers, in order to develop “a robust supply base.”

It said the new alloy should reduce component weight, improve component durability, and reduce operating costs. The project’s completed state will be production of full-scale, die-forged prototype parts in order to demonstrate improvements in key material properties versus alloy 2014. Potential applications of the new aluminium alloy include aerospace wheel and brake assemblies, and forged aluminium products used in aerospace structures or commercial vehicles, performance racing vehicles, and off-road equipment.
Sublime Technologies is the only producer of silicon carbide on the African continent, a product with a long history.

In 1891 Edward G Acheson produced a small amount of Silicon Carbide while conducting experiments with the aim of obtaining a hard material from the reaction of clay and carbon. He passed a strong electric current from a carbon electrode through a mixture of clay and coke contained in an iron bowl, which served as the second electrode. Acheson recognized the abrasive value of the crystals obtained, had them analyzed, found the formula to be SiC, incorporated The Carborundum Company in September 1891, and filed application for a patent on May 10, 1892.

The manufacturing process may be graphically represented as follows:

\[
\text{SiO}_2 + 3\text{C} = \text{SiC} + 2\text{CO}
\]

Typically, a “furnace” will yield various grades of silicon carbide that is physically sorted, crushed and sized for specific markets.

For many years, the properties of silicon carbide, namely high hardness, high thermal consistency, very good resistance at high temperatures, low thermal expansion, electrical conductivity and its non linear electrical resistance have found many industrial applications. However, more recently, silicon carbide has been used increasingly for metallurgical applications as a silicon and carbon alloying additive. Silicon carbide dissociates in molten iron and the silicon reacts with the metal oxides in the melt. This reaction is of use in the metallurgy of iron and steel.

Silicon Carbide as a replacement for other typical alloying agents like Ferro Silicon in the production of pig iron and gray iron castings is supported by a global trend, particularly in Europe, the USA and indeed our own local market. Reported benefits include an increase in graphite nuclei formation which in turn improves machinability, and less returns in scrap. Silicon carbide is also a potent de-oxidiser, offers lower impurity levels (especially sulphur), reduced carbon injection time and most importantly, reduced cost.

Sublime Technologies supplies local producers of grey iron castings, pig iron and exports to end user foundries in Europe, USA, and the Far East.

For more information contact Sublime Technologies on TEL: 021 789 1884, 017 648 6016, or 082 779 6071.
The use of specialty release agents designed for use in core and mold manufacturing can increase product quality and productivity in foundries. With the new release agent ECOPART® 756, which has been specially developed for use in gas curing processes, ASK Chemicals is providing another efficient element for this process.

The release agent ECOPART® 756, consisting of specialty silicones and additives dissolved in hydrocarbons, is suitable for all gas curing processes. However, the material’s efficiency is most noticeable in the cold box process.

This is particularly the case for the production of complicated cores whose contours tend towards strong application at the point of entry. ECOPART® 756 has been designed to greatly improve process efficiency. For instance, the material’s special composition significantly reduces the amount of cleaning needed for the core boxes. In addition, the release agent has a long lifespan and therefore reduces frequent application cycles. It can be flexibly applied by brush, cloth or spraying device, depending on the equipment of the core-molding plant.

Production delays can be avoided due to an extremely short flash-off time. Consequentially, the core boxes are immediately available for further use. Through the combination of these advantages, ECOPART® 756 is proven to significantly increase productivity in core molding.

The new release agent also affects the surface quality of the cores, because the build-up of resin and sand – especially under the point of entry – is significantly delayed, which optimizes the quality of the cast products.

The release agent was designed in the research and technology center of ASK Chemicals. Here, by combining theoretical knowledge with practical experience, and by engaging in a dialog with the customer, the research team develops new products and applications that are as innovative as they are efficient.

For further information on ASK Chemicals’ full product program, please visit www.ask-chemicals.com.
As an agent of Sibelco Nordic, a subsidiary of Belgian industrial minerals producer SCR Sibelco, Refraline has made specialised zoned silica linings available to the South African heavy metals industry. Manufactured in Finland, Finmix FF30 is a dry silica ramming mix made for coreless induction furnace lining installations. The structure of the material is altered to have a lower porosity and is less inclined to react with aggressive elements, which gives the silica mix a superior performance characteristic that is designed to last longer, states Refraline.

This counters problem spots in induction furnaces where the material tends to wear. With the appropriate binding agent, the required refractory properties for specific zone applications can be achieved.

Common areas of erosion in induction furnaces include the top of the furnace, as well as the area between the corner and lower portion of the sidewalls, also known as ‘elephant foot’ erosion. This is caused by turbulence and high temperatures at the base of the furnace.

Refraline technical sales manager Lawrence Scott says it is important to remember that the lining in a furnace does not always fade in the same spot. The company’s solution to zoned wear is to use good-quality, long-lasting material, but only in those spots where the lining is likely to fail. “Doing this will ensure that the entire furnace lasts longer,” says Scott.

The company installs the fused silica into the bottom section of the furnace, up to where the bottom section becomes straight. Natural silica then lines the rest of
the furnace up to the top part, where mechanical damage tends to occur. Here, fused silica lining is again applied.

“You don’t have to put the zoned silica, which is the more expensive material, everywhere in the furnace,” explains Refraline MD Manfred Rösch. “It’s normal engineering practice to tend first to the weakest part, where there’s mechanical damage owing to turbulence from the metal.”

Refraline claims to have had a lot of success with Finmix FF30 in certain foundries, such as at car parts manufacturer Auto Industrial Foundry, in Germiston, Gauteng, where it has been contracted to apply the specialised lining. The product does, however, have slight cost implications, but Refraline maintains it is more beneficial in the long run to pay a little bit extra.

“It’s actually a considerable cost-saver because it reduces downtime,” says Scott. “Downtime is like leaving an aircraft on the ground; if it’s not flying, it’s not making you money. The same goes for a furnace; if it’s not operating, it’s not melting and if it’s not melting, it’s not making money.”

Scott adds that zoned silica lining, like Finmix FF30, is designed to extend the lining for better production, which is the most important aspect in any foundry. “Without efficient production, you have nothing,” he says.

Refraline believes in the success of this product, which it says increases the life span of furnaces by up to 20%. But, with the constant shuffle of metallurgists in foundries, Scott admits that the company has had trouble convincing foundries to trust the product, even though it has been available for two years.

Rösch adds that some customers, who are satisfied with using natural silica lining in their furnaces, have also been reluctant to adopt the new product. “You can’t change a happy customer,” he says.

Nevertheless, he is adamant that Refraline will never sell anything that is not beneficial to the customer. The company says its primary aim is to improve the efficiency of the foundry process. “We’re not just a company that imports material and sells it,” he says.

Meanwhile, another product with which Refraline has experienced positive results is Scandinavian industrial materials producer Elkem’s Ceramite – a high wear-resistant, thermal-resistant, castable material that the company imports from Norway. Rösch claims that this product has superior characteristics to those of other available products.

The company’s solution to zoned wear is to use good-quality, long-lasting material, but only in those spots where the lining is likely to fail.
Maximum energy efficiency, material yield and dosing precision: these characteristics have described the WESTOMAT® dosing furnaces from the StrikoWestofen Group (Wiehl, Germany) for a number of years. To further improve these quality standards as well as the process reliability, the well-known equipment manufacturer has now developed a new ceramic riser tube with a steel flange. This allows easy installation and a precise fit and guarantees a long service life. The new riser tube is available from the StrikoWestofen “Service and Spare Parts” department with immediate effect. On request, it can be mounted in all newly delivered furnaces, too.

The dosing process in systems belonging to the WESTOMAT® series is based on an overpressure in the interior of the furnace. This gives the riser tube an important function. The riser tube is constantly filled with melt up to the so-called “top stop position” – i.e. until just before it overflows. From there, it supplies the mould or casting machine with melt as required. This allows WESTOMAT® dosing furnaces to save up to two-thirds of the energy required by automatic ladle systems. The technology also guarantees a high-quality melt with no oxide inclusions.

Simplified installation and long service life

To increase the process reliability of its dosing systems even more, StrikoWestofen has developed a new ceramic riser tube with a steel flange. The flange allows easy installation and a precise fit. In contrast to the riser tubes with conical connections used up to now, the flange connection prevents incorrect positioning in the melt. It is no longer necessary to cast the tube in heat-resistant refractory. This makes long drying and installation times unnecessary. Any leaks occurring between heat-resistant refractory and conical casting are ruled out from the start. This increases the dosing precision permanently. “Our new riser tube is made of heavy-duty aluminium titanate. The durability, high-precision manufacture and absolute resistance of the ceramic material to pressure allow us to achieve a service life which is up to three times higher than that reached by comparable products available on the market,” explains Holger Stephan, head of the StrikoWestofen “Service and Spare Parts” department.

Permanent dosing precision

The riser tube is a significant factor in the calibration of the dosing furnace. It is important for the system to be sealed completely by means of a high-temperature seal. Inaccuracies in production, in the orifice size or even changes in the diameter occurring during furnace operation impair the dosing process permanently. “The precise manufacture and the high-quality material used for our riser tubes guarantee a constant and highly exact hole diameter with no washing out. This is the only way to guarantee the dosing precision throughout the entire service life of the riser tube,” Holger Stephan explains.

Around-the-clock spare parts service

StrikoWestofen provides comprehensive after-sales service to ensure the continuing efficiency of the furnace systems. Trained technicians ensure the supply of spare parts and the execution of maintenance work in tried-and-tested OEM quality at over 25 locations worldwide. In this way, the leading manufacturer of thermal process technology guarantees a long and efficient service life for its melting and dosing systems.

Further information about StrikoWestofen can be obtained from Ceramic and Alloy Specialists on TEL: 011 894 3039
Insulating fiber offers up to 20 percent lower thermal conductivity

Morgan Thermal Ceramics now offers Superwool Plus high temperature fiber insulation.

I deal for repairing and lining aluminum furnaces, it reduces the frequency of relining operations when compared to the industry standard. Improved insulation efficiency also results in decreased operating costs.

A breakthrough in the company's advanced manufacturing control has allowed the product to be engineered to maximize the fiber content. As a result, Superwool Plus insulating fiber has up to 20 percent lower thermal conductivity than competitive fiber insulation materials. The maximized fiber content reduces radiant heat transfer and makes Superwool Plus insulation an excellent choice for lining heat-treat furnaces for aluminum and other non-ferrous metals, homogenizing furnaces for aluminum casters, as well as in expansion joints in the brick linings of carbon anode bake furnaces.

As an added benefit, all Superwool insulating fibers are non-wetting to molten aluminum. This reduces the concerns about metal adherence and penetration into the fibers, which is particularly useful in aluminium smelting and casting operations where molten metal is present.

When used in conjunction with Superwool Sealcoat HT coating, Superwool Plus fiber seals expansion joints and prevents carbon infiltration. The combination retains the expansion joint seal for three to five furnace cycles, in comparison with a standard fiber blanket that must be reapplied every cycle. Since relining the furnace is a labour and time-intensive operation, reducing the number of times expansion joints must be refilled decreases labour time and costs. In addition, the use of low biopersistent Superwool materials and the reduction in relining operations adds a health and safety benefit due to the challenging working conditions associated with expansion joint relining.

In addition to Superwool Plus insulating fiber, vacuum boards made of Superwool 607 and Superwool 607 HT are widely used in aluminium melting furnaces as backup, particularly in the hearth area. The material's compressibility and resilience does not deform steel nor cause cracks in the lower hearth portion of the furnace.

Further information contact Morgan Thermal Ceramics South Africa on TEL: 011 815 6820
Endress+Hauser offers complete solutions for temperature multipoint applications using WirelessHART

One adapter + four transmitters + eight sensors = cost savings!

Hart’s multi-drop protocol allows one WirelessHART adapter to be connected to up to four measurement devices. The iTEMP TMT82 temperature transmitter, a multi-channel input device has the capability to receive up to eight readings from a single WirelessHART adapter. Just imagine the cost savings that are possible if you need multiple measurements from a remote area of your plant! The cost of transmitters can be halved by using dual input temperature transmitters and the cost of installation could be reduced by over 50% with WirelessHART!

Multipoint thermometers are the ideal solution when multiple measuring points are required within a process and the number of individual measuring points exceeds the point at which they are economically viable. They are also used when the physical design of the vessel or chamber does not allow for the required number of process connections. The multipoint can be manufactured with thermocouple or resistance temperature detector (RTD) elements. These can also be converted to a common process signal (e.g. 4-20mA, Hart, Profinet or Foundation Fieldbus) using the innovative iTEMP temperature transmitter. This arrangement is most commonly used in applications such as silo temperature measurement for food and beverage, fractional distillation vessels and chemical storage tanks.

Over many years Endress+Hauser has continually re-evaluated conventional thoughts on multipoint sensor design, meeting the ever-increasing application demands that traditional assemblies are unable to cope with. Both rigid and flexible multipoint systems can be designed and manufactured with careful consideration of the end user’s specific requirements:

- Single-piece rigid stem for strength to prevent build-up of process media and to provide a smooth finish for hygienic applications.
- Inner guide tubes to enable fast, easy removal of temperature sensors for calibration or replacement.
- Dual input TMT82 temperature transmitters connected to wireless adapter enabling eight measuring points to be transmitted through one wireless adapter.
- Temperature sensor guide tubes are welded in contact with the outer wall of the thermowell for fast response.

For further information contact Trevor Fletcher of Endress+Hauser on TEL: 011 262 8000

MTS Criterion - Carefully engineered, seamlessly integrated

The new MTS Criterion range of tensile testing equipment offers a comprehensive family of load frames which perform accurate, repeatable monotonic testing on everything from thin-film plastics to high-strength structural steel. These high-stiffness frames are designed for years of high-speed, low-vibration performance across a broad range of force capacities.

Series 40 electromechanical test systems

Comprise a comprehensive line of compact, affordable electromechanical test systems for low- to medium-force monotonic testing requirements. Reliable and easy to use, Series 40 systems employ high-quality MTS electromechanical drives and integrated, digital closed-loop controls to test in load and position control at force capacities ranging from 1 N to 100 kN.

Series 60 static servo hydraulic test systems

Perform reliable tension and compression tests of high-strength specimens in a wide range of shapes and sizes. Series 60 systems employ proven MTS servo-controlled hydraulic actuation and high-resolution, digital closed loop controls to test in load, displacement or strain control at force capacities ranging from 300 kN to 100 kN.

All MTS Criterion load frames are engineered with operator efficiency and well-being in mind — from an ergonomic design to intuitive controls and advanced safety features.

For more information, contact your nearest IMP branch, Gauteng TEL: 011 916 5000, KwaZulu Natal TEL: 031 764 2821, Western Cape TEL: 021 852 6133, Eastern Cape TEL: 041 364 0159, Free State TEL: 018 293 3333 or email info@imp.co.za or www.imp.co.za
No Casting Defects

Coating solutions from ASK Chemicals accurately and effectively eliminate casting defects such as scabbing, veining, and penetration. The clean casting surfaces achieved in this way significantly reduce costs associated with rejection and cleaning. Fast coating processes with drip-free application and significantly less residual dirt in the component also increase productivity and economic viability in the casting process.

APPLIED™ Solutions
Sales Agent for ASK Chemicals
ARKOPAL waterbased coatings

tailor-made work to customer requirements

- constant layer thickness
- controlled rheological properties
- regular and constant operating process