







METALS SOLUTIONS

Corrosion-resistant steel with tin added

Sumitomo Metals has developed a corrosion-resistant steel with tin (Sn) added meant to be used in salt-containing environments, such as at the seaside or in cold climates where anti-freezing agents are sprayed. Bridges made of this new steel is expected to lengthen the intervals between repaints and reduce repainting workload.

Sumitomo has found out that in salt-containing environments, adding a trace of tin (Sn) can significantly improve corrosion resistance, and that this effect can be produced even if rust cannot be removed sufficiently during the repainting work. Tin added steel at the same time satisfies more than similar basic performance properties as conventional steel needed for bridges such as strength and weldability.

As the new corrosion-resistant steel has high corrosion-resistant performance even with no coating, its application for bridges with no coating is also studied. Sumitomo Metals will carry out further studies on the longer duration between repaints and maintenance and the simplification of repainting work.

	40 cycles	80 cycles	120 cycles
Conventional steel			
New corrosion-resistant steel with tin added			

Steel specimens coated by a general epoxy paint of 180 µm in thickness were tested by an accelerated corrosion test in accordance with SAE J2334* with scratches.
Photo courtesy of Sumitomo Metals

Tata Steel and Dyesol produce dye sensitised photovoltaic module

Tata Steel and Dyesol have partnered to produce a dye sensitised photovoltaic at Tata Steel's Shotton site in North Wales. The module is over 3 metres in length and approximately 1 square metre in area ; it is intended for the infrastructure of buildings.

Creation of the module put to the test the potential, using continuous printing and coating processes, for scaling up the production of steel strips onto which a dye sensitised photovoltaic coating has been printed. Produced as a single length of coated steel rather than separate cells connected together, the module brings closer to commercial realisation the two companies' ambitions to develop a manufacturing process that can produce long roofing panels with an integrated dye sensitised photovoltaic function.

Dr. Mikael Khan, Lead Scientist of Dyesol UK Ltd, commented: "This module demonstrates the feasibility of a continuously printed dye sensitised product. The materials and processes we have created move the process from the production of single cells into the continuous production, from rolls, of lengths of finished modules that would be ideal for roofing applications".

Dye sensitised photovoltaic modules have specific performance characteristics, being particularly tolerant of lower light levels and temperature variations. Developing the ability to print the PV coating directly onto steel roof cladding would enable the modules to be produced in large volumes cost effectively, and to be integrated into building envelopes.

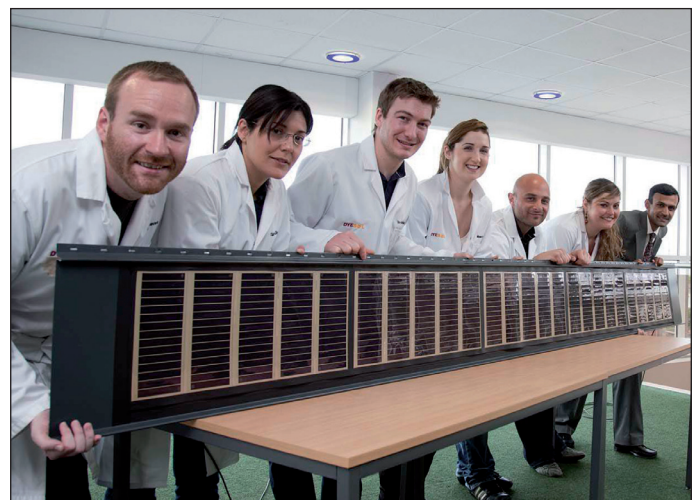


Photo courtesy of Dyesol

Hitachi Metals announces the development of alloys for use in fuel cells

Hitachi Metals has developed metal interconnect materials with higher oxidation resistance and strength for use in solid oxide fuel cells (SOFC). Among the characteristics demanded in materials are oxidation resistance over sustained periods of time at certain operating temperature ranges (700–850°C, for example), excellent electrical conductivity, and a coefficient of thermal expansion close to that of zirconia ceramics electrolytes.

With general stainless steel (430ss, etc.), the problem of insufficient oxidation resistance has been encountered. For nickel-based alloys (Alloy 600, etc.), which have excellent oxidation resistance, the coefficient of thermal expansion is large. Likewise, alloys containing aluminum have excellent oxidation resistance, but the electrical conductivity of their oxide scale is insufficient.

Hitachi Metals completed in 2005 work on ZMG™232L, which is a ferritic stainless steel. On this occasion, the Company has developed ZMG™232J3 and ZMG™232G10 which are interconnect materials that further improve electrical conductivity, oxidation resistance, and strength beyond the levels achieved in ZMG™232L. Achievements in this area are not limited merely to the supply of materials: steps are being taken to meet a wide range of customer needs through initiatives for processed products as well.

PLANTS AND EQUIPMENTS

ArcelorMittal Hamburg modernizes wire rod mill

ArcelorMittal Hamburg, Germany, has placed an order with SMS Meer for the modernization of a two-strand wire rod mill. The annual capacity amounts to 900 000 t. New cantilever stands from SMS Meer must enable higher rolling forces.

This is already the fifth modernization order which ArcelorMittal has placed with SMS Meer for the wire rod mill supplied in 1969. With the present revamp, ArcelorMittal is continuing the abolition of the mill stands designed for two-strand operation. The company will be replacing the last two mill stands of the intermediate train 1. Currently, a two-strand rolling operation is taking place in these mill stands. SMS Meer will be converting this section into two single-strand rolling lines. For this purpose, the existing looper tables will be moved and two new mill



New generation mill stands will be able to absorb higher rolling forces and rolling torques.

Photo courtesy of SMS Meer

stands of type CL 200 will be positioned in V-H arrangement for each strand. These cantilever mill stands represent a new generation and are able to absorb even higher rolling forces and rolling torques.

“Even older rolling mills are able to be brought up to the state of the art and to a competitive level through optimum tailor-made solutions”, Hans-Gerd Limper, Project Manager of SMS Meer, says. “Investment costs are thus kept low and the amortization period of the investment is short”. The modernization must be completed in September 2012.

Severstal Hot commissions second EAF at its Columbus site

The 2nd primary strand, which includes electric arc furnace (EAF), ladle metallurgy furnace, tunnel furnace, and caster, produced first tons, ahead of the original schedule at Severstal's Columbus site.

Sergei Kuznetsov, Chief Executive Officer, Severstal North America, noted, “The current expansion will enhance our already outstanding reliability, flexibility and cost-efficiency, and will benefit our customers, as well as the local community by creating new jobs”. Construction of the push-pull pickle line and the 2nd hot-dip galvanizing line remains on schedule with launches planned for September and October of this year.

Innovation centre in Teesside orders equipment

The Centre for Process Innovation (CPI) and Tata Steel have begun work to establish the national research facility after signing a Memorandum of Understanding last October. A recently appointed management

team has placed orders for the specialist equipment and discussions with potential customers are underway.

The facility will advance high-temperature technologies and costs a total of £5M to establish. The technologists there must pioneer new ways of turning waste products into fuels and raw materials which are crucial for industries such as energy generation, construction, steel and waste management. The project is receiving £2.5M from One North East through the Tees Valley Industrial Programme. Tata Steel and the CPI are investing the remaining £2.5M.

Orders have been placed for the pilot scale industrial plant – a gasifier and a pyrolysis unit. The gasifier is a 2-metre wide furnace that can handle a wide range of feedstocks such as unusable oils and organic wastes and convert them into the valuable and low-carbon fuels of the future. The pyrolysis unit will convert waste materials and biomass into liquid and gaseous fuels.

The equipment will be housed in an open access facility available to companies wanting to test or develop high-temperature processes and must enable testing and demonstration of technologies developed in the laboratory to prove they can work on a commercial scale. Facilities are also available to test the effectiveness of a wide range of materials in gasification and pyrolysis processes.

The facility is being built at Tata Steel's Teesside Technology Centre, in Grangetown, Middlesbrough. It is due to open next spring and is expected to employ at least 30 people by 2020.

CPI Director of Strategy, Dr Graham Hillier, said: "The new centre will help a range of industries to reduce the amount of energy and raw materials they consume, while at the same time increasing recycling rates for these businesses. This unique centre will be open to companies of all sizes on an "open access" basis and will strengthen the UK's international competitiveness in the development of new processes for the energy, construction, materials, metals, waste management, reclamation and process industries".

SMS Siemag expands Hyundai Steel's heavy-plate mill

Hyundai Steel, Korea, has placed an order with SMS Siemag, Germany, for the expansion of its 5.0-m heavy-plate mill in Dangjin, Republic of Korea. The 5.0-m heavy-plate mill went into operation in December 2009 and was completely supplied by SMS Siemag. By expanding the mill, Hyundai Steel can increase its production from 1.5 to 2.0 Mt/y and enlarge its product range. The upgrade will take place in several stages in 2013. The order includes a new roughing stand with edger, the expansion of the plate cooling system, an additional cooling bed, a second dividing shear as well as new pilers and roller tables in the plate yard. The entire X-Pact® automation for these facilities is part of SMS Siemag's supply scope.

The new roughing stand has a roll force of 100 MN and is equipped with hydraulic adjustment system. An edger is flanged-on at the exit side of the stand for precise adjustment of the plate width. SMS Siemag will be extending the existing laminar cooling section of the mill to include a spray cooling system with a pre-leveler.

The pre-leveler in the entry section of the plate cooling system eliminates any unflatness in the entering plates and thus ensures a uniform cooling effect. The new dividing shear will be installed parallel to the existing dividing shear and, like this, is designed for cutting high-strength plates with a thickness of up to 50 mm. Like with the plant which has already been supplied, the new facilities will also be operating with SMS Siemag's X-Pact® Level 1 and Level 2 automation system. Together with the expansion of the 5.0-m mill, Hyundai Steel has also placed an order with SMS Siemag for the construction of a new 4.3-m heavy-plate mill. With these investments, Hyundai Steel will be increasing its heavy-plate capacity in Dangjin to a total of 3.5 Mt/y.

MMK completes construction of Atakas metalworks

Magnitogorsk Iron and Steel Works (MMK) announced the launch of the MMK-Atakas continuous hot-dip galvanizing unit in Istanbul. This marks completion of construction of the MMK-Atakas metallurgy complex, which is located at two sites: in Iskenderun and Istanbul. The construction of the Iskenderun facility was completed in spring 2011. The Istanbul plant's capacity is 450 ktpa of galvanised steel. A portion of the output will be sold directly to customers, while the remainder will be further processed at the colour coating line, which was commissioned in May 2011, with a capacity of 200 ktpa.

MMK already commissioned an identical hot-dip galvanizing unit in Iskenderun, in order to produce specialized rolled metal products for home appliance manufacturers and, in the future, carmakers. The annual production capacity of MMK-Atakas is 2.3 mt of hot-rolled coils, 750 kt of cold-rolled coils, 900 kt of galvanised coils and 400 kt of colour coated coils.

MMK Board of Directors Chairman Victor Rashnikov said: "The total investments in the project exceeded 2000 M\$. The most advanced production technology installed at MMK-Atakas has no analogues in Turkey. This new facility will meet growing Turkish demand for a range of metal products and enable us to export products to the Middle East, Mediterranean region and Europe".

JSW Steel installs RSB from Friedrich Kocks

JSW Steel, has placed an order with Friedrich Kocks for the supply, installation and commissioning of a 3-roll Reducing and Sizing Block

(RSB) for their combined 500 000 t/a wire rod and bar mill in Salem in the state of Tamil Nadu. The new four stand Reducing & Sizing Block will be designed for the operation with newly developed heavy duty 3-roll stands using a nominal roll diameter of 300 mm. The block will be implemented in the combined wire rod and bar mill after the existing roughing and intermediate mill. The RSB operating as a finishing block will roll the finished bar sizes from 16.0 – 60.0 mm Ø. As a pre-finisher it will produce the entry cross sections for the downstream wire rod finishing block in the range of 16.9 – 20.5 mm diameter.

The RSB allows rolling out of only one pass series from the roughing and intermediate mill and thus significantly reduces the number of required feeders. Any desired finished dimension of the complete dimensional range can be produced in any desired sequence with a minimum number of roll sets and just a few stand changes. The optimum adjustment values for motor speed, rolls and guides as well as gear steps are calculated by the bar mill configuration system BAMICON in relation to the final product.

The scope of supply includes the 3-roll Reducing & Sizing Block with automatic quick stand changing system, remotely controlled adjustment of passes and guides as well as the roll shop equipment with quick roll change and CAPAS - the computer aided system for accurate adjustment of rolls and roller guides of 3-roll stands.

Delivery of the new 3-roll Reducing & Sizing Block is scheduled for the middle of 2012.

ArcelorMittal and CSC sign infrastructure managed services agreement in Europe

IT services provider CSC has signed a contract with ArcelorMittal, to provide information technology infrastructure managed services. The agreement provides the framework for common and country-specific agreements by the companies' respective local entities.

The contract has a five-year base with two two-year extension options. Services are expected to commence in the fourth quarter 2011 (the third quarter of CSC's fiscal year 2012). CSC's work will involve all ArcelorMittal's Western and Eastern Europe IT operations. Under the terms of the agreement, approximately 240 employees will potentially transition to CSC during the second half of 2011.

CSC services are due to manage ArcelorMittal's European IT services and to enhance infrastructure service quality, deliver new solutions, improve workforce efficiency and reduce ongoing costs. CSC will provide ArcelorMittal with enterprise infrastructure services (application and web hosting, datacenter, storage, mainframe, business continuity and disaster recovery) and workplace infrastructure services (desk-

top, network, communication and collaboration, print, security and helpdesk support).

Duferdofin-Nucor revamps Pallanzeno plant

The Duferdofin-Nucor group is to complete the electrical revamping of its finishing rolling mill of Beam mill in Pallanzeno (Verbania - Italy). Duferdofin-Nucor can reach a production of about 800 000 t of steel and 1 Mt of beams rolled.

A new automation & SCADA system in client-server configuration (including cold redundant server) will be designed; the drives of rolling stands will be upgraded through new profibus cards (and relevant profibus communication network). Ultimately the main target of the project is the upgrade to the state of the art the rolling mill control system optimizing the tension control (master speed reference) through RACS (Rolling mill Automation Control System) platform supplied by AIC - an Italian company focused on industrial automation systems.

The scope of supply also includes:

- PLCs Safety System suited to securing stop of finishing stands (with control of motor zero speed) and prepared for a future expansion about control of gates, shield and fences;
- Diagnostic system and high-speed historical data management with real-time data visualization on maxi-screen installed in pulpit room;
- New main desk;
- PC Panel for electronic items (Server and PCs client);
- Test, commissioning and production assistance.

The project has been implemented on-site during the summer shutdown.

Tata Steel Long Products selects Broner's Integrated Scheduling solution

Broner has completed the design study for Tata Steel Long Products Scunthorpe's business improvement project, and has now been selected to implement the integrated scheduling solution for steelmaking and casting, slab yard and plate mill together with MES facilities for tracking, quality and inventory management.

The "Chronos Project" will be implemented in close partnership with Tata Steel business, operational and IT specialists to provide various functions:

- Steel plant scheduling with real-time plant co-ordination, crane

and ladle management and “what-if” analysis capabilities, together with automated Caster scheduling for five casters;

- Integrated / through scheduling, to generate an automated piece-level schedule from the slab yard to plate rolling and finishing lines; with detailed line scheduling for the plate mill;
- Auto allocation of skelp, slab, plate inventories and cutting plans for finished plates and slabs;
- MES for slab yards and plate mill, comprising: production recording and management; quality conformance, recovery & tracking; inventory movements, tracking, & reporting;
- Full integration with Tata Steel IBM mainframe, Level 2 process control systems and other operational and MES systems.

The new integrated scheduling solution must provide more realistic schedules in order to facilitate an increase in schedule adherence, and to increase the visibility and control of plant material and processes.

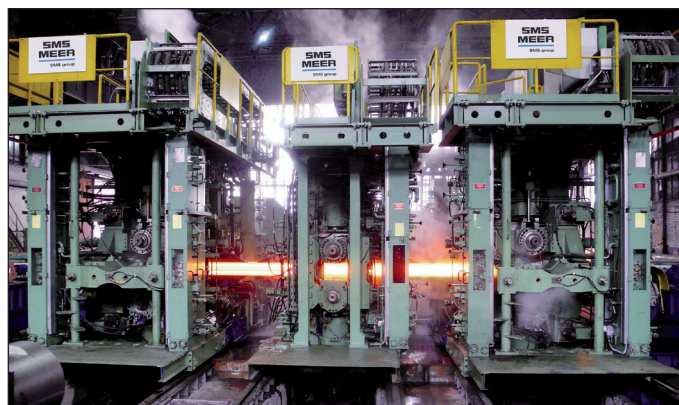
The Tata Steel Plant in Scunthorpe contains 5 continuous casters and complex routes. Tata faces challenges to manage hot metal flow considering ladle fleet constraints, teeming crane constraints, temperature control while dealing with unpredictable treatment times and manufacturing high quality steels. Broner’s Melt Shop Control Centre real-time scheduling solutions will be implemented to improve the synchronisation of all these different factors and will improve reliability of casting, reduce energy cost and increase productivity.

The Tata slab yard is also a complex facility which includes 6 slab processing facilities and has limited space. Broner’s MES solutions will be implemented here to provide real-time tracking of skelp and slab location, improve visibility of forward routing of each slab through the various treatments and provide more reliable delivery of slabs to the plate mill.

The Broner MES will also be implemented in the Tata Scunthorpe Plate mill to provide real-time the tracking of individual plates and integrated scheduling of all plate facilities to improve on-time delivery. The MES solutions will be deployed using wireless technology, hand-held terminals for shop floor and stock yard operators and wireless terminals for all the crane cabs. The complete solution will be implemented in phases and will use standard Broner modules with built-in steel functionality: Melt Shop Control Centre; Caster Scheduler; Production Planner; Plate Combination; Production Scheduler; Production Management; Quality Management and Inventory Management. Broner is providing product enhancements to support the special requirements of the Scunthorpe plant.

Bhilai Steel plant: rail mill for high-speed train tracks

Bhilai Steel Plant, a company of the Indian SAIL Group, has placed an order with SMS Meer, Germany, for the supply of a new universal rail



Rails with a maximum length of up to 130 m will be produced.
Photo courtesy of SMS Meer

mill. The mill, which is part of a modernization and capacity expansion program, will enable Bhilai Steel Plant to produce rails for high-speed trains as well as rails for goods transport with high weights and rail head-hardened products for special applications. Rails with a maximum length of up to 130 m will be produced. The rolling mill has an annual capacity of 1.2 Mt and rolling of the first rails is scheduled for spring 2013. The rail mill is to be supplied by a consortium headed by SMS Meer. CCS® (Compact Cartridge Stand) stands are to be used. This technology is characterized by high frame rigidity, all-hydraulic roll gap adjustment and fully automated stand changing. The CRS® (Compact Roller Straightener) horizontal roller straightener developed by SMS Meer will be used for straightening the whole rolling program. Thanks to the hydraulic vertical adjustment system with the straightening shafts mounted in bearings on both sides, the straightener offers optimum straightening characteristics for high-speed rails. The complete rail finishing equipment also belongs to the SMS Meer scope of supply. It includes two automated rail testing centers, visual inspection lines, several rail sawing units, rail straightening presses, rail drilling machines and the long and short-rail loading equipment. The RailCool® system with selective water spraying is employed for the rail head hardening. SMS Elotherm is to supply the induction heating equipment which allows selective temperature control in the fine pearlitizing process.

Air Liquide to supply oxygen, nitrogen and argon to Metinvest

Metinvest signed a new long-term contract with Air Liquide for the supply of oxygen, nitrogen and argon for Yenakievo iron and steel works, Donetsk Region. Total volume of Air Liquide investments in construction of the air separation unit will comprise EUR 100M, and financing will be provided jointly with EBRD (European Bank for Reconstruction and Development).

The unit will be designed, built and managed by Air Liquide. Design capacity of the unit will comprise 1 700 t of oxygen, nitrogen and argon per day. The commissioning is planned mid-2014. Air Liquide will also supply liquid gases to other industries in Ukraine.

Guillaume Salzgeber, Vice President North and Central Europe and a member of the Air Liquide Executive Committee, commented: "In addition to the investment of the new Air Separation Unit for Metinvest, Air Liquide plans to build up in Ukraine high level technical and operating expertise to support its long term development in this important market for industrial gases. Developing economies are one of the growth drivers of the Group".

JFE Steel to integrate its electric furnace operators

JFE Steel announced plans to integrate four group companies with electric furnace-based production operations - JFE Bars & Shapes Corporation, Daiwa Steel Corporation, Tohoku Steel Corporation and Toyohira Steel Corporation - on April 1, 2012.

Among the group's electric-furnace operations halted by the Great East Japan Earthquake, Tohoku Steel will not resume production but will retain its sales function. Products will be supplied to Tohoku Steel by JFE Bars & Shapes Kashima Works in Ibaraki Prefecture and Daiwa Steel Tobu Works in Saitama Prefecture, both of which manufacture reinforcing steel bars. Efforts must be made to transfer Tohoku Steel employees formerly involved with production to JFE Steel and other group companies.

JFE Bars & Shapes Sendai Works in Miyagi Prefecture, which also had to halt production, restarted its steel bar plant and wire rod plant. The steelmaking plant and slabbing came online sequentially, and overall production is expected to return to pre-earthquake levels by October.

Tata Steel orders equipment for new plant

Mitsubishi-Hitachi Metals Machinery, Inc. together with Sojitz Corporation and Hitachi, Ltd., received order for all equipment of a new Hot Strip Mill from Tata Steel Ltd. in India. The Hot Strip Mill ordered by Tata Steel will be part of Kalanganagar Works, a project now under construction in the State of Orissa, 400 km southwest of Kolkata in eastern India.

The mill will have an annual production capacity of 5.5 Mt, and will be capable of producing automotive steel sheets and other high grade steel sheets. Production is scheduled to begin at the end of December 2013.

TMS: \$84M contracts

TMS International Corp., the parent company of Tube City IMS Corporation, a provider of outsourced industrial services to steel mills, announces it has secured new contracts totaling more than \$84M in revenue. The long-term contracts are for a variety of outsourced services at steel mills in Dunkerque, France, and Abu Dhabi, United Arab Emirates. Services under the new seven-year oxycutting contract in Dunkerque, which began July 1, 2011, include handling, preparation and sizing of revert scrap, utilizing Tube City IMS' environmentally friendly New Cut process, where scrap is processed to charging size in an enclosed environment to capture emissions from the cutting operation. This is the second new mill services contract that TMS has implemented at the customer mill site in Dunkerque this year. Additionally, in Abu Dhabi, the company has contracted to commence a seven-year material handling and waste management agreement with a new customer through its joint venture entity Tube City IMS Middle East Holding. Services under the contract are scheduled to begin September 1, 2011, and will include material handling, hot pit furnace slag excavation, metal reclamation, scrap management, DRI handling, billet transportation and logistics, and a number of other auxiliary services.

SMS Meer new light-alloy press installed in China

The Shandong Yankuang Light Alloy Company in Jining (Shandong Province, China) ordered a light-alloy press from SMS Meer. The plant and machine engineering company is to supply four extrusion presses for aluminium profiles and seamless aluminium tubes to Shandong Yankuang. The machines have press forces of 36, 55, 82 and 150 MN. After their completion, the works in Zhoucheng will have a production capacity of around 130 000 t of aluminium profiles per year. Commissioning is scheduled for the beginning 2012. The 150 MN aluminium extrusion



Profiles with lengths from 2 000 mm to 60 000 mm and diameters up to 700 mm will be produced.
Photo courtesy of SMS Meer

press of the "Schloemann" Series is 12 m high, 5 m wide and 40 m long. After it is presented in Germany, the plant will be dismantled into its individual parts and shipped to China. The cylinder head alone is almost six metres long and weights 180 t. In total the plant weighs 2 000 t. It will be used in future for the production of profiles with lengths from 2 000 mm to 60 000 mm and diameters up to 700 mm. Ulrich Vohskämper, Vice President Hydraulic Presses Product Unit at SMS Meer, explained the use of a large extrusion press: "Plants of this size are used to produce among other things profiles for transport systems. That is of great importance particularly in countries such as China, as a great deal is currently being invested in the infrastructure", said Vohskämper. China needs profiles, for example, for that highspeed trains that will run in future on the new route between Peking and Shanghai. Aluminium is used here in particular for the side and roof sections.

JSPL selects Energiron for new DR plants

Tenova and Danieli as a consortium have agreed with Jindal Steel & Power Ltd, New Delhi, India to supply the Energiron ZR DR technology for direct-reduced iron (DRI) plants to be installed in Angul and Raigarh sites in India. The project consists of the installation of four plants using the reformerless Energiron ZR process with a design capacity of 2.75 Mt/year each. The source of reducing gas will be syngas from coal gasification, with the flexibility to operate with natural gas (or alternate gas), when available, taking advantage of the unique feature of Energiron technology of using different energy sources for the same scheme configuration. The Energiron ZR modules are of similar module design as the one currently under implementation for Nucor Steel in Louisiana, which is set to start up in first half of 2013.

Jindal Steel & Power Ltd. (JSPL) intends to construct the DR plants at various locations with a combined direct-reduced iron production capacity exceeding 10 Mt of highly metallized DRI to supply to its steel plants. These plants foresee the installation of the HYTEMP System for transport of hot DRI to the meltshop, which has already been installed in the DR/EAF plants at ESI in Abu Dhabi and Ternium in Mexico.

The ENERGIRON ZR process allows the selective capture of carbon dioxide, which can then be commercialized. The plant will also comply with the environmental regulations. JSPL has a total capacity of more than 7 MTPA DRI Capacity which is under operation / installation at its plant in Raigarh & Angul in India, Oman and Bolivia.

Harsco expands services at Fos-sur-Mer

Harsco Corporation (Harrisburg, PA) has been awarded two multi-year contracts in France that will expand its logistics and handling ser-

vices to two leading steel industry customers and generate new revenues estimated at \$10 million over their duration.

The first contract expands Harsco Metals' 30-year relationship with ArcelorMittal at its Fos-sur-Mer facility to add new services for the handling and packaging of finished products previously performed by a competitor. Harsco already performs handling and packaging at ArcelorMittal's Mardyck and Florange facilities. Work under the three-year contract is now underway, adding to Harsco's ongoing contract services which include slag management and metal recovery, briquetting and pelletizing of the mill's by-products for production re-use, as well as ship loading and unloading.

Under the second contract, Harsco is extending its expertise in steel mill materials handling, winning a five-year contract at the Ascometal facility in Fos-sur-Mer, where Harsco also has a 30-year relationship. The new contract expands Harsco's role to include the onsite transport and loading for expedition of semi-finished materials throughout various mill operations. Work has also begun on this contract.

Consteel technology expands in the Vietnamese steel market

Nghi Son Iron and Steel Corporation (NIS) has assigned to Tenova the order for the supply of one electric arc furnace (EAF) equipped with the Consteel® system capable to produce 1 Mt/year.

During the technical/economical evaluation stage important advantages of the Consteel® technology arose in the areas of energy savings, increased yield from scrap to liquid steel, and flexibility in accepting all kinds of scrap & other materials as mix of charge. The very low environmental impact gave a final push to the decision in favour of the Consteel® technology.

In Vietnam where 5 of the latest steel projects have selected the Consteel® technology. For Tenova this will be the 40th Consteel® system supplied worldwide. The EAF and Consteel® of the NIS project will have a nominal ton tapping size of 120 t and a hourly productivity of 150 t per hour of liquid steel. The meltshop will be installed in Thanh Hoa Province approximately 200 km South of Hanoi. The steel plant is planned to start production operations in the second quarter of 2013.

Siemens to supply mechanical equipment to ThyssenKrupp

Siemens VAI Metals Technologies has received an order from ThyssenKrupp Steel Europe AG to equip the finishing mill in hot-strip plant no. 2 at its Duisburg-Beeckerwerth (Germany) location with new mechanical components. The modernization must improve the quality of the surface



Siemens will supply the work roll cooling and anti-peeling systems for stands F2 to F4.
Photo courtesy of ThyssenKrupp AG

finish of the hot strip produced as well as extend the range of products to include thicker and wider strips. The project is scheduled for completion in August 2012.

Thin slabs are initially produced from molten steel which are then rolled out to hot strips. The strips can be up to 8.8 millimeters thin. The ThyssenKrupp Steel Europe steel works in Beeckerwerth can produce around 6 Mt of crude steel per annum. The company produces hot-rolled coils on a rolling line with an edger press, two roughing stands and a finishing mill consisting of seven, four-high stands.

To modernize the finishing mill, Siemens will supply the work roll cooling and anti-peeling systems for stands F2 to F4 to safeguard the roll surfaces. Stands F2 to F4 will also be equipped with a roll-gap lubrication system, including the associated operating media systems. This will reduce the roll separating force required and the wear on the rolls, and improve the standard of finish of the hot strip. The scope of supply also includes powerful, hydraulic loopers with an operating pressure of 280 bars, which will allow a greater range of strip tension between the stands. Siemens is also responsible for the hydraulic system and the pipework.

CMI FPE to supply a cold rolling mill complex to Kam Industries

CMI FPE Ltd. has entered into an agreement with Kam Industries (Nigeria) Limited for the supply of a cold rolling mill complex suitable

for 1 000 mm wide steel strip. This complex will be dedicated to thin gauge, cold rolled and metal coated production for construction and industrial applications and will be commissioned in the year 2012.

The cold rolling mill Complex consists of a 6-Hi single stand reversing cold rolling mill, a push-pull pickling line, a wet flux continuous galvanising line, a hr slitting line, a rewinding cum trimming line, two cut to length lines and four barrel type corrugation machines.

CMI FPE Ltd. has supplied in the past equipment in Egypt, Ethiopia, Kenya, Morocco, Nigeria, Togo, Tunisia, Uganda and South Africa.

POSCO starts construction of new FINEX plant

POSCO started construction of its new FINEX plant, which must reach an annual capacity of 2 Mt. Chairman Joon-yang Chung mentions, "FINEX is a technology that allows the use both normal coal and low-quality iron fine ores accounting for 80 percent of the world's iron ore deposits, and dramatically lowers pollutants compared to the existing blast furnace method".

FINEX facilities skip the coking and sintering processes while utilizing cheap powder form iron ores or soft coal; they aim at reducing investments or manufacturing costs by 15%. They also boast low levels of sulfur oxides, nitric oxides and dusts (3%, 1% and 28% of blast furnace respectively).

With POSCO's new facility, Korea means to be recognized as a country with self-supporting steel technology, and shift from being a country helped in making steel with technology from advanced countries to one that leads the world's steel industry. POSCO started research of the FINEX method in 1992, operating a pilot plant in 1996. In June 2003, an annual 600 000 t scale demonstration plant was constructed and commercialized followed by the successful operation of the 2nd FINEX Plant with an annual capacity of 1.5 Mt in 2007.

The 3rd FINEX Plant planned for completion in 2013 will allow 25% of Pohang Steelworks' molten iron production, 4.1 Mt, to be produced by the FINEX method, leading to a 177 200 M KRW reduction of costs annually by using low-cost materials.

Harsco to supply environmental services to Vallourec / Sumitomo plant

Harsco Corporation (Harrisburg, PA) has been awarded a new multi-year contract valued at more than \$90M over its duration to

support a new steel mill in Brazil with onsite environmental and logistics services.

The nine-year contract at the new Vallourec & Sumitomo Tubos do Brasil (VSB) steel complex builds on Harsco's long-standing relationship with the Vallourec group and its V&M do Brazil operations, which Harsco also supports with similar services. The new VSB mill is a joint venture between Vallourec and Japan's Sumitomo Metals aimed at the production of seamless steel tubes for the oil, gas and petrochemical markets. The plant will have a steelmaking capacity of 1 million tons of crude steel per year and an extrusion mill that will produce 600 thousand tons of seamless steel tubes per year. Harsco's onsite metal recovery and logistics services are scheduled to begin ramping up next month, with full operations expected in the second half of 2012.

Outotec to deliver iron ore pelletizing plant in Brazil

Outotec has agreed with Samarco Mineração S.A. on a turnkey delivery of an iron ore pelletizing plant in Brazil. The contract value is approximately EUR 200M, which will be booked in Outotec's second quarter order intake. In addition, the contract includes local EUR 100M purchases performed on behalf of the customer. Some 90% of the services and supplies for the project will be delivered from Brazil.



The plant will treat 9.25 Mt of iron ore per year on a 816m² traveling grate indurating machine.
Photo courtesy of Outotec

The new plant will be installed at Samarco's iron ore port in Ponta de Ubú, Espírito Santo, Brazil. Once operational at the end of 2013, the plant will treat 9.25 Mt of iron ore per year on a 816m² traveling grate indurating machine.

Outotec's scope covers the entire process technology, conceptual and detailed engineering, project management, supply, construction and start-up of the pelletizing plant.

"Brazil is one of the biggest iron ore producers in the world. Samarco's new plant will comply with the latest environmental regulations and be a benchmark for future plants in sustainability, efficiency and capacity", says Outotec CEO Pertti Korhonen.

ArcelorMittal Kryviy Rih chooses hydro-hybrid filter from SMS Siemag

SMS Siemag, Germany, received the order for a revamp of the gas cleaning equipment at ArcelorMittal's steelworks in Kryviy Rih, Ukraine. The works operates a total of six 160-t BOF converters. Presently, the dust-laden converter gas is cleaned by means of conventional wet-type scrubbers. Within the framework of the current modernization project, the filter systems will be converted to a hydro-hybrid filter technology. By retrofitting a wet-type electrostatic precipitator (ESP) suitable for this application and integrating it with the existing wet-type scrubber, residual dust contents can be significantly brought down. The compact design of the filter facilitates installation in existing plant environments with confined space conditions.

In addition to modernizing the off-gas cleaning system of the Kryviy Rih works, also the off-gas cooling system complete with the water cooling circuits will be renewed. Per converter, one new wet-type scrubber will be supplied. The existing water treatment plant will be used without any modifications for both the wet-type scrubbers and the wet-type electrostatic precipitators. Further, the SMS Siemag scope comprises the basic and detail engineering and the supply of all core components. The six wet-type electrostatic precipitators will be supplied by SMS ELEX. The project will be realized in several steps, covering one converter at a time. The first hydro-hybrid filter system is scheduled to be operational in 2012.

NLMK revamps melt shop

NLMK has started the installation of main equipment for the revamped Continuous Casting Machine No.3 (CCM) at its main production site in Lipetsk. As a result, CCM production capacity must increase by more than 300 000 t pa, up to 1 Mt pa. CCM-3 will produce a wide mix of slabs of various steel grades. Up-to-date equipment, 20-25% faster

casting speeds and longer interrepair periods must improve CCM efficiency. Product mix will expand with an increase in maximum slab thickness from 240 to 315 mm, allowing NLMK to roll wide thick plate at its subsidiaries in Europe (DanSteel, Clabecq).

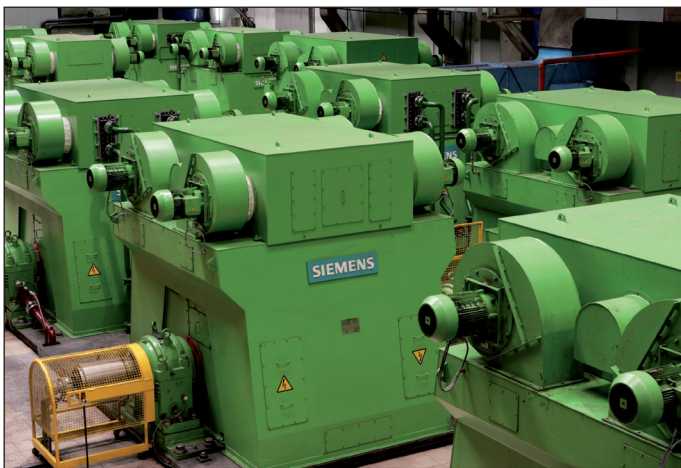
3 000 t of new equipment manufactured by NKMZ (Ukraine) and NLMK's in-house repair plant will be installed. Launch of the CCM is planned for Q4 2011. Total investments exceed RUR 3.7 bln (or about \$120M). The project is part of the Company's strategy aimed at the expansion of steelmaking capacity, following the start up of the new 3.4 Mt pa Blast Furnace No. 7, the construction of which is currently in its final stages at the Lipetsk site.

Siemens to modernize main drives at voestalpine

Siemens has received an order from Austrian company voestalpine Stahl GmbH to modernize the main drives on the hot strip mill at the company's plant in Linz. The drive control system will be integrated into the existing automation environment. Modernization work will take place step-by-step during short maintenance shutdowns and is due to be completed in the spring of 2013.

Following conversion, voestalpine Stahl's hot strip mill will produce 4.8 Mt of hot-rolled strip per annum in thicknesses ranging from 1.5 to 20 millimeters and widths of between 700 and 1,750 millimeters. The plant has a roughing stand with an edger, and a finishing mill with seven four-high stands. All eight stands are equipped with Siemens double-motor drives.

The 16 synchronous drives, equipped with cycloconverters and Simadyn D controllers, will be fitted with new Sinamics control components. The existing power units of the converters will be retained,



voestalpine Stahl's hot strip mill will produce 4.8 Mt of hot-rolled strip each year.
Photo courtesy of Siemens

enabling the rolling mill drives to be modernized without having to replace the whole converters. Siemens will also be responsible for configuration, detail engineering, installation and commissioning.

Award of order was preceded by successful piloting of the modernization concept on one drive in the finishing mill in December 2010.

INDUSTRY CONTRACTS

Ruukki to deliver wear-resistant special steel to Caterpillar

Ruukki's wear-resistant special steel Raex 400 will be used in Caterpillar ADT trucks main body structure. The contract with Caterpillar covers the delivery of Raex to their major European facilities for 2011.

The approval testing was performed at the CAT Peterlee production facility in the UK where the group's Articulated Dump Truck (ADT) product for global supply is manufactured. The ADT truck's main body structure is one of the most demanding applications for wear-resistant steel due to the continual impact and wear it undergoes.

The approval process included chemical, mechanical as well as impact testing and macro's tests on the weld. Identical tests were performed in large quantity to ensure product consistency.

ThyssenKrupp: Congress Center near the Caspian Sea

The Heydar Aliyev Congress Center in Azerbaijan, designed by Zaha Hadid Architects, will have an envelope made from more than 30 000 square meters of construction elements from ThyssenKrupp Steel Europe. The 57 519 square meter building will house a conference area with three auditoriums, a museum and a library.

More than 5 500 kilometers separate the Siegerland district, where German steelmaker manufactures its construction elements, and Baku in the Caucasus. The twelve meter long and 1.5 millimeter thick profiled sheets were first transported by truck to Istanbul. There the material was transhipped by Turkish distribution partner EMI INSAAT Ltd., responsible for the logistics of the project, and delivered to Baku, again by truck.

Once on the site the elements were cut into three meter long pieces and mounted on a lattice-like steel support structure. The trapezoidal profiles supplied by ThyssenKrupp Steel Europe have a profile depth of 100 millimeters. The galvanized steel is coated with polyester in RAL 9002 gray-white.

Essar Steel to supply plates for war ships

Essar Steel, India, has been approved by the Indian navy for the supply of steel plates destined to war ship construction. Essar has integrated facilities from heavy plates, hot rolling, cold rolling, galvanizing and colour coating, with a full distribution business with Steel Processing Centres and retail outlets under the brand Essar Hypermarkets.

An audit of Essar Steel's recently commissioned wide-plate mill was conducted by teams from the Directorate of Naval Architecture (DNA), Defence Metallurgical Research Laboratory (DMRL) and the Director General of Quality Assurance (DGQA) of the Ministry of Defence. The company consequently received an order from Mazagoan Dock (MDL) to supply 13 000 t of heavy plates to build ships for Defence.

The plate mill finishing facilities include normalized rolled, furnace-normalized, direct quenched, quenched and tempered (QT) plates, shot blasting, austenising and Accelerated Direct Cooling (ADCO). The mill can produce plates with a thickness ranging from 5 to 150 mm, width from 900 to 4900 mm and 3 m to 25 m in length – all of which are import – substitution products. The plates find applications in diverse segments, including defence, oil and gas, boilers and pressure vessels, heavy duty earth-moving machines, wind towers, mine protective vehicles, construction.

The plate mill has also received an approval from API to use its monogram on steel plates.

Construction of Line 2 of the Nord Stream Pipeline completed

The pipelay vessel Allseas' Solitaire today completed the construction of Line 2 of the Nord Stream Pipeline in Russian waters and has resumed pipe laying in Finnish waters. Over 230 kilometres of Line 2 have now been laid in the Baltic Sea, 124 kilometres of which are in Russian waters. Simultaneously, Saipem's Castoro Sei is laying pipes in the Gulf of Finland as well. Line 1 has been completed and will be put into operation in the fourth quarter 2011.

On the Russian shore in Portovaya Bay near Vyborg, construction of landfall facilities for both pipelines and pressure tests have been completed in June. Herewith, the main scope of work on Nord Stream's Russian section consisting of the 1.5 kilometre dry part and 124 kilometre offshore part has been finalised.

During the operational phase gas pressure at the start of the pipelines will be 220 bar, which requires the use of steel pipes with a maximum wall thickness of 41 millimetres. To guarantee that the pipeline can withstand such operational pressure, the two pipelines of the dry



Onshore facilities located 1.5 kilometres from the shoreline include pig traps as well as isolation and emergency shutdown valves. Installation of equipment was completed in June.
Photo courtesy of Nord Stream AG

part were pressure tested to confirm their integrity and safety. Both sections will now be dried and filled with nitrogen to prepare for gas-in.

Outokumpu's stainless rebar for road infrastructure project

Outokumpu delivers duplex stainless steel rebar to the construction of the traffic route Norra Länken in Stockholm, Sweden. Norra Länken is a large infrastructure investment in a new traffic route around the northern parts of central Stockholm. The purpose is to reduce traffic and improve the environment in the city centre.

The Swedish construction company Skanska has ordered some 300 t of Outokumpu LDX 2101® duplex stainless steel rebar to be used in a viaduct. "Stainless steel rebar has high corrosion resistance and it withstands highly corrosive road salts better than carbon steel, which is traditionally used in rebar", says Mats Segerbäck from Outokumpu. The rebar is produced at Outokumpu's plant in Sheffield, UK.

Sumitomo receives first order for ultra-high tensile strength steel H-SA700

Sumitomo Metals has received order from Obayashi Corporation (Obayashi) for construction of a "Techno Station" main building at its Technical Research Institute. H-SA 700 is a ultra-high tensile strength steel material which has yield strength that is about twice as high as conventional steel. It was developed to improve the seismic

performance of buildings in the collaborative government project concerning "Research & development of buildings with new structural systems that use innovative structural materials". In addition, Sumitomo Metals has independently developed a process innovation for this material. Specifically, the preheating for the welding work can be omitted.

A steel stand column made of H-SA700, when filled with ultra-high strength concrete developed by Obayashi, becomes an ultra-high strength CFT column. This column is meant to make the building safe even against a major earthquake and allows the creation of a large space with a wide span between the columns; columns made of this material can then be thinner, and buildings require the installation of fewer columns.

Magnitogorsk hot-rolled galvanized steel accepted by Renault

Magnitogorsk Iron and Steel Works (MMK) has successfully passed technical audit completed by Renault S.A. As a result, MMK has received the French carmaker's approval that allows the steelmaker to ship its hot-rolled galvanized steel designed for inner parts of Renault automobiles.

In the past few years MMK has been targeting Russian and international carmakers, getting approvals for technologies and products from international carmakers and home appliances manufacturers. Production of corresponding steel types is monitored by the MMK Central Control Laboratory. At the moment MMK is rolling test lots of steel for such companies as LG Corp and Ford Motor Company. In the meantime, selection of additional samples is underway in order to send selected samples for approval by international automakers (including General Motors, Volkswagen and Matador) and home appliances companies (such as Samsung, Bosch, Bosch und Siemens, etc.).

STRATEGY AND ORGANISATION

Sumitomo to acquire Standard Steel

Sumitomo Corporation, Japan, is to acquire Steel Wheel Acquisition Corporation ("SWAC"), the parent company of Standard Steel, United States.

Standard Steel is a manufacturer of railway wheels and axles with a history of over 200 years. Sumitomo Metals manufactures railway

wheels and axles, with a strong focus on the Japanese market. Sumitomo Metals' high-speed railway wheels have been supplied to Japan's Shinkansen bullet train as well as the Intercity-Express (ICE) trains in Germany. Following the completion of the acquisition, Sumitomo Metals plans to transfer certain technology, such as its proprietary SIRD (Sumitomo Inclined Rotary Dishing) pressing facility, a rotary forging press for wheels, to Standard Steel. The aim of this is to enhance competitiveness in the manufacture and sale of railway wheels, including wheels used for locomotives and passenger trains, including high-speed rail.

Guangzhou JFE Steel Sheet begins operating cold rolling mill

Guangzhou JFE Steel Sheet (GJSS), a joint venture between JFE Steel Corporation and Guangzhou Iron and Steel Enterprises Holdings, has begun operating a new cold rolling mill as part of an integrated production system encompassing cold rolling to hot-dip galvanizing, which the company is constructing to meet the increasing demand for high-end steel in China.

In addition to the cold rolling mill (1.8 Mt/year), GJSS will add a continuous annealing line (1 Mt/y) and a second continuous galvanizing line (CGL, 400 000 t/y) under a major expansion.

Total investment is approximately USD 170M (additional capital investment for the cold rolling mill project: approximately USD 820M).

The cold rolling mill entered commercial production in July after test operation. The continuous annealing line started operating in June and commercial production began in August, after which shipments of cold rolled steel sheet mainly for automobiles and electrical appliances must have moved into full gear.

When the No. 2 CGL is completed by around the end of the year, GJSS's two CGLs must have a combined annual processing capacity of 800 000 t.

Going forward, GJSS, JFE Steel and Guangzhou Iron and Steel will cooperate in providing stable supplies of cold rolled steel sheet and hot-dip galvanized steel sheet to customers in China, particularly firms in the fast-growing automobile and electrical appliance industries.

Vale starts pellet production in Oman

Vale has started pellet production at its first pelletizing plant in the coastal city of Sohar, Sultanate of Oman. The US\$1 356M pelletizing plant and distribution center will serve as a hub catering to the growing demand of iron ore products in the Middle East, North Africa and India.

Vale's industrial complex in Sohar is comprised of a two-unit pelletizing plant, each with a nominal capacity of 4.5 Mt of pellets for direct reduction per year, in addition to a distribution center with an annual capacity of 40 Mt/year. The plant uses a Grate Kiln furnace. A total of US\$ 40 M has been invested in green technology which includes an advanced 100% water recycling system as well as a 3 150 meter wind fence surrounding the Industrial Complex to control dust emissions.

In May 2010, Vale announced a partnership with the Omani government through the sale of a 30% stake in the pelletizing plant to Oman Oil Company. Vale also contracted Sohar Industrial Port Company to build a 1.5-kilometer jetty which will be exclusively used and operated by Vale. Three ship loaders and one ship unloader have already been delivered. A long-term agreement was also signed with Oman Shipping Company for the construction of four very large iron ore carriers (VLOCs) with a loading capacity of 400 000 t to be leased to Vale.

Kobe Steel strengthens operations in China

Kobelco Holding is the first headquarters established in China by a Japanese blast furnace steelmaker. The company has been operating since April. Its first investment project was equity participation in Wuxi Compressor Co., Ltd., announced last week.

Based in Luwan District, Shanghai, the wholly owned subsidiary of Kobe Steel is capitalized at US\$50.14 M. The main activities of the China headquarters are investments, mergers and acquisitions; centralized financing and cash management; strengthening group governance and risk management; and supporting group companies in China.

The Kobe Steel Group aims to achieve consolidated sales of 3 000 000 million yen and ordinary income (also called pretax recurring profit) of 200 000 million yen over the next five to ten years. Overseas sales are anticipated to make up about half of that amount, or 1 500 000 million yen, supported by active global development mainly in emerging countries.

Business activities in the growing Chinese market are ever more important than before. Kobe Steel's current sales of 260 billion yen from China, which includes exports from Japan in fiscal 2010, are anticipated to more than double in the future. In its materials segments, the Kobe Steel Group has three companies in China for steel wire rod processing; three for the production and sales of welding consumables; and one for copper sheet processing. In the machinery field, Kobe Steel has two units that assemble construction machinery and one that makes standard compressors.

The company has also set up a venture for aluminum forgings, increased production of hydraulic excavators and standard compressors, plans to manufacture crawler cranes, and is entering the non-standard compressor business.

In total, Kobe Steel currently has 35 companies in China, of which 16 are consolidated subsidiaries, and employs over 3 000 people. Each of its locations is anticipated to expand, and Kobe Steel is also considering other new locations. The China headquarters plans to centralize financing and cash management, strengthen group governance, support group companies, and promote lateral communication within the Kobe Steel Group.

voestalpine integrates additional railway systems R&D

voestalpine has acquired the research department of Baas B.V., Netherlands. It will be integrated into the turnout technology segment of voestalpine's Railway Systems Division.

Baas R&D, headquartered in Waddinxveen in the western Netherlands, specializes in the development and production of wheel diagnostic and axle recognition systems based on fibre optics technology. Within the VAE Group organization, Baas R&D will become a branch of the German company SST Signal & System Technik GmbH (a subsidiary of VAE Eisenbahnsysteme GmbH, Zeltweg).

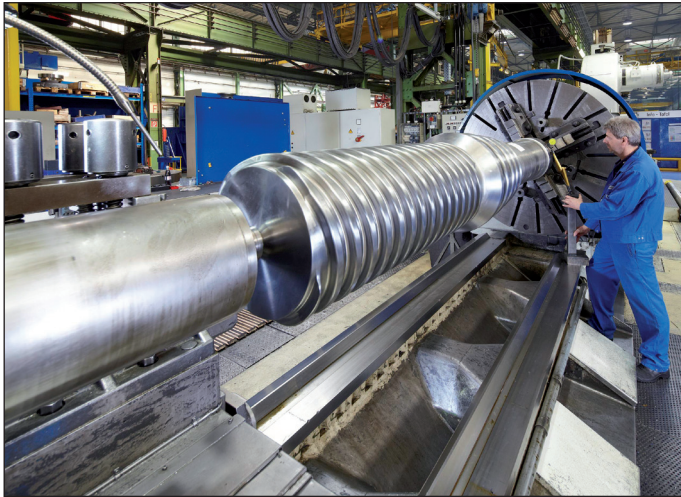
voestalpine's subsidiary Hytronics GmbH is responsible for the activities of the voestalpine Group concerned with electro-hydraulic setting and safety systems for turnouts, as well as diagnostic systems for railways. The company expects demand to continue to grow in the long-term future for technologies related to rail infrastructure and rolling stock.

voestalpine's Railway Systems Division supplies ultra-long, special head-hardened rails in unwelded lengths of up to 120 m. It also provides turnout technology and integrated monitoring solutions for high-speed, passenger, (heavy) freight and municipal transportation.

SMS Meer invests 60 M€ in its Mönchengladbach site

SMS Meer will be investing around €60M in the expansion of its Mönchengladbach site by 2015. "We are increasing productivity, reducing delivery times and thereby safeguarding jobs at the site over the long term", said Dr. Joachim Schönbeck, President & CEO of the plant construction and mechanical engineering specialist. The modernization of the machinery must reduce unit costs considerably, while shortening lead times at the same time. The expansion of the heavy-equipment bay should further improve production processes, in particular.

While other companies are shifting production completely to Asia, SMS Meer means to demonstrate its belief in Germany as a production location. Dr. Schönbeck went on: "Germany as a location offers benefits, particularly thanks to our committed, well-trained employees".



The modernization of the machinery must reduce unit costs.
Photo courtesy of SMS Meer

The SMS Meer Business Area employs 3 000 staff worldwide, with 1 400 in Mönchengladbach.

Nippon Steel announces joint venture with Wuhan Steel

Nippon Steel and Wuhan Iron and Steel Corporation ("Wisco") have agreed to establish a joint venture named "Wisco-Nippon Steel Tinplate Co., Ltd." in Wuhan City, Hubei Province, China for the manufacture and sale of tinplates. This project targets demand for tinplates for food cans, beverage cans, and other containers which is expected to significantly increase in China.

Nippon Steel has long maintained amicable cooperative relations with Wisco since the construction of the Wisco's hot-rolling mill. Total investment is about RMB 1 850 M (approx. JPY 24 000 M). Continuous annealing and processing line will have a 400 000 t/y capacity, while electrolytic tinning line's capacity must be 200 000 t/y. Operations must start by summer 2013. The new company, when established, must allow Nippon Steel to develop its tinplate business, and also to develop global business in China.

Sumitomo to partner with Mazda in South America

Sumitomo and Mazda Motor Corporation have reached an agreement on launching a two-pronged joint venture focusing on Mazda cars in Central and South America, with production in Mexico and sales in Brazil. One pillar of the project is production of Mazda cars in Mexico, with a focus on compact cars targeting the entire Latin American mar-

ket. A car-body and engine assembly plant is planned for construction in Salamanca in the state of Guanajuato, around 250 kilometers northwest of Mexico City. The plant, scheduled to be completed in fiscal 2013, will have an initial annual output capacity of 140 000 units, which will mainly consist of Mazda 2 and Mazda 3 units. The companies also aim at increasing market share in Brazil, which saw new car demand doubling to 3.5 million in 2010 from 2005. It is planned that the sales and marketing base in Brazil will start operation in fiscal 2012 by importing vehicles produced in Japan, and upon completion of the Mexico plant, products will be supplied from the new base in addition to Japanese imports. Sumitomo has maintained a partnership with Mazda for many years across a broad range of areas, from supplying raw materials, components and equipment to exporting products (finished cars and knocked-down kits) and auto leases. Under the recent agreement, Sumitomo will make its first foray into the automobile production business.

PEOPLE

Severstal: Christopher Clark, Chairman of the Board

On June 30, 2011, the Board of Directors of OAO Severstal elected Mr. Christopher Clark as the Chairman of the Board of Directors. Christopher Clark's career spans 40 years at Johnson Matthey plc, the specialty chemicals and precious metals Group, where he became Chief Executive Officer in 1998. He led the Group into the FTSE 100 in 2002. Since his retirement in 2004, Christopher Clark has taken a number of non-executive positions. He currently chairs Urenco Limited, the leading international supplier of enriched uranium to the power generating industry. Christopher Clark is a graduate in metallurgy; he studied at Trinity College, Cambridge and Brunel University, London.

ECONOMY WATCH

World Steel in Figures 2011

The World Steel Association (worldsteel) has published the 2011 edition of its World Steel in Figures report. It is now available on worldsteel.org

The report recalls information on crude steel production, apparent steel use, pig iron production, steel trade, iron ore production and trade, and scrap trade.

A PDF copy of the report can be downloaded from World Steel Association's website:

http://www.worldsteel.org/pictures/publicationfiles/WSIF_2011.pdf

India set to become global steel powerhouse

India is set to become the world's steel powerhouse, with investment in the latest and most efficient technology forecast to surge, according to Ernst & Young's report, "Global steel – 2010 trends, 2011 outlook".

Ernst & Young's Global Mining & Metals Leader, Mike Elliott, says with India's strong economy driving a 12% rise in domestic steel demand in the next two years alone, India is poised to become a dominant player in the global steel sector. Although capacity has increased 8.7% between 2005 and 2010, this was outstripped by growth in domestic consumption of 11.1% over the same period. "This unprecedented growth has attracted many global steel players, with a number establishing mega greenfield projects and others entering strategic partnerships or joint ventures with Indian steelmakers", says Elliott. "There is a stampede of steelmakers to India and all the leading global steelmakers have an India strategy to tap into the growth".

However Elliott says the increased global steelmaking capacity from the investment boom in India will combine with higher raw material costs to squeeze the margins of steelmakers around the world. "The next few years will be survival of the fittest for steel producers", he insists. "The key driving factor for the profitability of all steel players will ultimately depend on more tightly managed operating expenses and capital expenditure". Elliott also recalls steelmakers have had a challenging couple of years in the wake of the global financial crisis, with the uneven recovery in demand compounded by increasing raw material costs. "The fluctuations in demand and raw material price volatility are the two biggest challenges facing steelmakers". Recovery in steel demand in developed markets remains fragile, but the strong growth in steel demand in emerging markets will continue, fuelled by growing demand from infrastructure, construction and automotive end-users.

Sufficient iron ore reserves, low per capita steel consumption and strong demand for steel gives India a real competitive edge over other emerging economies. India is the world's fourth-largest iron ore producer, with sufficient iron ore reserves to meet expected steel demand. The Indian steel industry has already witnessed robust growth during 2005–2010, with production (crude steel) and consumption (finished steel) registering growth of 7.7% and 7.1%, respectively, according to Ernst & Young.

The construction and infrastructure sector is India's largest steel consumer, accounting for 61% of total steel consumption in FY09, and future demand looks strong. Between FY09 and FY10, infrastructure development increased the demand for long steel by 8.6%, but flat steel by only 3.2%, Ernst & Young says: "this trend is likely to continue in the short term, as investment grows in this sector". Power and pipeline construction in particular will be important drivers of steel demand. During the Tenth Five-Year Plan (2002–2006), demand for power increased at a rate of 6.2% and availability by 5.8%, creating a power deficit. Demand for steel is also expected to come from the huge network of pipelines to be laid

over the next few years for oil and gas transportation, with the network for liquid fuel transportation likely to grow from the present 16 800 km to 22 000 km in 2014. In addition, the shipbuilding industry is likely to undergo a fast growth cycle further pushing up demand for steel.

Opportunities across the infrastructure sector

Sector	Key opportunities
Power	- Government target of 100 000 MW by 2012 - Both generation and transmission capacities being enhanced significantly
Oil and gas	- Pipeline network, city gas distribution and refinery infrastructure installation and upgrading
Roads and highways	- National Highway Development Program (NHDP) - plans to construct and upgrade more than 50 000 km of national highway by December 2015
Railways	- Dedicated Rail Freight Corridor (DRFC) network expansion lagging behind freight growth; this will need to be made up
Ports	- Port traffic is estimated to increase by about 12% during 2010-2012; the capacity increase or upgrade bodes well for the steel industry
Water and waste management	- The Jawaharlal Nehru National Urban Renewal Mission is expected to increase steel consumption

The automotive sector, which grew by 27% in FY09 and 26% in 2009–2010, is likely to continue to enjoy double-digit growth as the launch of low-cost passenger cars expands the market. With many automobile manufacturers increasing capacity and (or) establishing manufacturing operations in India, demand for the high-quality, value-added steel segment will see immense growth, according to Ernst & Young. Capital goods sector, which currently accounts for 11% of steel consumption, has the potential to significantly increase in tonnage and market share. For example, in China, machinery production alone accounts for more than 100 Mt of steel per year.

Domestic demand for steel is anticipated to grow by around 12% in the next two years on the back of forecast strong GDP growth, with long steel in greater demand than flat steel, although both are set to increase. The short-term demand forecast for both long and flat steel suggests growth of about 10-12% and 9-10%, respectively, over the next two years.

According to Ernst & Young, the ongoing debate is whether India should aspire to grow to such levels and, if required, whether it can replicate China's growth model in the sector. China's reforms began 13 years before India's. Even at the start of its reform process, China was a more industrialized economy. "Industry and construction" constituted 48% of its GDP, in comparison to 27% for India when reforms began in 1991. China has continued to focus on infrastructure. Its share of GDP expenditure accelerated from 38% to 48% during the reform journey, while India's GDP grew from 25% to 32%. In 1991, China produced 71 Mt of steel, which grew to 127 Mt by 2000. In the same period, India's steel production grew from 17 Mt to 26 Mt. In China, steel production picked up pace after 2000,

growing to around 630 Mt in 2010. Although India registered significant growth during this decade, in absolute terms, China's steel production is 12.3 times that of India's. Based on India's GDP data, Ernst & Young believes the economy is on a strong growth path. In the coming years, Ernst & Young anticipates steel consumption growing in line with GDP growth in the expected 8%-plus range. "While India does not need to emulate the volume achieved by China, production must accelerate to meet the robust growth in demand", according to Ernst & Young. "The extent of production growth will depend on how well stakeholders address the market's challenges". India was the world's fifth largest producer of crude steel in 2009 and is expected to become the world's second largest producer by 2015–2016. Total crude steel capacity in India is expected to be around 112.5 Mt by 2015 – a growth rate of 9%.

Expected capacity additions

Crude steel capacity (Mt) Year-ending 31 March	2007	2008	2009	2010	2012E	2015E
Tata Steel (India)	5	5	6.8	6.8	6.8	12.7
Essar Steel (India)	4.6	4.6	4.6	4.6	9.2	9.2
Ispat	3.6	3.6	3.6	3.6	3.6	3.6
JSW Steel	3.8	3.8	3.8	7.8	11	11
RINL	3.5	3.5	3.5	3.5	3.5	6.3
JSPL	2.9	2.9	2.9	2.9	4.9	6.9
SAIL	13.8	13.8	13.8	13.8	15.9	24.7
Bhushan Steel	0.3	0.3	0.3	0.3	2.2	5.1
Bhushan Power& Steel	1.4	1.4	1.4	1.4	1.4	1.4
Others	17.9	20.9	25.6	28	28	31.6
Total crude steel capacity	56.8	59.8	66.3	72.8	86.6	112.5

Source: "India Steel Sector: India - An outperformer in steel", BNP Paribas Securities

Further details about Ernst & Young's report, "Global steel – 2010 trends, 2011 outlook" are available from Ernst & Young's website: www.ey.com

ENVIRONMENTAL OUTLOOK

ArcelorMittal Kryviy Rih to modernize assets and reduce footprint

6 133 700 t of steel were produced by ArcelorMittal Kryviy Rih in 2010, compared to 5 039 000 t in 2009. "2010 was the year of gradual overcoming crisis consequences", Rinat Starkov, CEO of ArcelorMittal Kryviy Rih, commented. "At this juncture the enterprise used the opportunities given by the market and built up volumes of production of main products by 20%. It is also important we have launched the full-scaled moderniza-

tion program which was suspended in 2009 and we've launched some important projects. The largest one was the construction of our first CC-machine. In 2010 we started to rebuild organizational structure of the enterprise to create effective business of the Western model". In 2010, exports reached 85% of total sales (compared to 83% in 2009). In 2010 OJSC "ArcelorMittal Kryviy Rih" supplied 60 countries worldwide (61 countries in 2009), with the main markets remaining Africa, the Middle East, the Persian Gulf, CIS, Iran, and Turkey. 78.22% of total production of the enterprise is exported to these regions and countries. Sales of the main steel production increased by 11% compared with 2009 at the domestic market. In 2010, the company delivered its production to all regions of Ukraine.

Besides, in 2010 ArcelorMittal Kryviy Rih has renewed its modernization program, suspended in 2009. Now the long-term and new projects on modernization and environment protection activities which will be completed in the nearest time are under implementation. This includes construction of CC-machine and ladle furnace (92 M\$). In addition, modernization program of 2010 included:

- Reconstruction of crushing plants of mining and beneficiation complex (41 M\$);
- Capital repair of the blast-furnace No. 6 with introduction of environment protection activities (107 M\$);
- Gas cleaning of the converter shop (118 M\$);
- Construction of packaging line at light-section mills No. 2, 4 (20 M\$), and also a lot of other projects.

Capital expenditures will exceed 400 M\$ after main projects completion. In 2010 the plant invested 219 M\$ compared to 132 M\$ in 2009 in modernization. Besides, ArcelorMittal Kryviy Rih implemented several projects to reduce its footprint in 2010:

- Reconstruction of dust exhausting plant of bulk material conveying at the converter shop. Operation of dust exhausting plant enables to reduce pollutant emissions to the atmosphere from 120 mg/m³ to 50 mg/m³, which corresponds to Ukrainian standards of environmental law. This dust exhausting plant will be put into operation in 2010-2012.
- Reconstruction of gas treatment unit of mixer department at open-hearth shop resulted reduction of concentration of suspended substances in the emissions from 180 mg/m³ to 50 mg/m³. This project is completely fulfilled.
- Reconstruction of purification plant of transport column No. 7 at technological motor transport shop. As a result pollutions produced by open pit transport stopped to fall into rain-storm run-off which flows to Saksagan River.
- Construction of washer for dumpers and purification plant of storm water and reverse water. Environmental impact resulted rational use of water and avoiding of pollutions in rain-storm run-offs.
- Finished reconstruction of tailings facilities and reverse water supply of tailings pond "Obyedinennoye" with flood-breaking dams up to 146 m.
- Reconstruction of tailing facilities and reverse water supply to support capacities of mining and beneficiation complexes.