Ladle Furnace Commission
Michel commissions an integrated steel processing facility (ladle furnace) #3 that is the second technological part of the continuous casting machine No.4 complex project at the oxygen-converter shop of its Chelyabinsk Metallurgical Plant (CMP) OAO subsidiary. The ladle furnace #3 is planned to process about 1.2 million tonnes of steel per year that would enable improved continuous caster efficiency at the continuous casting machine No.4 in the oxygen-converter shop up to 120 thousand tonnes per year. Investments for construction and commissioning of the ladle furnace #3 amounted to 1.05 billion rubles.

Extrusion Tooling Subsidy
Schmidt + Clemens Group GmbH has established its new subsidiary S+C Extrusion Tooling Solutions GmbH (ETS). “We deliberately chose the English company name,” says Dr. Henning Kreisel. “ETS is operating internationally and we therefore favoured a widely-used language”. ETS belongs to the Schmidt + Clemens Group and is headquartered in Kaiserau – Lindlar, Germany. In addition to the German headquarters, S+C also has production plants in Brazil, the United Kingdom, Malaysia, Spain, and the Czech Republic. S+C Sales Offices can be found in the USA, India, and the United Arab Emirates. The Schmidt + Clemens Group employs approx. 1,000 people worldwide (Germany approx. 600).

NADCAP certification
Aercast Inc. announced that its wholly owned subsidiary, Aercast International Inc., received NADCAP certification for optical emission spectroscopy (OES), a reference technique for direct analysis of solid metallic samples. Aercast uses OES to test metal samples prior to pouring castings. AERCAP — the National Aerospace and Defense Contractors Accreditation Program — is a global cooperative that sets quality and performance standards for aerospace engineering, defense, and related industries.

Technology cooperation for the C919 passenger jet
Alcoa and Commercial Aircraft Corporation of China Ltd. (COMAC) announced they are jointly exploring leading technology solutions for the design and development of China’s new, large passenger jet, the C919. Through a technology cooperation agreement, the two companies are examining advanced aluminum structural concepts, designs and alloys to create the 190-seat aircraft.

“A we are working closely with COMAC to develop a tailored solution that will meet COMAC’s goal of creating a globally competitive, high-performance, economical commercial aircraft,” said Helmut Wieser, Alcoa Executive Vice-President and Group President Global Rolled Products and Asia. “The aircraft will be assembled in Shanghai, but will source parts and components globally. The C919 will be the largest passenger jet to be produced in China. Our goal is to design an efficient, high-performance structure that will compete in the global aerospace market. Therefore, it is imperative that we look at design alternatives and collaborate with innovative materials technology leaders like Alcoa,” said Wu Guanghui, chief designer of the C919 program and vice president of COMAC. A prototype of the C919 was displayed at the Asian Aerospace International Expo and Congress in Hong Kong last month. There is strong market interest for this aircraft based on China’s expected long term growth in global passenger traffic demand. The C919 is expected to take its first flight in 2014 and enter service in 2016.

Aerospace & Defence Zone
Hero Group in India plans to develop a 300-acre Special Economic Zone for the aerospace and defence industry, with a further 100 acres expansion possible, the location has yet to be disclosed. Hero Motoons will make a direct investment of Rs 500 crore for various activities in the aviation sector, which include manufacturing of light sports aircraft (LSA), aircraft and aerospace applications, besides setting up aviation training institutes and colleges, as told to Economic Times at a press conference.

World’s largest closed-die forges modernized
AlcoaForging & Extrusions has commissioned Siempelkamp to engineer and produce cast parts for one of the world’s largest closed-die forging presses. The rebuild and modernization of the 50,000-tonne (450 MN) press located in Cleveland, Ohio, USA, will make it the most advanced, productive forging press in the world. The Ohio forging press produces structural parts made of aluminium for the aircraft industry. Because of its large press force and its central meaning for the American aircraft industry, the giant press has become a “National Historic Mechanical Engineering Landmark” in the United States of America.

As part of the order, Siempelkamp will supply 34 large cast parts for the upper, moving and lower beams as well as the foundation stools.
Ten of the castings weigh between 200 and 250 tonnes each (220 and 270 US tons). Siempelkamp cast the first foundation stool on August 20, 2009 at the company-owned Krefeld foundry. The beams and stools are to be machined on large-scale equipment, capable of processing components with a clamping length of 22 metres (72 ft).
Global News

Rotary furnace order for Railcar components

Can-Eng Furnaces, manufacturer of a broad range of industrial heat-treating equipment, based in Ontario, Canada, has an order from Russian railcar manufacturer TVSZ for two 10-metric ton/hour rotary hearth furnaces for normalizing steel castings, reported Foundry Management & Technology. TVSZ will install the equipment at its plant in Tikhvin, Russia, to quench and temper components for railroad track assembly, side frames, and bolsters. The project’s scope of supply covers the entire thermal processing needs for a 73,000 metric tons/year combined normalizing and quenching-and-tempering operation. Can-Eng’s multi-million dollar order is part of a $1-billion investment by TVSZ to establish a complete casting and machining operation, and railcar assembly plant. The Tikhvin plant, 150 miles east of St. Petersburg, will start up in January 2011 and product up to 12,000 railcars per year. Can-Eng indicates the normalizing furnaces will be supplied with a Level 2 Automation system, automated material handling functions, a batch temperers, an 80,000-liter quench tank with elevator; and loading/unloading roller hearth conveyors with forced cooling on the post normalize side. Castings will be conveyed on cast alloy grids that measure approximately 10 × 10 ft.

JV project construction begins

The management of Schmolz + Bickenbach Guss Group, a joint venture facility in Krefeld, Germany, announced a $4.5 million order for the production of casting machinery. The Chinese company, Xingtai Iron & Steel Group, Ltd, offered the contract for the production of one of a kind, ultra-wide steel hot plate mill. The contract includes the delivery of continuous casting equipment for the production of railcar components. The project is expected to be completed in 2012.

China – Austria stainless steel project

The project is expected to be completed in 2012.

Multiple investments in production lines

Mecel OAO, a Russian mining and metals company, announces subscription of several investment projects at Mecel Campia Turzii plant, Romania, a part of Mecel OAO’s East-European Steel Division. Three new production lines were launched at the plant including: a metal fiber production and packing line, a reinforcing wire coils extension, an enlargement line and steel wire production shop. Total investments in the projects amounted to approximately €7 million.

Forged JV for Brakes

Her Moto Industries, Ltd. signed a share purchase agreement with Kiru Corporation, Japan. The JV company, named Munjal Kiru Industries Pvt. Ltd. will manufacture brake discs and drums and will add automotive original equipment manufacturers at Manesar, Haryana, India. The total project cost for the JV, with Sumitomo Corporation Japan, Sumitomo Corp. in India and Kiru Corp (a Sumitomo Group company), is Rs 240 crore.

Schmolz + Bickenbach close casting site

The management of Schmolz + Bickenbach Guss Group announced plans to close its production site in Monheim, Germany, at the end of the year, as reported by Gus News. Approxi- mately, 60 employees will be affected by the closing. This facility, which mainly focuses on centrifugal and gravity cast products, had already taken measures and cut back employee hours earlier in the year.

Since centrifugal castings are heavily used in biofuel refineries, it turns out that protests over biofuel became a critical influencer in the closing of the facility. Matthias Pampus-Meder, Chairman of the Management of Schmolz + Bickenbach Guss GROUP, remembers a time when it was believed that no change in the use of regular gasoline and ethanol would become in- corporated. So, the foundry invested 1.8 million euros in the Monheim operation. There have since been significant protests against biofuel. Mr Pampus-Meder quoted explaining how produce was seen as taking away fuel from food supply and how it increasingly becomes expensive. “We deeply regret [the closing] – especially in light of the Monheim long-standing commitment to our employees. Because of the economic situation, it is, unfortunately, not possible to provide ade- quate jobs for employees within the group.”

Schmolz + Bickenbach Guss Group says this closing will have no effect on customers. All customers previously served by the Monheim facility will continue to receive their orders in a timely manner. The company’s three other cast- ing facilities in Krefeld, En- nepelt and Kohlscheid will not be affected.

Ultra-wide steel hot plate mill

Indian public sector specialty steelmaker Mishra Dhatu Nigam Ltd (MID- HANI) will invest US$ 8.65 million to set up a hot plate mill. The proposed 6000m2 manufacturing facility will produce ultra-wide strong wide steel plates. These plates are used extensively in automotives, nuclear reactors and heavy duty machines such as machines for oil and gas exploration. The project has received the necessary approval from the Indian government. The Defence Research and Development Organization is expected to invest about US$ 43.3 million in the project, while the remainder will be financed from internal accruals and advances from financial institutions. Presently, the ultra-wide steel used in nuclear and aerospace applications is produced by the state-owned Steel Authority of India Ltd (SAIL) at its Kalinga plant. The project is expected to provide adequate capacity for the Indian market.

China – Austria stainless steel project

Xingtai Iron & Steel Corp. Ltd officially started its CNY 1.2 billion stainless steel project in November. The first phase of the proj- ect was funded CNY 600 million, containing an advanced 700,000 tonnes alloy melting furnace, a CNY 9 million continuous casting machine made by voestalpine AG, a 600,000 tonne AOD furnace and Ladle Refining Furnace and a sharpening machine. The project is slated to be put into service in October 2010, and will be capable of producing 350,000 tonnes of continuous casting billet slab a year, including stainless steels 200, 300 and 400 series, wire rod, steel, ESR and more.

Georgia foundry to resume

Internet Corp’s ductile iron foundry in Senoia, Ga., USA, reportedly has been bought by a Car- penter Group. Carpenter Diver- sified Machine Inc. According to the Columbus Ledger-Enquirer the sale was completed at an undisclosed price.

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PTC Industries has now broken the weight barrier in Ceramic Shell castings. It utilizes an innovative and unique technology, which enables it to produce parts weighing up to 2500 kg, which offer all the benefits of Investment Castings and Vacuum Pouring, moreover reducing the Total Cost up to 50%.

PTC Industries commenced operations over 40 years ago and has been exporting castings to US and Europe for over 25 years. PTC has 3 foundries and 2 CNC machine shops in India, manufacturing castings using Replicast®, RapidCast®, Investment Casting (Lost Wax) and Centrifugal Casting processes in either as cast or finish machined condition. PTC has a wide range of materials that it can offer, including Alloy Steel, Stainless Steel, Duplex and Super Duplex Stainless Steel, Creep Resistant Steel, Heat Resistant Steel, Nickel Base alloys, Austenitic Ductile Iron, Nickel Aluminium Bronze etc.

Replicast®, the mould takes polystyrene patterns. In place of sand and binders, polystyrene is fed into the shell which eliminates the need of sand core. These elements in moisture in the mould, and reactions & reactions, gas holes & porosities, “hot tear” & cracks and “core shift” & dimensional variation. Since these elements and their related parameters are extremely difficult to control, sand moulded casting quality becomes highly vulnerable to any variation and thus is unreliable and inconsistent.

PTC utilizes a process called Replicast® which was developed by Castings Technology International (U.K.). As in the Investment Casting process, a Die/Tooling is required to make patterns; however instead of a heavy and fragile wax pattern used in the Investment Casting process, Replicast® uses light weight and dimensionally stable polystyrene patterns. In Replicast®, the mould takes form of a thin Ceramic Shell, while the liquid metal is poured, that is under Vacuum. Thus, by using this process, PTC is able to replace sand and binders by a ceramic shell. The presence of moisture in the air is removed by applying vacuum to the shell which eliminates the major sources of defects in the casting.

The Replicast® process requires an Aluminium Die/Tooling in order to produce patterns for parts having repetitive and series production requirements. However, for low and medium volume requirements, PTC offers a unique technology named RapidCast®. RapidCast® uses the same manufacturing process as Replicast®, but instead of making the polystyrene pattern from a Die/Tooling, the pattern is machined from a solid block of polystyrene on a large 5 Axis Machining Centre. RapidCast® uses the concept of “Virtual Tooling” whereby the initial cost and lead time related to Die/Tooling is eliminated. The short development cycle and reduced production lead times makes RapidCast® very attractive for customized solutions, projects, spares, etc.

The main advantages of castings offered by PTC utilizing this unique process are:

- Weight Reduction up to 40%
- Machining Time Reduction up to 30%
- Exceptional Surface Finish
- No Sand Inclusion or Reaction
- Reduced Gas Holes and Porosity
- “Green Process” – solid waste 1/30th of sand moulding
- Flexible production lots; from 1 piece to several hundreds
- Short ‘Time to Market’ using RapidCast®

PTC Industries has been awarded the National R&D Award from the Government of India in 2006. It carries an ISO 9001:2000 IV certification, PED/97/23 – BV, AD 2000 Merkblatt WO – TaV Nord while the ISO 14000 & 18000 accreditations are under implementation. The company has been approved by the Nuclear Power Corporation of India, while BV and Lloyds have approved the company for Marine Classification. Approval of manufacture of Nuclear Pressure-Retaining Castings in accordance with ASME Section III is currently under process and shall be completed soon.

Not one to rest on its laurels, PTC Industries is constantly making investments for the future. PTC has recently commissioned a fully automated, Robot assisted Shell Coating System for Replicast®. This has led to a remarkable consistency in quality, increase in efficiency, shorter lead times and less wastage. Company has further added a new Induction furnace for melting metal up to 5000 Kg. PTC has its own house capability for all testing equipment including Radiography up to 200mm thickness. The two CNC machine shops are equipped with state of the art CNC Turning Centres, Vertical Machining Centres and Horizontal Machining Centres from Japan and Germany. Additionally, a new Replicast® and RapidCast® “Green Foundry” is being set up, this plant will have the capability to produce individual parts weighing up to 5000 kg.

PTC has always believed that its greatest success lies in being a part of their customer’s competitive edge. As their Chairman, Mr. Sateesh Agarwal states, “…for only on our customer’s triumph depends our success” hence, the company has constantly strived to advance their ideals of Quality, Value & Speed.

In the spotlight

Investment Castings (Lost Wax) have found many applications in recent times by converting conventional sand moulded castings into precision castings, thus reducing total cost and adding substantial value to the product. The advantages of Investment Casting are well known viz. superior quality, reduced weights, lesser machining costs, and far better surface finish and aesthetics. However, Investment Castings are limited by the maximum weight and size they can be casted making it unfeasible for large Oil companies like Saudi Aramco etc.

PTC Industries has over 25 years of experience in rapid castings and now utilizing this experience, PTC has a vast range of product offerings spanning various metallurgies and weight ranges for wide industrial use.
Siemens has confirmed its objective to be one of the world’s top providers of wind turbines. Siemens entered the wind power market five years ago with its acquisition of Denmark’s Bonus Energy. Since then, wind power operations at Siemens have undergone rapid development. The workforce has grown seven-fold, while revenue has actually increased ten-fold. “This is a success story whose narrative we wish to continue,” says Andreas Nauen, CEO of the Wind Power Business Unit. “The overall global wind power market is growing at 12% annually. We need to significantly outpace the market growth to become one of the top three providers by 2012.”

A recent press release from Siemens Wind Power stated it currently has a record order backlog of 8 billion. Revenue from the Siemens’ Environmental Portfolio totaled about €23 billion in fiscal year 2009, making Siemens the world’s largest supplier of ecofriendly technologies. In the same period, these products and solutions enabled customers to reduce CO₂ emissions by 210 million tons.

Part of Siemens’ strategy is to strengthen its position in offshore wind farms and to continue to make a leadership in innovation. Innovation with products such as the Hywind floating turbine project, a joint effort with StatoilHydro, and recently completed prototypes of its newly developed gearless wind turbines, which assures even higher availability than standard wind turbines with about half the number of parts, seem to service a place at the top for Siemens.

Jindal orders caster from Siemens

Siemens VAI Metals Technologies has received an order from Jindal Steel & Power Ltd. for the supply of a new single-strand slab caster, which will be built at Angul in the Indian state of Orissa. The slab caster will be part of a greenfield integrated production facility currently under construction at the Angul site where an annual steel output of approximately 6 million metric tonnes is planned. The nominal capacity of the caster will be 3.6 million metric tonnes per year with steel grades ranging from ultra-low carbon steels as well as micro and low alloyed grades. Initially, production will concentrate on slabs for pipeline and plate applications, which will be rolled in a new Siemens VAI 5m wide plate mill which is currently under construction. The caster is equipped with a straight mold and the mold radius is 10m. Slabs will be cast at thicknesses of 200mm, 260mm and 300mm and in widths from 1000mm to 2300mm. Cut slab lengths will range from 4.5m to 12m. Siemens VAI’s responsibilities for this project include plant engineering, equipment design and supply, advisory services for erection, installation, start-up and commissioning in addition to personnel training. All of the major process equipment will be provided as the main casting-floor equipment, mold, strand-guiding system and discharge facilities in addition to the torch-cutting machine, deburring, marker, roll-gap checker and pusher-puller. Electric, hardware and software for Level 1 automation and Level 2 process optimization as well as hydraulic, lubrication and cooling systems are also included. Start-up is scheduled for September 2011.

Forgemasters play a crucial role in Britain’s Nuclear industry

Sheffield Forgemasters International (SFIL) will further develop its key role in the development of Britain’s nuclear manufacturing industry after becoming a founding member of the new Nuclear Advanced Manufacturing Research Centre (NAMRC). SFIL will provide a functional and supportive role to the NAMRC, which will be based at the Advanced Manufacturing Park in Rotherham, UK.

Special steel & ultra heavy forging JV

Larsen & Toubro (L&T) announced the formation of a joint venture with the Nuclear Power Corporation (NPCIL) to set up a company in Gujarat for the production of special steel and ultra-heavy forgings. The facility will come up for an investment of Rs 1.725 crore in Hazira, Surat, and will manufacture critical components for the power industry. "India has been making most products required for nuclear power generation, but heavy forgings were not on the Indian product list. The JV is aimed at to ease this constraint," NPCIL chairman & managing director SK Jain said.

The facility will have a dedicated steel melt shop producing ingots weighing up to 600 MT each and a heavy forge shop equipped with a forging press. "The JV will supply finished forgings for nuclear reactors, pressurisers and steam generators, in addition to heavy forgings for other equipment in the hydrocarbon sector, as well as for thermal power plants. Direct access to a water front at Hazira will facilitate multi-modal transportation and exports," L&T chairman and managing director AM Naik said.

"The plant will start production from April 2011. It will meet domestic demand across nuclear and thermal power and hydrocarbon sectors in the short-term. However, there are plans to start exporting from 2013," he added. "L&T will have 74 per cent stake in the venture. NPCIL will hold the remaining 26 per cent stake. The company will have one-lakh tonne per annum steel and 40,000 tonne per annum forgings making capacity," Naik said.

Brazil exports will grow

Flavio Azevedo, president of Brazil’s Steel Institute Aco Brasil, told reporters on Dec. 2 that crude steel production capacity in Brazil will rise 3.6 percent next year to 43.5 million metric tonnes, about double demand levels which are still recovering from the crisis. He went on to say that in the medium term, new initiatives, including those announced by Vale SA, will further boost capacity, particularly for the export market. According Aco Brasil, steel demand will climb 22 percent to 22.9 million tons from 18.8 million this year as growth orders from industrial segments including car-making. “There’s going to be steel to spare,” Azevedo said. “Brazil’s going to continue with high exports.” According to the institute’s forecast, steel exports from Brazil increased by 3.3% in 2009 and will grow an additional 16% to 11 million tonnes in 2010.

Volunteers make positive global impact

On International Volunteer Day, Alcoa President and CEO Klaus Kleinfeld congratulated a record 23,000 Alcoa employees who took part in the company’s 2009 Worldwide Month of Service – volunteering in 800 community events to support those in need and invest in the sustainability of our planet. The annual Worldwide Month of Service program brings together Alcoa’s global workforce to make a positive difference in the communities where they live and work – this year partner- ing with nearly 1,900 not-for-profit community organisations across 23 countries. Through Alcoa employees’ efforts during the month of service over 14,000 meals were served to those in need, 4,000 charitable campaigns held to collect and distribute food and clothing, and 11,000 trees planted.

Outstanding payable settled through issuance of shares

Timminco Limited, the 46% owned affiliate of AMG Advanced Metallurgical Group, announced that it has agreed to issue approximately 900,000 common shares, representing approximately 0.6% of Timminco’s current issued and outstanding shares, as full and final settlement of approximately $1.2 million in outstanding payments due to a supplier of serv- ice for the silicon metal operations of its wholly-owned subsidiary, Becancour Silicon Inc. The issuance of these common shares is subject to receipt of all necessary regulatory approvals, including ap- proval of the Toronto Stock Exchange. The issuance of these shares will decrease AMG’s ownership in Timminco to approximately 45.7%.
Grain refiner for special steels

Eiklem in collaboration with NTNU and SINTEF has developed a grain refiner for steel. While grain refiners have been used in aluminium for many years (TiB2), a dedicated grain refiner has not been available for steels until recently. The grain refiner is accessible both in lumpy and in cored wire, and is added just before casting. The cored wire is supplied by Affilux.

For low alloyed steel that undergo massive thermo mechanical treatment, reduction in grain size can be obtained through heat and mechanical treatments. This is due to phase transformation and re-crystallization after the phase deformation. In Eiklem Grain Refiner (EGR) cerium, which if you have any comments or information addressing the above question please email direct.

Best wishes for the holiday season and a prosperous 2010!
Barrie Kirkman
Barrie Kirkman/nttuorld.com

3DQ: Three-Dimensional Hot Bending and Quench technology

Sumitomo Metal Industries Ltd and Sumitomo Pipe & Tube Corp. have developed the world's first Three-Dimensional Hot Bending and Quench mass processing technology (3DQ), which enables the formation of automatic parts with a tensile strength of 1470MPa or more. This technology enables steel components with a hollow tubular structure to acquire ultra-high-tensile strength. Application of this technology reduces weight of automotive parts by 30-50% and improves crash safety, compared to conventional methods. It is also expected to lead to technologies for space frame body structures in the future. The new technology enables such components with complex shapes to be manufactured in one process. For example, some selected steel tube parts are heated and quenched with cooling water while a bending moment is simultaneously applied to the steel pipe with a movable roller dice so that the pipe bends.

This 3DQ technology is a consecutive forming method that allows three-dimensional complex bending and quenching at the same time. It has produced effects that are hard to achieve with conventional hydroforming and other cold forming methods. 3DQ technology combines both the effect of improving tensile strength by quenching after hot stamping and the advantage of hydroforming processing for hollow tubular structures. 3DQ technology can significantly reduce the number of dies required.

New casting simulation program

CD-adapco, a developer of software programs for simulating fluid flow, heat transfer and stress, has teamed up with the Technical University of Aachen that concentrates on scientific and industrial issues in metallurgy and materials science, particularly casting processes.

Wrought & cast welding electrodes

Arco Industries LLC has released Arcos 309/309L, its new bare wire and covered stainless steel electrodes, designed for welding similar al- lloys in wrought and cast form. The Arco 309L, bare wire (ER309/309L) and covered (E309/309L) electric can be utilized for welding Type 304 and similar base metals, where severe conditions exist. In addition, these electrodes are used for joining 304 to carbon steel or the clad side of 304 clad steels. Arcos 309L, also joins Types 304, 347, 321 and 316 and duplex stainless steels to mild and low alloy steels and can provide a buffer layer prior to surfacing 308L for corrosion resistant overlays. Typical welding ap- plications for 309/309L bare wire and covered electrodes include general fabrication, automotive exhaust systems, pipelines and equipment in chemical processing plants and nuclear power facilities. The bare wire electrodes are available in diameters from .035in to .045in. The covered electrodes are offered in three different coatings, -15, -16, and -17 and in standard diameters from 3/32 - 3/16, as well as non-standard diameters up to .250in.

Tell the world about your technology

CFN is keen to hear about your own research and deve- lopment activities. Contributions are welcome from all sides of the industry: foundries, forges, equipment sup- pliers, universities, research institutes, end users, etc. Se- lected Items will be placed free-of-charge. Suggested length 200-500 words. To submit, please send to press@cfn/ceki-world.com

Grain refiner for special steels

Case study: austenitic manganese steels

EGR activated diameter reduction, large near net shape cast components where the solidification front is very far from the mould, typical coarsens grain structure, and high al- loyed steel where the coarse solidification structure leads to problems during forging.

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Precoated Steel assets acquired

Essar Steel, a fully integrated flat carbon steel manufacturer, has completed the acquisition of steel assets of Shree Precoated Steels Limited. The assets that have been acquired include the plant comprising colour coating line, cold rolling mill, galvanizing line and pickling line. This is only plant in India that uses NIR (near infrared) technology for colour coating which extends the life of the product. The colour coated products from this plant are well accepted in the domestic and export market with exports accounting for 30% of its production. Commenting on the acquisition, Mr. Malay Mukherjee, CEO, Essar Steel said, "going forward, it is important for the steel companies to widen the product base. This acquisition is aimed at achieving that objective. We will be capable to capitalize on the synergies offered by this plant through technical expertise of Essar Steel". The total value of the fixed and current assets acquired is approx. Rs. 1200 crores. This is funded through a mix of debt and equity.

Aluminium R&D

James Chater’s office is in Nevers, France.

James says:

An interesting report crossed my desk recently about aluminium alloy castings. It seems that the CTIF (Foundry Industry Engineering Centre) has carried out an R&D project on defect control in aluminium alloy castings in collaboration with ACTRA (Associations of Technical Centres of the Rhone Alpes Region) and in partnership with the Ecole Nationale des Mines de Saint-Etienne. The project had three aims: to set up innovative methods of producing samples with controlled internal defects; to characterize the impact of the defects on mechanical behaviour; and finally, to correlate characterizations with simulations and FEM calculations. The project should improve knowledge of the real impact of internal defects on mechanical characteristics of foundry parts and better define the maximum acceptable level of these defects to avoid current penalizing safety coefficients.

Enhanced forge

Karen Miller resides in Kentucky, USA.

Karen writes:

There’s positive news this month from Alcoa. The company has announced that funding has been approved for the complete repair and refurbishment of its 50,000 tonne forging press at the company’s Cleveland Works. As I understand it, the project will make Cleveland Works a premier producer of large aluminium and titanium forgings for the defence, aerospace and industrial markets. In a press statement, William F. Christopher, Alcoa executive vice president and president of Alcoa Engineered Products and Solutions, said, “This could not have happened without the support of our employees, community leaders and leadership of United Auto Workers Local 1050. When this project is completed Cleveland Works will be the home of the most advanced, productive large forging press in the world.” The press project should be completed by the end of 2011. It will involve the complete disassembly and renovation of the 50,000 tonne press. This 92-foot structure began production in 1955.

Boom in China

Yizhong Shen is based in Shanghai, China.

Yizhong reports:

The positive vibe I’ve been noticing amongst local foundry managers has recently been backed up by official figures. These reveal that the Chinese foundry industry is experiencing a boom. According to the report, the overall output of Chinese castings in 2008 was 33.5 million tonnes, which equals the total output of the U.S.A, Russia, India and Japan and accounted for 1/3 of the world’s total output. Since the last quarter in 2008, the Chinese government has dramatically increased infrastructural investments. In particular, the State Council passed the Adjustment and Development Plan of Ten Top Industries, including iron and steel, automobile, equipment manufacturing industry and so on. Now, all these industries are closely related to the foundry industry, thus providing a broad space for development. So it is predicted that after the adjustment in 2009, despite improvements in casting precision, the output of Chinese castings will exceed 35 million tonnes in 2010.

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Automatic visual inspection techniques for modern foundries

By Dipl.-Ing. Dirk vom Stein, inspectomation GmbH, Mannheim/D

Mould inspection by colour multi-pleated shadow modulation:

Currently, quality control in foundries is often assessed by manual visual inspection, which is sometimes undertaken by staff only implicitly and alongside their proper activities in the production process, for instance during manual deburring or palletizing/picking. This manual inspection has its well-known drawbacks:

• Inspection quality is not uniform, i.e., test results may be affected by the condition, time of day and inspector. Thus certain tests are forgotten; each inspector has his own (subjective) criteria, and inaccurate measurements may happen, e.g. due to incorrect use or reading of measuring equipment. Therefore, reproducible (objective) results cannot be expected.

• Test results are often documented only partially or not at all.

These sources of error can be avoided by automatic quality inspection to supply objective, reproducible and documented results. During the past years, inspectomation GmbH has developed many different inspection systems for various inspection situations and tasks. These systems have proven their dependability during long-term operation in many foundries throughout the world.

Cores, moulds and patterns

For cores, moulds and associated patterns, the shadow-modulation principle offers a low-cost qualitative inspection solution [1]. Using several directed light sources from different directions enables the acquisition of an image series where the same object regions show different shadow patterns. These shadows contain valuable implicit 3-D information about the shape of the object under investigation, so this image series carries much more information than a single image acquired with diffuse lighting, thus increasing the performance and robustness of the system. This technique may be used to monitor core shooting systems and assembly of core packages as well as horizontal and even vertical moulding lines [2].

Complex castings

Inspection-based acquisition of range images enables an almost all-over quantitative surface inspection of complex castings [3]. Different faces are presented sequentially to the vision system by a robot. The acquisition unit contains a light-section sensor moving on a highly dynamic and precise linear actuator. Several Lasers are used on opposite sides of the camera to minimize blind areas. Different triangulation angles allow trade-offs between resolution and measuring range. Typically, each scan takes about 1 s and provides approximately 3 m 3-D points. The fault detection and analysis is completed after an additional second, thus allowing the in-line inspection of 100 percent of the production. The attainable height resolution clearly depends on diverse design parameters of the set-up. A typical system achieves a vertical resolution of 0.1 mm on a lateral sampling grid of 0.2 mm 0.2 mm. By the use of a robot, this system is extremely flexible. Different products can be examined by the same system, if necessarily using different grippers. Beyond that, the test strategy can be chosen very flexibly, selected sides can be scanned several times in different situations using different lasers and triangulation angles. If the cycle time is exhausted, several inspections can be alternated in a user-defined order. The check routines are configured by means of a concise graphical user interface. All inspection results are stored in a database that can be queried from any networked computer. In particular, the workman at the reworking station only has to scan the data matrix code (or another one-to-one tag) and immediately gets images of the defective faces with the exact locations of the flaws indicated.

References


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YXLON gears itself for the future

YXLON International is gearing itself for the future through further process optimization. Feinfocus micro-focus systems are going to be produced alongside YXLON X-ray inspection systems on an additional 4,000 square meters of space in a new, state-of-the-art production hall at the Hamburg location. A relocation of all other activities at the Garbsen location in Hamburg will take place at the same time. Substantial opportunities for synergies are going to be brought to bear by consolidating the two sites in North Germany at one production venue. This step facilitates the development of innovative products that transcend platforms, thus safeguarding the leading position YXLON holds in the field of X-ray inspection systems for the non-destructive testing of materials in the future.

Quality and defect tracking

Quality was one of the hot topics discussed during the recent North American Die Casting Association (NADCA) annual Plant Management Conference. The event was held 23–25 September at the Hilton – Northbrook in Northbrook, Illinois, U.S. In addition to a reception and plant tours, the conference also included round table discussions, where attendees could voice their opinions and ask questions. Some of the hot topics discussed were productivity improvement, controlling processing cost and improving quality and defect tracking. The featured speakers were NADCA president Daniel L Twarog, who gave attendees an overview of where the die-casting industry is at and the direction it is going. NADCA project engineer Alex Monroe, who discussed the pressing issues of Cap & Trade and Energy Efficiency and professor & director of the Metals Processing Institute at Worcesters Polytechnic Institute Diran Apelian, who spoke on Semi-Solid Metal Processing.

Modal Shop hires Sokolowski

The Modal Shop Inc. has announced the hiring of Frank Sokolowski as the NDT Field Sales Manager for North America. Mr Sokolowski was previously an Automotive Key Account Manager for GE Inspection Technologies with the responsibility for supporting GE’s non-destructive test products at major automotive manufacturing companies like GM, Toyota, Ford, Nissan, Magna, Chrysler and Honda. The Modal Shop provides quality-testing systems for powder metal, cast, die-cast iron and forged parts.

Visit NEWCAST 2011 www.newcast.com
Squeezed between cost and innovation

A company which immediately springs to mind when discussing magnesium is Dynacast. The company website is quite clear about the advantages this metal has to offer: “Magnesium is the ideal material for applications where weight saving is a priority, the lowest density of all structural metals. Almost as light in weight as plastic, magnesium has the advantage of greater strength and rigidity along with inherent EMI/RFI shielding, durability, heat-dissipation and full recyclability.” Dynacast is clearly at the forefront of innovation since it is one of the few companies to take magnesium. In fact, their website gives a good overview of their so-called “multi-slide, hot-chamber” casting process. They write, “Multi-slide tooling is designed to use 4 perpendicular slides allowing the tool to be very complex and accurate castings to be produced. In some cases, up to 6 slides can be used, which may be at angles other than 90 degrees. The process is having this tool for small zinc components but also Dynacast has developed a multi-slide, hot-chamber casting magnesium parts.”

Magnesium Technology symposium 2010

A very interesting event to be held early in 2010 (February 14-18, Seattle, USA) is the yearly Magnesium Technology symposium. There are presentations on topics related to casting, forming, machining, processing and recycling, including topics such as “thermal management” and “green manufacturing”. In short, the site provides links to a mass amount of data.

About this page
Starting this issue, CFN will include pages dedicated to specific materials. We will present a selection of the very latest technical developments, updates on company websites, direct information, reviews of relevant associations and articles that can provide a starting point for further reading. Please help us to make these pages as useful as possible by sending your own articles, press information to CFN editor Betty Hammond at: b.hammond@kei-world.com

Magnesium

Magnesium is a logical choice for applications requiring weight saving, and thanks to its lightweight properties, magnesium is said to be one of the earth’s most versatile metals. I like to think of magnesium as “the earth’s most versatile metals.” Founded in 1943, the International Magnesium Association (IMA) website provides access to information about IMA members, programs and events, data-bases, conference proceedings, publications and videos. In short, if you want to keep in touch with the wealth of resource information about magnesium, which the IMA provides, you will definitely want to check it out. IMA (is) to promote the use of the metal magnesium in material selection and encourage innovative applications. IMA is a joint organization of primary producers, recyclers, foundries, fabricators, end-users and suppliers. IMA serves the industry and the membership through its Annual World Magnesium Conference, seminars, statistical programs, research and publications. Through IMA’s efforts, manufacturers and consumers are increasingly aware of the numerous opportunities and benefits that magnesium provides. The IMA website also includes some compelling applications for magnesium. For example, they state that thanks to its lightweight properties, magnesium alloys are being used increasingly in the automotive industry as a means of reducing weight, increasing fuel efficiency and reducing greenhouse gas emissions.

International Magnesium Award

CAST’s Dr Mark Easton has been awarded the GKS Magnesium Research Award at the 8th International Conference on Magnesium Alloys and applications. The GKS Research Centre in Germany is an independent, industry-funded award to honour innovative work by an individual researcher in the area of the science and technology of magnesium alloys. Magnesium is a logical lightweight alternative to traditional materials, especially for automotive applications. Magnesium is 13% lighter than aluminium and 75% lighter than cast iron, has an excellent strength to weight ratio, high shock and dent resistance and will dampen noise and vibration considerably more than either aluminium or steel.

Dr Easton was selected from a field of applicants from Asia, Australia, Europe and America. According to GKS, Dr Easton received the award because of his “important contributions to the understanding of the relationship between nucleation and grain refinement for magnesium alloys.” GKS further said, “Dr Easton was also involved in the development of new grain refiners for wrought alloys containing Zr in its most effective form. He has led teams in the development of several new alloys, predominantly for medical applications.” Other applications, Dr Easton has provided considerable leadership in the Australian research community and globally.”

According to Dr Easton, “My passion is for doing research that spans the gap between good science and the development of real technologies. Research is able to contribute to some of the important issues that face the world and humanity. One of the greatest issues is how we learn to live in a resource limited world. I like to think that my research goes some way to addressing these issues.”

Mark Easton is a Research Program Manager with the CAST Cooperative Research Centre based at Monash University, Melbourne, Australia. Dr Eaton graduated from Monash University and obtained his PhD in Materials Engineering from the University of Queensland. In 1999, he worked at Comalco Research and Technical Services in Thomastown, Victoria, Australia. From 2000 to 2004, he was a Research Engineer at Monash University with the CSIRO’s Central Metallurgy and Manufacturing (CAST). Since 2005, Dr Eaton has been a Research Program Manager with the CAST Cooperative Research Centre based at Monash University, Melbourne, Australia.

www.magnesium.pnl.gov

www.magnesium.pnl.gov

www.gifa.com
Euroguss 2010:

Euroguss 2010, 10th International Trade Fair for Die Casting: Technology, Processes, Products, will be held January 19-21, 2010 at the Exhibition Centre Nuremberg. EUROGUSS is the central forum for experts from the pressure die casting foundries and the associated industries. As a leading international trade fair for pressure die casting, this highly specialized event offers the setting for the international exchange of knowledge, know-how and dedicated information. The exhibition will host some 300 exhibitors. Running parallel to the exhibitions the 10th International Die Casting Congress will offer an extensive program of lectures with 22 presentation on “tools and machinery” and “aluminium, magnesium and zinc die casting” for the expected 6,000 trade attendees. NurembergMesse has organized the event in cooperation with the German Association of Pressure Die Casting Foundries (VDD) and with the Federation of German Foundry Specialists (VDG).

For optimal preparation prior to visiting the fair, www.ask-euroguss.de has been made available. Here, all exhibitors are represented with comprehensive information about their companies, products and contacts.

METEF & Foundeq 2010

METEF – 8th International Aluminium Exhibition and Foundeq Europe - Foundry Equipment Exhibition for Ferrous and non-Ferrous metals will be held in conjunction April 14-17, 2010 at the Garda Exhibition Centre in Montichiari, Brescia, Italy. Distinguishing itself as the opportunity par excellence to have a close-up view of industry developments in machinery, plant, equipment, products and aluminium applications, METEF is a meeting point for large and small scale enterprises in the industry providing qualified experts in the field of die casting, extrusion, foundry, rolling, surface treatments and complementary technologies, with innovative and technologically advanced solutions to cope with the most demanding production requirements. One can not talk of METEF without mentioning Foundeq, now in its 5th edition, Italy’s one and only exhibition of foundry machines, equipment and products.

Valve World’s first time in Düsseldorf

The leading international trade fair for valves and valve accessories, Valve World Expo, will be held for the first time in 2010 at its new location in Düsseldorf. A total of 400 exhibitors from 35 countries and approximately 7,000 visitors come together to focus on technical innovations in faucets, valves components, related fittings and pipeline products. Coinciding with the exhibition is the KCI-organized Valve World Conference.

The next METAV International Fair for Manufacturing Technology and Automation will take place February 23-27, 2010 at the Düsseldorf Trade Fair Centre. Thus METAV is the first international metalworking fair in the new year and the ideal platform for exhibitors to gather information on the latest developments and solutions for production right at the start of 2010. The exhibition will cover a wide scope of state-of-the-art manufacturing technologies for the metalworking industry – from machine tools, precision tools, automation technology to complete systems made to customers’ specification. Trade visitors are offered ideal opportunities for gaining an overview of the goods and services available and can make their investment decisions at the beginning of the year on a sure and well-informed footing.

For more information please visit www.metav.de.
Calendar & Appointments

Calendar

January 7 – 9, 2010
7th Everything About Water Expo
Chennai (India)

January 11 – 15, 2010
AOV / MOV Joint Conference
San Antonio (USA)

January 19 – 20, 2010
1st Middle East North Africa Water Resource
Dubaï (United Arab Emirates)

January 19 – 21, 2010
Euroguss 2010
Nuremberg (Germany)

February 5 – 7, 2010
META V 2010
Nuremberg (Germany)

February 10 – 12, 2010
Aluminium India 2010
Mumbai (India)

February 11 – 13, 2010
IFEX 2010
Düsseldorf (Germany)

February 12 – 15, 2010
Africa Water Resource 1st Middle East North
Africa Conference

March 10 – 20, 2010
Dongguan Int Expo on Foundry & Die Casting 2010
Dongguan (China)

March 20 – 25, 2010
CastExpo 2010
Orlando (USA)

April 12 – 16, 2010
wire & tube 2010
Düsseldorf (Germany)

April 14 – 17, 2010
Metec 2010
Brescia (Italy)

May 11, 2010
Asia Foundry Forum 2010
Beijing (China)

May 11 – 13, 2010
International Casting Sourcing Fair 2010
Beijing (China)

May 11 – 14, 2010
Casting China International 2010
The 10th International Foundry Fair & Alloy Industry
Exhibition

May 12 – 17, 2010
The 12th China International
Metalurgical Industry
Expo
Beijing (China)

June 2 – 4, 2010
5th International
ROSMOULD Exhibition
Moscow (Russia)

June 10 – 11, 2010
Deutscher
Gießereietag 2010
Dresden (Germany)

DE BEOLDER COLUMN

Getting up close and personal

It’s not just what you know, it’s also who you know

Most employers only tend to get involved in the recruitment process when they are looking for new personnel. Likewise, most people only begin studying the jobs market when they are looking for a new position. So it is probably quite fruitless to state that such employers might be interested in your skills and qualifications.

A piece of advice we always give to companies or candidates is to get to know the other people involved personally. Don’t make decisions on hearsay or for that matter on information you glean from the Internet.

Get facts AND feeling

Here is a real-life and very timely example. For a recent commission, we were asked to find an experienced industry specialist by a company that is quite literally located on the other side of the world. An excellent candidate was found and a meeting arranged with the client company, who were planning to visit Europe to conduct interviews.

In the meantime, however, the candidate decided to do some research of his own on the Internet. From what he saw he decided he didn’t want to proceed with his application.

That was a big mistake! Whilst he got facts from the Internet, he didn’t get any feeling. He could not assess the personality of the company or of its people. We, however, thanks to our own personal experience, were able to reassure him of their quality and reputation both as a company and as employers. Not only that, we were also able to inform him that they were sending two senior executives over to meet him – one a national of the country where the company is based and the other being someone who had previously done exactly the journey they were asking our candidate to consider.

Most people only tend to get involved in the recruitment process when they are looking for new personnel. Likewise, most people only begin studying the jobs market when they are looking for a new position. So it is probably quite fruitless to state that such employers or candidates are by no means experts in this complex and often complicated field. Therefore, whether you are looking to source new personnel or whether you want to find that ‘dream job’, a specialist recruitment company can really make the difference between success and failure.

Aluminium India 2010

Aluminium India 2010, India’s largest professional conference and exhibition on aluminium, is a must to be held February 25-27, 2010 at the Bombay Exhibition Centre, Mumbai, India. Aluminium India 2010 offers the aluminium industry an international B2B platform that will showcase and foster the exchange of ideas on the latest technology, products and new business opportunities to visitors from a wide spectrum of decision makers, manufacturers, producers, users, policy makers, government officials, academics, and technology developers. Alcastek 2010 conference, held concurrently, will continue its present role by providing a high standard technical forum on new developments addressed by invited world class experts.

International Casting Sourcing Fair 2010

China Foundry Association will host the International Casting Sourcing Fair 2010, May 11-13, 2010 at the New China International Centre in Beijing, China. With 1, 869 members whose casting output accounts for 72% of the total output of the foundries in China, this fair offers a unique opportunity for overseas purchasers to find business partners and see the latest industry development in China.

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Tube & Wire 2010 Düsseldorf

Tube & Wire 2010 Düsseldorf will bring wire and cable trade fair in conjunction with Tube 2010, international wire and cable trade fair. Wire 2010 & Tube 2010 will bring exhibitors and visitors together to highlight the wire, pipe and cable industries. At Tube 2010, plastic pipes, profiles, profile tech-
Active institute for foundries in India

Set up in 1950 and registered as a society in West Bengal under the Societies Registration Act XXI of 1860, the Institute of Indian Foundrymen (IIF) has modest beginnings. Today it has an enviable national spread of four regional branches and twenty seven chapters. Its current membership numbers over 3,200 inclusive of Fellows, Members, Life Members and Committee Members.

From providing education, research and training pertaining to metal casting, to publishing the monthly Indian Foundry Journal, in addition to hosting the annual Indian Foundry Congress and being the nodal point of information, plus being a key point of reference for the Government and participating in the preparation of standards for foundry materials and products... IIF is multi-dimensional in its sphere of activities.

Headquartered in Calcutta, in a four storey building, it is equipped with a library aimed at keeping the foundrymen technically abreast of global developments. The IIF is affiliated with the Confederation of Indian Industry (CII) in New Delhi and the World Foundry Organisation (WFO), U.K.

Specialist foundries slowly emerging

By David Sear

A global destination for castings and forgings

Karmen Castmetals has commissioned a state-of-the-art steel and alloy steel foundry in Chennai. Indian Industry (CII), New Delhi and the World Foundry Organisation (WFO), U.K.

Specialist foundries slowly emerging

By David Sear

some of the foundries focus on automotive parts, some in valves and some in construction and mining type castings. Many buyers are surprised that Indian foundries are often able to do complex parts with demanding specifications. While sourcing from India, my advice would be to seek suppliers of material and design specifications since that would reduce the potential quality issues.

Karmen Castmetals’ Mr Natarajan states, “The Sanmar Metals business is comprised of two distinct and independent sectors, namely the iron and steel foundries. In both these businesses we have operations in India as well as overseas. The iron business is largely focused on the automotive segment particularly for the turbo charger applications. Our Eisen- werke Erla foundry in Germany specializes in Ni-Resist (DSS) alloys for highly cored complex parts used in turbo charger applications. We have recently started a Greenfield Iron Foundry in Chennai (India) to complement the German foundry. The steel foundry business, on the other hand, is dealing with cast products that are largely in flow products like valves, for the construction and mining segment and rail / transit applications. Our foundries are located in U.S., Mexico and India, but we service customers on a worldwide basis. The basic difference is that in steel we make a wide range of castings from very small to large size and in a wide range of metallurgies from carbon steel to super high al-loys.

A “leading light” in India, Bay Forge is set- ting standards for others to follow. Bay Forge is an ISO 9001:2008 company. Bay Forge has also been recommended to receive the “Green India” Environment Certification in December 2009 by European DIN.