

## METALS SOLUTIONS

### *ArcelorMittal unveils steel types for lighter and safer cars*

Developed through direct technical collaboration with automotive manufacturers, the S-in motion automotive research programme comprises a range of over 60 press-hardened steel and advanced high-strength steel solutions that can be implemented in vehicles today, aiming at benefits in terms of weight, safety and efficiency.

This portfolio includes solutions covering 43 parts of the typical C-segment vehicle. According to ArcelorMittal, manufacturers that implement the lightest solution for each component can save up to 73kg or 19% of the typical vehicle's body in white weight, compared with a baseline C-segment production car. According to a life cycle analysis (LCA) conducted throughout the process, from steel elaboration to the vehicle end of life, these weight savings have the potential to deliver a 13.5 per cent reduction in CO<sub>2</sub> equivalent (eq) emissions during the vehicle's use-phase, without compromising safety, durability or corrosion-resistance. According to the same LCA, another 15 per cent reduction in CO<sub>2</sub> equivalent (eq) emissions can be obtained during the production.



Up to 73kg or 19% of a typical C-segment vehicle's body in white weight can be saved.  
Photo courtesy of ArcelorMittal

### *Outokumpu LDX 2404 grade to complete duplex offer*

Outokumpu launches a new duplex stainless steel grade featuring a high mechanical strength. The new grade, Outokumpu LDX 2404, enables thinner gauges to be employed in a variety of applications. The resistance to corrosion must bring high durability and long service life, whereas weight reduction and lighter designs are due to translate to savings in design, transport and maintenance costs as well as lower energy consumption. The new grade is meant for all uses of stainless steel where high mechanical properties and good corrosion resistance can be utilised - in storage tanks, road and rail tankers, building and construction as well as in industrial processes.

## PLANTS AND EQUIPMENTS

### *TU Freiberg and MgF put magnesium rolling mill into operation*

Freiberg University of Mining and Technology and MgF Magnesium Flachprodukte (MgF), a subsidiary of ThyssenKrupp Steel Europe, have inaugurated a hot rolling mill for magnesium, which extends a production line for magnesium flat products developed jointly by the university and MgF.

Built with 7.5 million euros in funding from the state of Saxony, the mill will be operated by the university's Institute of Metal Forming. "State funding for research and universities will continue to be aligned with industrial policy in the future and will focus on key growth technologies, including materials research", Prof. Georg Unland, Saxony's finance minister, underlined.

MgF and the Institute of Metal Forming at TU Bergakademie Freiberg jointly developed a concept for the production of magnesium sheet using a casting-rolling line to manufacture flat strip directly from molten magnesium. The new rolling mill reduces the four to seven millimeter thick magnesium strip from the casting-rolling line to a thickness of ca. one millimeter: the flat-rolled magnesium can then be used in automotive body parts. The mill processes up to two metric tons of magnesium strip per hour at a rolling speed of 80 meters per minute.

### *SMS Siemag revamps Dillinger Hütte's continuous caster No. 5*

The firm of "Aktien-Gesellschaft der Dillinger Hüttenwerke", Germany, has recommissioned continuous caster No. 5 following a revamp and an enlargement to 450 mm in the thickness. SMS Siemag has provided a package containing new components for the revamp. The vertical-

type continuous caster produces thick slabs, in the sizes 230 to 450 mm gage and 1,400 to 2,200 mm width. The caster, featuring thicknesses up to 400 mm, was supplied by SMS Siemag in 1998. The SMS Siemag supply scope pertaining to the revamp comprised the expansion of the vertical-type continuous caster to thickness 450 mm, the reinforcement of the withdrawal and straightening units, and various spare parts. The supply scope also included the X-Pact® electrical and automation package and, for this package, the planning, production, programming of the electrical equipment and its complete installation, commissioning, training and supervision of trial operation. Various devices were renewed: the automatic control equipment for the hydraulic mold oscillator, the hydraulic segment adjustment, the hydraulic bending adjustment system, the hydraulic adjustment system for the withdrawal and straightening units, and the load compensation control for the strand drive group.

## *Siemens to modernize rolling mills for Böhler Edelstahl in Austria*

The Siemens Industry Solutions Division has received an order from Böhler Edelstahl GmbH & Co KG, Kapfenberg, an Austrian special steel maker, to install new drive and automation equipment on the conti-



*New drive and automation equipment on the continuous rolling mill, which has been in operation since 1988.  
Photo courtesy of Siemens*

nuous rolling mill in the multiline rolling mill and the plate rolling stand of the blooming mill. Siemens will install a digital control system with Simatic S7-400 programmable logic controllers. A "RollMaster" specially developed for long product rolling mills will handle the generation and management of the pass schedules. This software is the link between the production planning system and the plant automation.

The existing hydraulic drive trains will be replaced by controlled, water-cooled three-phase asynchronous motors, including gearboxes, couplings and cardan shafts. The drives will be fed by frequency converters from the Sinamics product family, configured as multi-motor drives.

Siemens will also renew the auxiliary drives on the continuous rolling mill, and the uninterruptible power supply (UPS). The scope of the modernization project also includes equipping the plate rolling stand of the blooming mill with a new 3.3 megawatt main drive. All the products and systems used will be drawn from the Siroll LR solution platform for long-product rolling mills. Siemens will also be responsible for the installation of all the electrical systems and the commissioning of the rolling lines.

## *NLMK to start installation of Kaluga's production facilities investment in Böhler Edelstahl, Kapfenberg*

NLMK's Kaluga mini-mill, which is currently under construction, has embarked on the installation of main process equipment for its EAF shop supplied by VAI Siemens (Austria).

The plant will receive equipment for its electric-arc furnace, ladle furnace and an 8-strand continuous casting machine before the end of February 2011. The EAF will combine high specific electric power (more than 1 MVA/t) with a single-bucket EAF charging practice per one melt. A twin-stand ladle furnace will allow the treatment of steel in two ladles in different positions in turn.

Besides, gas cleaning systems must reduce emissions from the plant by at least 99%. Furthermore, the company plans to install closed water circuits.

Main process equipment supplies for the rolling facilities are scheduled for first half 2011. The light-section rolling mill will be supplied by SMS MEER.

## *Tata Steel invests £6.5 million in its Stocksbridge plant*

Tata Steel will be investing £6.5 million in new high-tech equipment at its Stocksbridge plant, South Yorkshire, to increase production of aerospace steels.

The company will install two vacuum arc remelting furnaces and specialist testing equipment in order to make more special steels for the aerospace industry. The new equipment must increase Tata's output of these steels by 30%.

The steel, which is used in aircraft landing gear, engines, wings and other safety-critical components, is manufactured at the company's Rothe-rham site before undergoing further refining at the Stocksbridge plant. The two new vacuum arc remelting (VAR) furnaces will be installed alongside seven existing VAR furnaces and two electroslag remelting (ESR) furnaces at the Stocksbridge plant. The new furnaces will be operational by winter 2011/12. Additional ultrasonic and mechanical testing equipment will also be installed in Stocksbridge over the coming months.

As well as expanding to meet the needs of its existing customers in established markets like North America, the company means to win more orders in emerging markets like China and India. In April 2009 Tata Steel opened a service centre in Suzhou, China, to supply aerospace steel products to the country's growing aircraft industry.

## ArcelorMittal Hochfeld orders high-capacity wire rod mill

Two years ago, ArcelorMittal Hochfeld GmbH with headquarters in Duisburg, Germany, placed an order with SMS Meer, Germany, for the supply of a complete high-capacity wire rod mill. In view of the economic situation at that time, however, the order was suspended. The order was recently reinstated and the mill will commence production in spring 2012. In addition, the wire rod blocks will be equipped with a new individual drive technology (MEERdrive) developed by SMS Meer. The high-performance wire rod mill is designed for an annual capacity of 690 000 t. The SMS Meer scope of supply comprises a walking-beam

furnace, the mechanical and electrical equipment of the mill train, all the supply systems, the coil handling equipment, the entire rolling and cooling technology as well as the erection and installation.

The walking-beam furnace for billets measuring 155 mm square will have a capacity of 120 t/h. This is followed by a four-stand roughing train comprising HL (HousingLess) stands with downstream free runout and an intermediate train consisting of 14 CL (CantiLever) stands, each in horizontal and vertical arrangement. The wire rod outlet comprises a cooling and equalizing section in loop arrangement, a six-stand wire rod block with MEERdrive® and a four-stand FRS (Flexible Reduction and Sizing) block with MEERdrive® – both in UHD (Ultra-Heavy Duty) arrangement.

The wire rod block and FRS® block are each followed by a water cooling line. The heart of the mill is the FRS together with the proven cooling and equalizing section. The scope of supply here includes a 104 m long loop cooling conveyor LCC® for intensive and retarded cooling, three water cooling lines and the CCT (Controlled Cooling Technology) system developed by SMS Meer.

These facilities allow wire rod to be produced over the full size range from 5.5 to 25.0 mm by means of temperature-controlled rolling. Ultra-fine microstructures can be achieved especially for cold-heading grades by thermomechanical rolling. The maximum rolling speed at the loop laying head is 120 m/s for 5.5-mm wire rod.

## Tata Steel to serve wind tower makers

Tata Steel is investing £1.3 million in a new processing and distribution centre in Scunthorpe, which will be dedicated to the wind power sector. The new hub will handle up to 200 000 tonnes per year (tpa) of



The new wire rod mill is due to start production in spring 2012.  
Photo courtesy of SMS Meer

steel plate manufactured at the company's adjacent Scunthorpe plate mill, as well as at the Dalzell plate mill in Motherwell. Three profiling machines with a total capacity of 40 000 tpa have been installed on site to process plate for delivery to fabricators, who will use it to build tubular wind tower structures. "The profiling machines will cut the plates into shapes suitable for fabricating into conical towers. They can at the same time cut special edges onto the plate so that our customers can weld the edges together after the steel has been fabricated into a tubular structure and join these sections together to produce towers", Phil Knowles, Tata Steel Plate Sales Manager, said. According to Tata Steel, wind towers typically contain between 150 and 250 tonnes of steel.

## SMS Meer ring rolling plant commissioned at Ovako Tube & Ring

Ovako Tube & Ring has commissioned its new ring rolling plant from SMS Meer. The company must thus expand the annual capacity of the works in Hofors in Central Sweden to 55,000 t. The new plant of type RiWa 2000/80 is the world's largest ring rolling plant in which industrial robots transport and position the workpieces. The fully automated plant consists of a ring-blank press with three permanent work stations and a radial-axial ring rolling machine.

The industrial robots perform the workpiece transfer within the press and between the forming units. "The largest types of robots currently available on the market are in use here. We have equipped them with special gripping tongs for the specific application", says Robert Düser from the Ring Rolling Product Unit at SMS Meer. Ovako Tube & Ring produces profiled rings with rectangular cross-section and outside diameters from 200 to 1,200 mm on the new plant. The maximum ring height is 350 mm, the weight lies between 50 and 250 kg. The products are used in the automotive and machine engineering industries. It is the fourth ring rolling machine from SMS Meer actively in operation in Hofors. Ovako has already ordered a fifth ring rolling machine from SMS Meer; it is scheduled for delivery in 2012.



The new RiWa 2000/80 ring rolling plant must increase the annual capacity of the Ovako works to 55,000 t.  
Photo courtesy of SMS Meer

## SSAB to invest \$300 million in Alabama plant

SSAB, Sweden, is to invest nearly \$300 million for its new heat treating facility for quenched and tempered steels, which will be located on the site of its existing steel mill in Mobile County, Alabama. The plant will produce steel plate used throughout the manufacturing and construction sectors. Additional improvements include a vacuum tank degasser and roll shifting technology.

"Once this facility is fully operational, we will increase our quenched and tempered steel capacity by 200,000 metric tons", said David Britten, Executive Vice President and Head of Business Area Americas. The new facility is expected to be brought into commission in the first half of 2012.

## OMK installs primary equipment in rolling-mill area

In early December, 2010, United Metallurgical Company (OMK) started installing primary production equipment in the rolling-mill area of the under-construction sheet-rolling facility Mill 5000 (part of Vyksa Steel Works, based in Vyksa, Nizhni Novgorod Region).

The equipment assembly started with the installation of roll housings manufactured by Germany-based SMS Siemag AG. "This assembly operation is unique because one assembled housing weighs about 560 tonnes", said Mill 5000 Project Manager Aleksandr Rybkin. "To assemble two housings, we had to use a specialized hydraulic portal and hydraulic jacks".

After installation of the rolling mill, the contractors will start to assemble other equipment of the main production line: a water descaling unit, machines for preliminary hot straightening, a controlled sheet-cooling unit, etc. It is planned to complete the assembly and commissioning operations in the area in May 2011.

OMK started the installation of main equipment in the Mill 5000 furnace area in July 2010. The construction of Mill 5000 was launched in 2007. The new facilities are due to produce broad sheets using heavy-duty steels; annual capacity must reach 1.2 million tonnes of sheets (rolled products), to fully cover Vyksa Steel Works' needs for raw materials to manufacture large-diameter pipes and make it possible to supply sheets to metallurgical, machine-building, and other entities. It is planned to launch production in mid-2011.

## Siemens commissions plate rolling mill at Xiangtan Iron & Steel

In October 2010, Siemens VAI Metals Technologies started up the finishing stand in the new plate rolling mill for the Chinese steelmaker Xiangtan Iron & Steel Co., Ltd, having rolled the first plate



Siemens engineered and supplied key process technology for the new Xiangtan Iron & Steel two-stand plate mill.  
Photo courtesy of Siemens VAI

on the roughing stand in September. The plant will produce up to 2.0 million tons per year at maximum finished width of 4.8 m.

The 2 stand hot mill is designed to produce traditional plate grades, high strength plate grades such as X80 and ultra thick plate (350 mm) from heavy ingots.

Siemens engineered and supplied key process technology for the new Xiangtan Iron & Steel two-stand plate mill. This included the mechanical equipment for the roughing mill stand and finishing stand with Smart Crown rolls, a Mulpic® intensive cooling section, hot and cold plate levelers, as well as one shear line with double side, slitting and dividing shears.

The scope of supply also included the instrumentation and automation technology, including all the process models, such as the microstructure monitor. The microstructure monitor originally developed by Siemens for strip rolling mills was used for the first time here in a plate rolling mill.

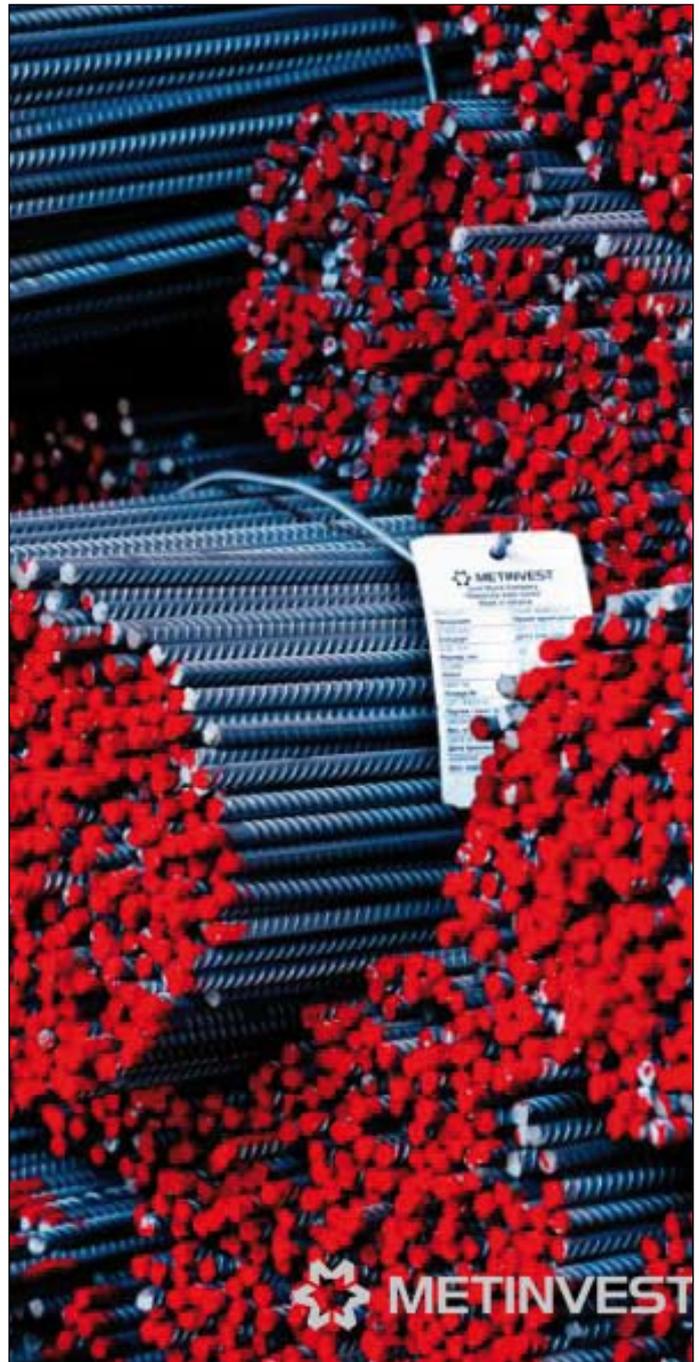
The complete solution for the entire rolling line was based on the integrated Siroll PM concept for plate rolling mills. The main drives on the finishing stand are equipped with three-phase synchronous motors, which are supplied with Sinamics SM150 DC link converters. Siemens was responsible for supervising the construction and commissioning, and providing the customer training.

## Metinvest launches four-strand rebar rolling at Makiivka Steel

Makiivka Iron and Steel Works, Ukraine, has rolled a 4,000 t diameter 12 rebars trial lot in Mill-390. Total performance of the rolling mill is expected to increase by over 15%. Cost of additional equipment for the four-strand rolling of rebars with diameter 10 and 12 comprised UAH 8 mln.

One of the activities to raise productivity of Mill-390 in production of small profiles (rebars with diameters 8-16), was the implementation of the technology of the rebars rolling using four strands.

This technology was already set up in other Metinvest plants in Italy, Turkey, and Russia. Technologically the four-strand rolling of rebars envisages one billet being divided into 4 strands, unlike the approach of 2 strands. Then each of the strands is rolled into the set product separately. The equipment for rebars rolling using the new technology was made by Swedish Morgardshammar AB.



Performance of the rolling mill using the new technology must increase by over 15%.  
Photo courtesy of Metinvest

## ENVIRONMENTAL OUTLOOK

### *ThyssenKrupp builds a further dedusting system*

ThyssenKrupp Steel Europe has started a project that must reduce particulate matter emissions in Duisburg. The additional filter must capture sinter plant dust, thus reducing particulate emissions by 450 tons per year.

ThyssenKrupp Steel is investing 30 million euros in the project. The investment is part of a comprehensive filter system for the sinter belts. Exhaust air arising directly at the belts is extracted and today is cleaned by high-voltage electrostatic precipitators. The system cleans around a hundred billion cubic meters of gas a year. In the new system under construction, cleaned air is additionally passed through a fabric filter, which must reduce the particulate matter content per cubic meter exhaust air by another more than 50 percent. The foundations have already been completed and building work on the steel frame for the 32 meter tall building has begun. Completion is scheduled for October 2011.



*The iron and steelmaking operations of ThyssenKrupp Steel Europe are concentrated on the River Rhine for low transportation costs.*  
Photo courtesy of ThyssenKrupp

### *Outotec launches CO2 removal pilot plant*

Outotec has commissioned a new CO<sub>2</sub> removal pilot plant at its R&D center in Frankfurt am Main, Germany. It complements Outotec's circulating fluidized bed (CFB) pilot plant allowing for the cleaning of process gas from iron ore direct reduction as well as from coal and biomass gasification.

The new pilot plant must play an important role in the development of Outotec's new offerings for the energy industry providing the testing facilities to reduce the carbon footprint of coal and biomass-based energy production as well as the oil winning from oil shale. The pilot installation also allows Outotec to demonstrate its proprietary Circofer process for the direct reduction of fine iron ores based on coal.

The pilot plant applies BASF's aMDEA technology for acid gas removal to remove primarily CO<sub>2</sub> and H<sub>2</sub>S from metallurgical process gases. The facility also features integrated gas cleaning steps allowing for the treatment of gases rich in dust and tars. The gases which have been removed can be used in other processes or for underground storage as envisaged in carbon capture and storage approaches.

### *Air testing program at Clean Air Hamilton*

Clean Air Hamilton is currently spearheading a mobile air quality monitoring program in five neighbourhoods across Hamilton, Canada. The project results from a partnership between Clean Air Hamilton and Green Venture, with funding from ArcelorMittal Dofasco.

Presently, air quality monitoring in Hamilton is done through a network of fixed air monitors operated by the Ministry of the Environment and the Hamilton Air Monitoring Network (HAMN). The HAMN network focuses on industrial sources of air contaminants.

The mobile monitoring will be done with air monitoring equipment mounted to a vehicle. The vehicle will travel along Hamilton streets collecting air quality data at street level. "We can measure what people are actually breathing in their everyday lives, in different neighbourhoods, on the roads and on the highways", says Dr. Denis Corr of Rotek Environmental. "We can find out how to improve our own air quality through taking personal action and also by pressuring for community-wide improvements".

## INDUSTRY CONTRACTS

### *voestalpine to supply axle components to Daimler Trucks*

voestalpine Anarbeitung, part of voestalpine's steel division, has secured a contract with Daimler Trucks regarding the production of axle components. According to voestalpine the contract involves a three-figure million euro trading volume and must last for several years.

The axle components were created by Daimler in a development process lasting several years and are used, for example, in the "flagship Mercedes Benz Actros". The components will be completed at the Daimler axle plant in Kassel after being integrated at the assembly plant in Wörth. With 11,000 employees, Wörth is Daimler Trucks' largest and



*The components will be completed at the Daimler axle plant in Kassel.  
Photo courtesy of Daimler Chrysler*



*Outokumpu hopes the project can be a breakthrough  
for special grade LDX 2101® in architectural constructions.  
Photo courtesy of Outokumpu*

most modern assembly plant. The “alphas - forming” forming process, which has been patented by voestalpine Anarbeitung, will be used to manufacture the axle components.

## **Baosteel supplies Mo-added stainless steel to Algerian desert water project**

In cooperation with water tank manufacturer - Shanghai Tong Hua Stainless Steel Pressure Vessel Engineering, Baosteel, China, supplied nickel-saving stainless steel SUS444 to the Algerian desert water supply project. Water tank made with Baosteel stainless steel material will receive at least 30 years' test in the conditions of Sahara desert.

Compared with traditional 304 stainless steel and due to the addition of Mo, SUS444 has strong resistance to chloride corrosion.

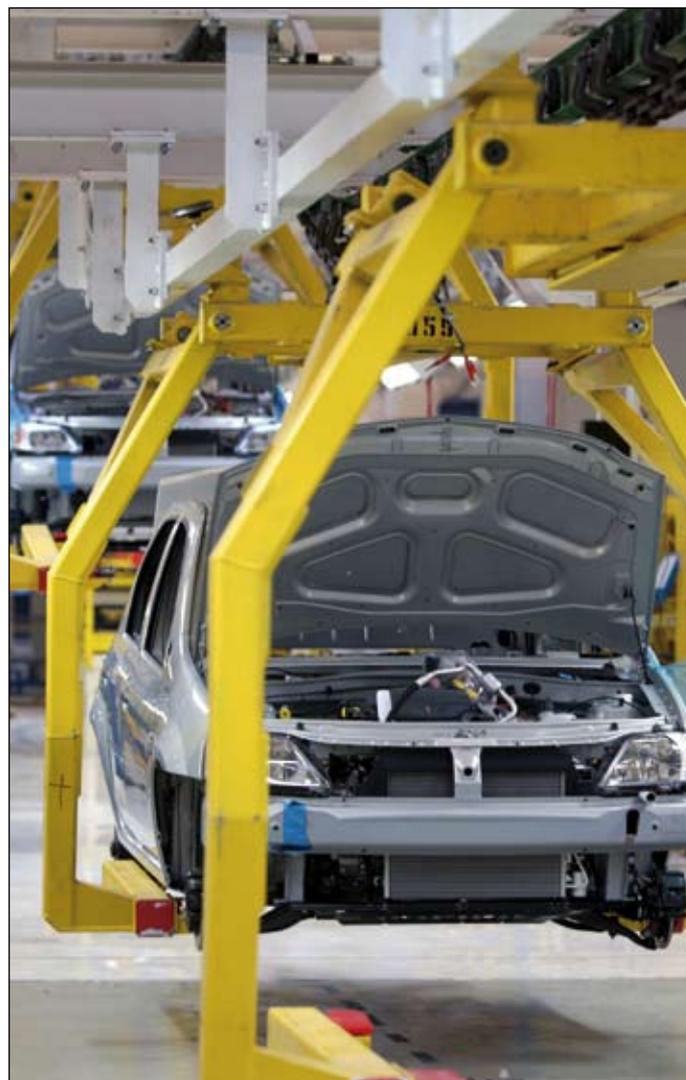
Last year, the Algerian president instructed to build water towers in the desert area to centralize water supply and solve the water supply problems faced by desert. Currently, the 100 tons of SUS444 stainless steel material required by all the eight tanks in the project have been sent to Algeria.

## **Severstal to supply more rolled metal products to car makers**

Severstal has signed an agreement to continue to supply rolled metal products to the Renault group in Russia and, following positive test results for its rolled metal products from Hyundai-Kia and Ford, will start to supply deliveries to those companies in the medium term.

Severstal has entered into a 6-month agreement with Renault for the delivery of rolled metal products for the Renault Logan and Renault Sandero car part stampings to be produced by AAT. Rolled metal products sales may increase under this agreement by 3 times as compared with the previous period which is a result of the increased stamping of parts in Russia.

The range of products to be supplied to Renault includes hot-rolled pickled, cold-rolled and galvanised rolled stock. All items of hot-rolled and galvanised rolled products used in the manufacture of Renault Logan and Renault Sandero cars are exclusively supplied by Severstal in Russia.





*Severstal will deliver more rolled metal products for the Renault Logan and Renault Sandero parts.*  
Photo courtesy of Renault



*ThyssenKrupp Marine Systems Class 209 submarines have been delivered worldwide since 1967.*  
Photo courtesy of ThyssenKrupp

Furthermore, promising test results for samples of cold-rolled micro-alloy, high-strength products previously sent to a Hyundai-Kia laboratory in Korea have been received as part of the approvals procedure for delivering Severstal rolled metal products to Hyundai-Kia, a St. Petersburg-based integrated factory. The next approvals phase involves the stamping of Hyundai Solaris car parts using Severstal rolled metal products.

Positive welding test results for samples of grade WSS-M1A345-A3, previously sent to the Ingemat laboratory in Spain, have been received as part of the approvals procedure for delivering Severstal rolled metal products to Ford's plant in the Leningrad Region. Zinc coating adhesion tests have also been successfully completed. The technical audit of the quality management system, production processes and product quality control also required as part of the approvals procedure is scheduled for March 2011.

## *Delivery of the second Class 209PN Submarine to the Portuguese Navy*

On December 22, 2010, the second Class 209PN submarine for the Portuguese Navy, was delivered and commissioned on the premises of Howaldtswerke-Deutsche Werft – a company of ThyssenKrupp Marine Systems – in Kiel.

The new submarine named N.R.P. Arpão is equipped with an air-independent fuel cell propulsion system and combines the design principles of the Class 209 family with features of Class 214. Sensors and an integrated command and weapon control system make it suited to its future reconnaissance and surveillance tasks.

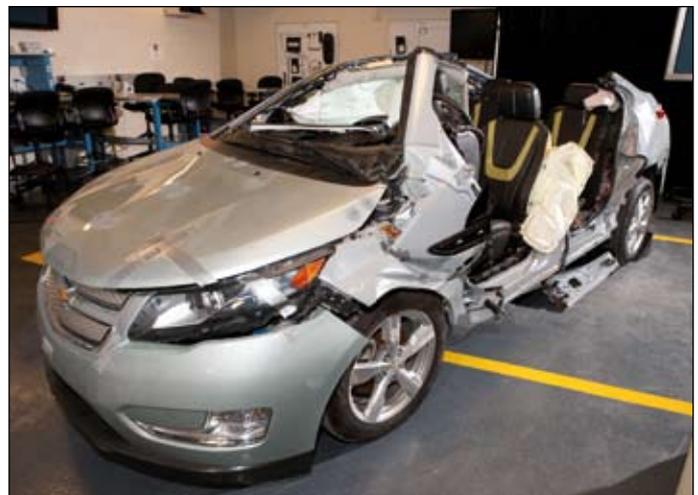
The contract on the two Class 209PN submarines was signed in 2004 with the Portuguese State. Start of production for N.R.P. Arpão was end of 2005. The sister boat of N.R.P. Arpão, the N.R.P. Tridente, was delivered earlier in 2010. It has been in operation by the Portuguese Navy since its arrival in Lisbon.

## *Ultra high-strength steels in Motor Trend's car of the year*

As the automotive industry recognizes the Chevy Volt plug-in electric vehicle as Motor Trend's Car of the Year, the Steel Market Development Institute (SMDI) is celebrating the record use of high-strength steel in the vehicle structure. Motor Trend called the Chevy Volt "some of the most advanced engineering ever seen in an American car".

According to General Motors, the Volt combines advanced steels to help ensure crashworthiness and stiffness. With over 70 percent of its total structure made from high-strength steels, including advanced and ultra high-strength steels, the Volt's steel design provides occupants with added protection. In addition, the Volt features a pressurized steel fuel tank.

"The Chevy Volt utilizes lightweight, advanced high-strength steel technologies that complement its revolutionary steel design and add to its technical appeal as this year's Motor Trend Car of the Year", Ron



*The combined advanced steels help ensure crashworthiness and stiffness.*  
Photo courtesy of GM Corp

Krupitzer, vice president, automotive applications for SMDI, said. "GM's innovative use of advanced steels has resulted in a vehicle that is affordable, safe, durable and energy efficient." Nippon Steel's "EcoKote-STM" adopted in Chevrolet Volt fuel tanks.

## Ruukki's special steels in light-weight Alstom train coaches

Ruukki and the French company Alstom Transport have developed a solution for the assembly of wall panels for train coaches. The steel components for the sides of regional train coaches are made of special steel at Ruukki's service centre in Uusikaupunki, Finland. The first panels were delivered to France in October.

The wall panels for the train coaches are made of Ruukki's high-strength, hot-rolled Optim special steels that are laser welded and cut into components ready for installation. High-strength Optim special steels have enabled the thickness of the wall panels to be reduced so that a coach side panel weighs less than 500 kg.

"Alstom Transport and Ruukki started working together already at the train design stage. Use of high-strength steels helps to reduce the weight of the coach structure. Using high-strength special steels enables the coaches to be made of thinner material than earlier and yet still retain the required properties", says a spokesperson at Alstom Transport.

Besides, to ensure the safety and traceability of coach components, Ruukki's service centre in Uusikaupunki has obtained EN 15085-2 certification awarded by Det Norske Veritas.

## Nord Stream passes half-way mark for line 1

Nord Stream has now completed over half of the first of its two 1,224 kilometre gas pipelines through the Baltic Sea. The construction of Line 1 is progressing on schedule, and it will start transporting gas from Russia to customers in the European Union in late 2011.

Using up to three pipelay vessels and a flotilla of support ships, the Nord Stream consortium's partners have constructed and laid more than 600 kilometres of pipe along different sections of the route agreed by the five countries through whose waters the large-diameter pipeline will pass.

"Everything is going according to plan, and we are on budget and on schedule", said Nord Stream's Managing Director Matthias Warnig.

Saipem's Castoro Sei pipelay vessel started construction in April 2010 in the Swedish Exclusive Economic Zone (EEZ) off Gotland, laying pipe in an easterly direction into Finnish waters before laying down the pipe and moving on to Russian waters, where it laid sections of both pipelines and participated in the shore-pull at Portovaya Bay, near Vyborg.



30 ships are currently working on the project in different parts of the Baltic Sea. Photo courtesy of Nord Stream AG

The vessel then moved south to pick up another section of the first pipeline in German waters where Saipem's flat-bottomed Castoro Dieci had completed ahead of schedule the difficult 27 kilometres shallow-water section of both pipelines at the German landfall.

Meanwhile at the other end of the 1,224 kilometre pipeline route the world's largest pipelay vessel, Allseas' 300 metre long Solitaire, has reached the Finnish EEZ after laying a key section in Russian waters. It had picked up the pipe where Castoro Sei had completed the first 7.5 kilometres in the Russian landfall section.

"At any one time at least 30 ships are working on the project in different parts of the Baltic Sea and everything is fitting into place" says Nord Stream's Deputy Director Construction Ruurd Hoekstra.

Nord Stream's twin pipelines will be 1,224 kilometres long and consist of altogether 202,000 concrete weight coated pipes, each 12 metres long and weighing 23 tonnes on average. When both lines are completed in 2012, they will transport 55 billion cubic metres of natural gas per year – enough to meet the needs of more than 26 million European households.

## STRATEGY AND ORGANISATION

### *CPI and Tata Steel to develop high temperature research centre*

The Centre for Process Innovation (CPI) and Tata Steel have signed a Memorandum of Understanding (MoU) to establish a new national High Temperature Innovation Centre (HTIC) at Tata Steel's Teesside Technology Centre (TTC).

Under the MoU CPI will create an open access innovation and research facility centred on two new pilot plants which are to be installed on the TTC site. The new plants will extend the existing capabilities of the site to carry out research and development work in the fields of novel sources of fuel and energy, the recovery of raw materials and reductions in the amounts of organic wastes produced. The equipment to be installed comprises a 350 kg pyrolysis oven and 2-metre diameter fully flexible gassifier.

This £5m project has received £2.5m investment from One North East through the Tees Valley Industrial Programme, which is helping to accelerate industrial transition in the area and help the region to seize new and emerging opportunities in low carbon and advanced manufacturing. It will enhance the skills base of the existing innovation centres in the region, creating a technology cluster of global significance.

The equipment installed will operate on a scale midway between theoretical, laboratory research and real industrial production. CPI Director of Strategy, Dr Graham Hillier, said: "The creation of the HTIC will provide the UK with an asset that is suitable for use by a range of companies using and developing high temperature technologies. We are particularly keen on transferring knowledge between industries and on supporting the scale-up of novel technologies".

### *JFE, Maruichi and Toyota Tsusho acquire pipe maker in Vietnam*

JFE Steel Corporation, Maruichi Steel Tube Ltd. and Toyota Tsusho Corporation wholly acquired a Vietnamese spiral steel pipe manufacturer, Jeong An Vina Co., Ltd., for about 18 billion won (about 1.3 billion yen) from Jeong An Steel Co., Ltd. of South Korea, under a plan to directly manufacture and sell steel pipe pile and steel pipe sheet pile in Vietnam. Jeong An Vina has an annual production capacity of 50,000 tons and recorded sales of USD 10.9 million in 2009.

Now headed by General Director Takashi Maruyama from JFE Steel and Deputy General Director Nobuhiro Morioka from Toyota Tsusho, and renamed as J-Spiral Steel Pipe Co., Ltd., the company will be manufacturing steel pipe pile, steel pipe sheet pile and water pipe by combining existing facilities for spiral steel pipe manufacturing and coating with manufacturing technologies from JFE Steel. The demand for



Location of Jeong An Vina. Annual production capacity is 50,000 tons.  
Photo courtesy of JFE Steel

construction steel pipe in Vietnam is increasing rapidly, due to projects for ports, railways and other infrastructure.

### *voestalpine to target the railway market in Gulf Region*

A joint venture agreement has been signed in Riyadh City between Austria based VAE, and Sarab Al Modon Saudi Arabia, a member of Al Mobty group of companies, working in the field of railway materials.

VAE is a subsidiary of voestalpine AG, specialized in manufacturing rails and turnout systems. The joint venture aims to service the market with turnouts for railways and metros in Saudi Arabia and on a later stage the Gulf Region. The actual production of this joint venture company must start in the middle of 2011 with the assembling of turnouts complying with international standards under the technical supervision of voestalpine contributing its technical expertise.

The plant will be established in Riyadh city close to the railway line between Riyadh and Dammam adjacent to the factory for concrete sleepers owned by Sarab Al Modon which has started production in June 2010 to support the railway projects in Saudi Arabia.



Production will start in the middle of 2011.  
Photo courtesy of voestalpine AG

## ThyssenKrupp opens new steelmaking and processing plant in southeastern USA

Following a three-year construction period, the new steelmaking and processing plant of ThyssenKrupp Steel USA and ThyssenKrupp Stainless USA in the southeastern USA has been officially opened. ThyssenKrupp has invested five billion US dollars in the overall complex, 3.6 billion for the carbon flat steel facilities and 1.4 billion for the stainless area. The Calvert plant will eventually have 2,700 permanent employees.

Stainless steel flat products from ThyssenKrupp are already marketed in the NAFTA region through sales companies. From the new location in Alabama, ThyssenKrupp Steel USA and ThyssenKrupp Stainless USA mean to strengthen their position in North America.

For the production of carbon flat steel, the plant will be supplied with three million metric tons of slabs per year from Brazil. These will

be shipped to the Port of Mobile, which has been specially expanded for this purpose, and from there along the Tombigbee River to the plant's own river terminal. The central element of the plant is a wide hot strip mill with a capacity of over five million metric tons per year. The cold rolling mill started operation in September. The coating lines of ThyssenKrupp Steel USA will be completed step-by-step.

In the future the hot strip mill will also be used by ThyssenKrupp Stainless USA. Stainless operations got underway in September 2010 with one cold rolling mill and an annual capacity of around 100,000 tons. Further units such as the hot-rolled annealing and pickling line, which is scheduled to start production in fall 2011, are currently at the planning stage or under construction. A second, 72 inch cold rolling mill is scheduled to come on stream around the same time. Starting material for ThyssenKrupp Stainless USA is currently being supplied from the Group's European plants. In the future the stainless steel slabs will be produced in an on-site melt shop in Calvert.

Part of the stainless hot-rolled produced there will later be supplied to ThyssenKrupp Mexinox in San Luis Potosí (Mexico). Startup of the electric-arc furnace melt shop is planned for December 2012. It will have an annual capacity of up to 1 million metric tons.

## Second blast furnace fired up at ThyssenKrupp CSA in Brazil

Blast furnace 2 at the ThyssenKrupp CSA steel mill in Santa Cruz/Rio de Janeiro state was fired up on schedule and without problems on December 16, 2010 – five months after blast furnace 1, which is now producing over 6,500 metric tons of top-quality hot metal per day, close to its full capacity.

"I expect the ramp-up of our second blast furnace to be just as successful and that next fiscal year the plant will be able to operate at its full capacity", said Edwin Eichler, the ThyssenKrupp AG Executive Board member responsible for the Materials division. "This further milestone in our forward strategy will allow us to reach our objective of generating a profit in the Steel Americas business area in 2012/2013".

In addition to blast furnace 1, the two 330 t converters have been in operation since early September and early November. The first slab was produced on September 7. Slabs from Brazil have now arrived in Duisburg and Mobile/Alabama; once full capacity is reached, 3 million tons of slabs per year will be shipped to Alabama and 2 million tons to the German processing plants.

The project includes the construction of a state-of-the-art plant complex with its own port terminal for importing coal and exporting the slabs, raw material handling facilities, coke plant, sinter plant, two blast furnaces, a BOF melt shop and a power plant. "With the startup of the plant in Alabama and the launch of the steel mill in Brazil in the summer, ThyssenKrupp is entering a new dimension of its history", said Dr. Ekkehard Schulz, Chief Executive Officer of ThyssenKrupp AG, at the opening ceremony in Calvert. "These two projects are the cornerstones of our transatlantic growth strategy".



Since 2007 ThyssenKrupp Steel USA and ThyssenKrupp Stainless USA have been working together for the erection of the new plant for steel and stainless steel flat products in Alabama.

Photo courtesy of ThyssenKrupp



*With total investment €5.2 billion, the iron and steel mill is the first major steel mill to be built in Brazil since the mid-1980s.*  
Photo courtesy of ThyssenKrupp

## Severstal-metiz sells its welding business in Russia

Severstal announced that its metalware segment Severstal-metiz has signed a definite agreement with Lincoln Electric Holdings, Inc. to sell Severstal-metiz Welding Consumables, a manufacturer of welding consumables in Russia. The transaction will include acquiring manufacturing operations and distribution rights of the Severstal brand of welding consumables.

Manufacturing production facilities are based in Orel, Russia, with 283 employees. Severstal-metiz Welding Consumables' 2010 estimated sales were approximately \$40 million USD. "The sale of Severstal-Metiz Welding Consumables will allow us to concentrate fully on our core business, wire and wire products", said Oleg Veter, CEO of Severstal-metiz.

## AK Steel to close Kentucky coke plant

AK Steel is to permanently close its Ashland, Kentucky coke plant in 2011. The company currently has 263 hourly and salaried employees at the coke plant, which produces the blast furnace fuel for the company's iron- and steelmaking facility located separately in Ashland. The company said it will do its best to provide jobs for the affected employees at its Ashland Works or elsewhere in the company. Procedures for the closure will begin immediately and are expected to be completed early in the second quarter of 2011.

The company said that the decision to close the facility was made because the coke plant is no longer cost-competitive due to increased maintenance and increasingly stringent environmental regulations. As a result, the total per-ton cost of coke produced by the plant is significantly higher than all other sources of coke for the company.

## ArcelorMittal: stainless steel business to be spun off

The stainless steel division of ArcelorMittal has published its European prospectus and de-merger plan, following the decision of the ArcelorMittal Board of Directors to proceed with the spin-off of the stainless steel business. The stainless steel division also announces that its new name will be Aperam as at the date of the spin-off.

The new identity has launched an initiative to target management gains and profit enhancement of USD 250 million over the next two years. The program, known as the "Leadership Journey", will focus on cost reductions and increasing productivity. As part of this program, Aperam plans to convert its blast furnace number 2 to charcoal in its Brazilian plant in Timoteo, to suspend temporarily its traditional cold rolling mill in its French plant in Isbergues (capacity of 100,000t) and to invest USD 62 million in the productivity of its hot annealing and pickling line in Gueugnon (France).

## Posco: No. 4 hot-rolling mill to be built in Gwangyang, cold-rolling mill in India

Posco plans to build No. 4 hot-rolling mill at Gwangyang steelworks: it will produce 3.3 million tons of hot-rolled steel products per year. Construction is to start in September 2011, and be completed by January 2014. Slabs needed at the hot-rolling mills will be supplied by reinforcing the steelmaking and casting capabilities within Gwangyang.

The No. 4 hot-rolling mill must meet the increasing demand for steel products such as automobile steel plates, oil steel pipes, high-strength steel, wide strip steel to cover the deficit in materials for the cold-rolling industry in the country. The left-over materials will be exported to overseas subsidiaries and customers in South East and West Asia. Once the No. 4 hot-rolling mill is completed, the production capacity for hot-rolled coil will increase from 23.54 million tons to 26.84 million tons per year. It must take over supply of the imported steel from overseas like Japan. Posco also plans construction of a cold-rolling mill in India; the mill, which will be built in Vile Bhagad Industrial Complex in Maharashtra, must produce 1.8 million tons of cold-rolled steel plates per year, concentrating on automobile steel plates. Construction for the mill will start in November 2011 and end in December 2013. The hot-rolled products used in this mill will be supplied from Gwangyang No. 4 hot-rolling mill for the most part.

Maharashtra is the industrial capital of India, producing 45% of automobiles and 40% of electronic appliances in the country, while Vile Bhagad Industrial Complex is located at the mid-point between Pune, where Posco's processing mill is located, and Dighi, a port where Posco's has settled its distribution center. According to Posco, by 2018, the demand for cold-rolled steel products in the automobile and other industries of India is expected to gradually increase by 12.5%.

## PEOPLE

### *ArcelorMittal announces changes to the Board of Directors*

It was announced and approved at ArcelorMittal's Extraordinary General Meeting of Share-holders on Jan. 25 that François Pinault will step down from his position as a member of the Board of Directors effective 26 January.

M. Pinault, 74, joined the Board of Mittal Steel Company in June 2006 and has been an independent director of ArcelorMittal since the company's inception in November 2007.

Shareholders also approved the appointment of Mrs. Suzanne Nimocks, 51, to the Board of Directors. She was previously a director (senior partner) with McKinsey & Company, a global management consulting firm, from June 1999 to March 2010 and was with the firm in various other capacities since 1989, including as a leader in the firm's Global Petroleum Practice, Electric Power & Natural Gas Practice, Organization Practice, and Risk Management Practice. She chaired the Environmental Committee of the Greater Houston Partnership, the primary advocate of Houston's business community, until 31 December 2010. She holds a Bachelor of Arts in Economics from Tufts University and a Masters in Business Administration from the Harvard Graduate School of Business.

### *Uday Chaturvedi appointed Chief Technical Officer of Tata Steel Europe*

Uday Chaturvedi has been appointed Tata Steel Europe's Chief Technical Officer with effect from 1 October 2010, thus joining the company's Executive Committee and reporting directly to the Tata Steel Europe MD and CEO. The responsibilities of the new role will include Tata Steel Europe's proposed new manufacturing hubs.

Mr Chaturvedi has held a number of operational positions during his career with the Tata Steel Group. Before becoming Managing Director of Corus Strip Products UK in 2008, he was Vice-President Coke, Sinter and Iron and TQM in Jamshedpur.

### *worldsteel chooses new Director General*

The World Steel Association (worldsteel) announces the appointment of Edwin Basson. Subject to the formal approval of the Board in April, he will succeed Ian Christmas as Director General on 1 August 2011. Edwin Basson (50) is currently Vice President, Commercial Co-ordination, Marketing and Trade Policy, ArcelorMittal. A South African

national, Edwin received his PhD in economics from Pretoria University, subsequently becoming an economics lecturer. After a few years in the banking industry, he joined the steel industry in 1994 as Chief Economist at Iscor Ltd. By 1996 he had become a General Manager for the company, looking after coated steel products, and then later flat steel products. He joined Mittal Steel (now ArcelorMittal) in 2004.

### *ArcelorMittal appoints senior Head of Marketing and Sales in Mining*

ArcelorMittal announces that Simon Wandke has been appointed as the new Chief Commercial Officer heading up Marketing and Sales for its Mining division and a Vice-president of the company. Mr Wandke will report to Peter Kukielski, Head of Mining and member of the Group Management Board. Simon Wandke's appointment is effective from 10 January.

Mr Wandke has senior management and marketing experience in the mining industry where he has focused in particular on the development of greenfield projects, transportation logistics and designing and implementing major change to ensure companies are more customer focused. His most recent position was as Chief Marketing Officer at Ferrexpo Group, an iron ore mining and processing company where he worked from 2006 until recently. Between 2002 and 2005 he was a Partner in the Destra Consulting Group. Between 1989 and 2002 Mr Wandke held a number of senior positions at BHP Billiton, including Vice-President of Strategic Marketing and Vice-President for Strategy within the Minerals Group.

### *Anthony Malangone joins Metinvest as CIO*

Mr Anthony Malangone has been appointed the Chief Information Officer of METINVEST HOLDING, LLC. As the CIO Mr Malagnone will be responsible for developing Metinvest's IT strategy and aligning IT with the long term goals of the business, standardization of IT business process and along with managing IT function.

For the last 5 years Anthony Malangone worked as the CIO at RTI International Metals (USA) one of the largest producers of titanium mill products for the aerospace, industrial and defense global markets. Mr. Malangone is a graduate of the University of Colorado in Boulder Colorado with an MBA in Business.

### *Martin Lindqvist appointed new CEO of SSAB*

Martin Lindqvist has been appointed as the new CEO of SSAB. He is currently head of the company's largest business area, SSAB EMEA, and succeeded Olof Faxander, on January 1, 2011. Olof Faxander became the new CEO of Sandvik AB.

Martin Lindqvist is aged 48 and holds a Bachelor of Science in Economics. He began at SSAB in 1998 and has served as CFO of SSAB's Strip business during 1999–2000, as Group CFO 2001–2008, as Head of the Strip Products Division 2008–2009, and since 2010 has been Head of the business area SSAB EMEA (Europe, Middle East and Africa).

## ECONOMY WATCH

### World crude steel output increases by 15% in 2010

World crude steel production reached 1,414 million metric tons (mmt) for the year of 2010, according to the World Steel Association. This is an increase of 15% compared to 2009, and a new record for global crude steel production.

All the major steel-producing countries and regions showed double-digit growth in 2010. The EU and North America had higher growth rates due to the lower base effect from 2009 while Asia and the CIS recorded relatively lower growth.

In December 2010, world crude steel production for the 66 countries reporting to the World Steel Association (worldsteel) was 116.2 mmt, an increase of 7.8% compared to December 2009. The crude steel capacity utilisation ratio of the 66 countries in December 2010 declined slightly to 73.8% compared to 75.2% in November 2010. Compared to December 2009, the utilisation ratio in December 2010 is 1.1 percentage point higher.

Annual production for Asia was 881.2 mmt of crude steel in 2010, an increase of 11.8% compared to 2009. Its share of world steel production increased to 65.5% in 2010 from 63.5% in 2010. China's crude steel production in 2010 reached 626.7 mmt, an increase of 9.3% on 2009. China's share of world crude steel production declined from 46.7% in 2009 to 44.3% in 2010. Japan produced 109.6 mmt in 2010, 25.2% higher than 2009. In 2010, South Korea's crude steel production was 58.5 mmt, a 20.3% growth compared to 2009.

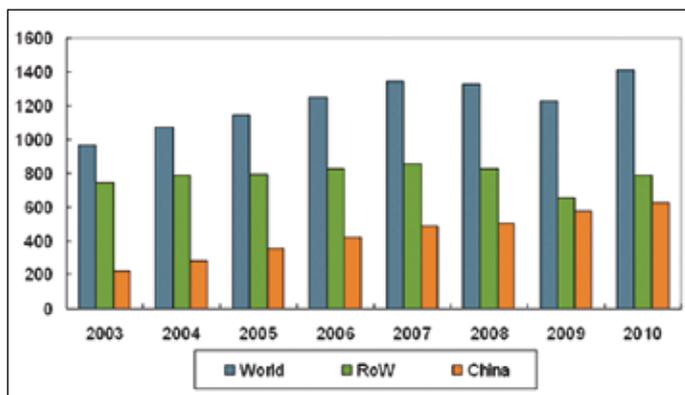


Figure 1: Annual crude steel production

The EU recorded an increase of 24.5% compared to 2009, producing 172.9 mmt of crude steel in 2010. However, crude steel production in the UK and Greece continued to decline in 2010. In 2010, crude steel production in North America was 111.8 mmt, an increase of 35.7% on 2009. The US produced 80.6 mmt of crude steel, 38.5% higher than 2009. The CIS showed an increase of 11.2% in 2010, producing 108.4 mmt of crude steel. Russia produced 67 mmt of crude steel, an 11.7% increase on 2009 and Ukraine recorded an increase of 12.4% with a year-end figure of 33.6 mmt.

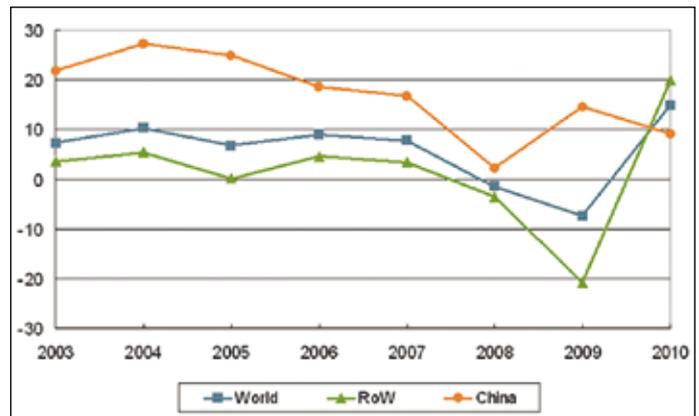


Figure 2: Crude steel production annual growth trend

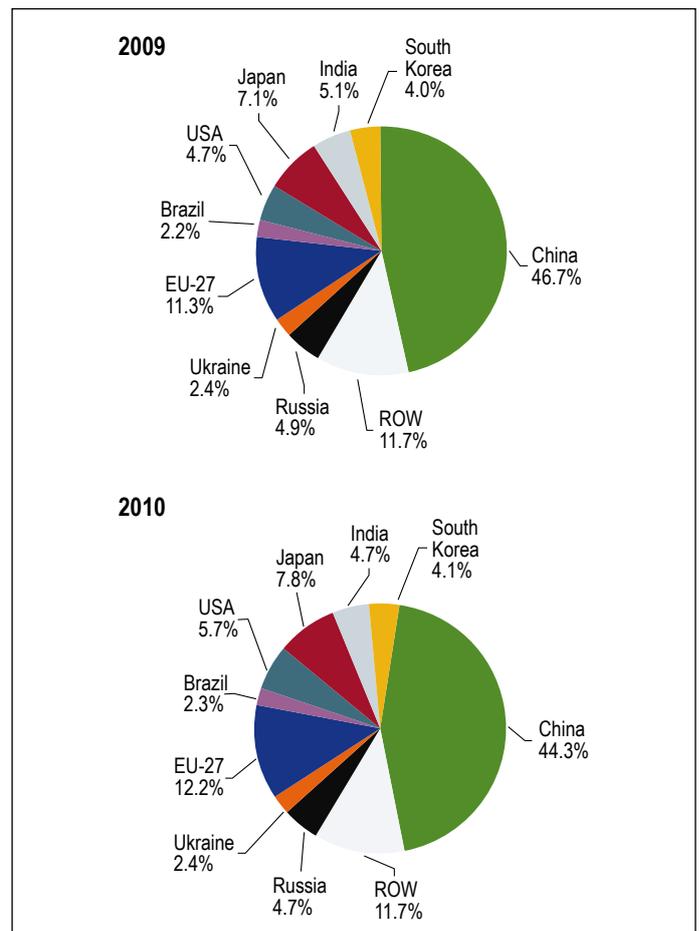


Figure 3: Share of world crude steel production 2009, 2010

## Top 10 steel-producing countries

Rank	Country	2010	2011	% 2010/2009
1	China	626.7	573.6	9.3
2	Japan	109.6	87.5	25.2
3	US	80.6	58.2	38.5
4	Russia	67.0	60.0	11.7
5	India	66.8	62.8	6.4
6	South Korea	58.5	48.6	20.3
7	Germany	43.8	32.7	34.1
8	Ukraine	33.6	29.9	12.4
9	Brazil	32.8	26.5	23.8
10	Turkey	29.0	25.3	14.6

Source: World Steel Association

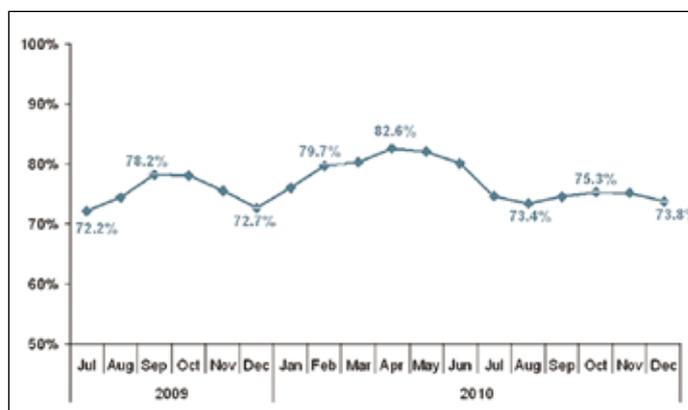


Figure 4: Steel capacity utilisation ratio

## EUROFER: "EU steel industry recovery threatened by unfair competition"

According to Eurofer, EU finished steel imports have surged since the start of the second half of 2010, almost doubling in August-September (+82% year-on-year). "This surge has weakened the already uncertain recovery in the EU steel market", the organisation underlines. "With one in three tonnes coming from China, hot-rolled coil (HRC) imports have reached 25% of the total EU market supply since July, up from 15% in the first half of this year". Import monitoring by EUROFER has revealed

intensifying HRC price undercutting of up to 25%, with the largest margins originating in China and Ukraine.

According to Eurofer, during the financial crisis non-EU countries that are home to around 65% of global steel production introduced measures to protect their home industries. "Even now, following the crisis, some countries where steel demand is growing and steel prices are rising have been taking further action, such as ad hoc product quality testing on individual cargoes and minimum prices as a basis for calculating import tariffs. These measures are hampering import flows and shielding domestic markets from increasing import competition. Other countries, looking to replace imports by bringing new capacities on stream, are considering significant increases in steel import tariffs (Arab region)."

"Ignoring the fragile European steel demand situation, surging imports are unfairly grabbing market share in the EU, the only major steel market in the world which has remained completely open", Gordon Moffat, Director General of EUROFER, points out. "We are stepping up our monitoring of imports and our screening of third-country steel protectionism as we prepare an appropriate response".

## ORE & MINING

### Olcon obtains license for geological study of new reserve deposit

Olcon (the Olenegorsk Iron Ore Complex, a business unit within Severstal's mining division) obtained a license for the right to use subsoils for geological studies at the Svintsovy Tundry (Lead Tundry) area, in the Murmansk Region in north-west Russia.

The deposit spans 36.6 sq. kilometers and contains an estimated 91 million tonnes of iron ore, according to Russian standards. The area is characterised by high iron content (30.6%) and complex geology in comparison to Olcon's other deposits.

The Svintsovy Tundry area is 10 kilometers away from the Kurkenpakh deposit and 16 kilometers away from the Kirovogorsky deposit, both of which are also currently being developed by Olcon. The Svintsovy Tundry is located near to another reserve deposit, the Volchiye Tundry (Lupine Tundry), which also has potential for development.

Earlier this year, Olcon received exploration and mining licenses for the Kurkenpakh iron ore deposit and for the East area of the South-Kakhozersk deposit in the Murmansk Region.

Severstal's Cherepovets Steel Mill is the principal consumer of Olcon's iron ore concentrate. In 2009 Olenegorsk Iron Ore Complex shipped 4.8 mln metric tonnes of iron ore concentrate to its customers.