

ROLLING MILLS AND STRIP PROCESSING LINES

Business Area Manager



**FULL-LINE CAPABILITY IN
STAINLESS STEEL PROCESSING.**

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[1] The annealing and pickling line for cold-rolled stainless steel strip that Andritz delivered to Shanghai Krupp Stainless (SKS), China handles strip thicknesses from 0.3 to 3.0 mm and strip widths of up to 1,340 mm and speeds of up to 120 m/min. Shown here is the upcoiler group (upcoiler operating speed up to 200 m/min, with simultaneous, crease-free feed of protective paper; upcoiling with exactly placed edges).

[2] The annealing furnace developed and constructed by Andritz Thermtec for SKS is one of the most advanced annealing plants for low-thickness stainless steel strip worldwide. At temperatures of up to 1,240°C, depending on the stainless steel grade, the strip's crystal structure is rearranged.

[3] The annealing and pickling line for cold-rolled stainless steel strip supplied by Andritz to Taiyuan Iron and Steel (TISCO), China, one of the largest worldwide, was taken over by the customer in 2007. The plant processes 500,000 metric tons of stainless steel strip per year (strip width: 800 – 1,320 mm; strip thickness: 0.3 – 3.0 mm). Shown here is the pickling section.



[1]



[2]



[3]

PROFILE

The Rolling Mills and Strip Processing Lines Business Area designs and builds complete lines for the production and further processing of cold-rolled stainless steel, carbon steel, and non-ferrous metal strips. These lines consist of equipment for cold rolling, surface treatment, strip coating and finishing, stamping and deep drawing, and acid regeneration. Key equipment is developed in-house and manufactured at the Business Area's own facilities.

The Andritz Group is one of the very few single-source suppliers worldwide capable of providing all technologies and processes involved in the manufacturing of stainless steel strip (cold-rolling, annealing, pickling, and finishing) on a comprehensive basis (mechanical, process, and electrical equipment). This ensures minimized interfaces and takes the interdependencies of the overall process into consideration.

MARKET DEVELOPMENT

In 2007, the market for carbon steel and stainless steel equipment developed very positively. Project activity was high in all major steel producing regions worldwide, especially in Europe, the USA, Russia, China, and India. Several orders for new plants and the modernization of existing steel mills were awarded. For the full year 2007, global crude steel production is expected to increase by approximately 8% compared to last year, to approximately 1,350 million tons.

In the stainless steel sector, project activity for the modernization of existing plants, as well as for new plants, also developed positively. The continued strong demand for stainless steel, especially from the fast growing economies like India and China, was the main driver for this development. For the full year 2007, market researchers expect global stainless steel production to increase by approximately 9% compared to 2006.

Sources: ISSF, IISI, MEPS

KEY FIGURES ROLLING MILLS AND STRIP PROCESSING LINES

MEUR	2007	2006	2005	2004	2003
Sales	408.0	450.5	275.9	235.4	173.1
Order Intake	636.4	401.9	444.8	266.7	287.6
Order Backlog as of 31.12.	631.6	403.7	458.9	293.1	265.4
EBITDA	32.1	32.8	18.2	14.3	6.6
EBITDA margin	7.9%	7.3%	6.6%	6.1%	3.8%
EBITA	29.7	30.6	15.9	12.1	4.4
EBITA margin	7.3%	6.8%	5.8%	5.1%	2.5%
Capital investments	3.2	2.3	2.2	3.2	1.4
Employees as of 31.12.	880	819	749	736	533

BUSINESS DEVELOPMENT

The Business Area's Sales amounted to 408.0 MEUR, which is a decrease of 9.4% compared to 2006 (450.5 MEUR). Many large orders have been in their initial processing stages, especially during the Second Half of 2007, thus making low Sales contributions. Despite the decline in Sales, EBITA, at 29.7 MEUR in 2007, was practically unchanged compared to last year (2006: 30.6 MEUR). As a result, EBITA margin surged to 7.3% (2006: 6.8%).

Order Intake in 2007 developed very favorably. At 636.4 MEUR, it surged by 58.3% compared to 2006 (401.9 MEUR), thus reaching a new record level. Orders were received from customers in all major steel producing regions, confirming the strong competitive position of Andritz as a leading global supplier to the international steel industries.

During the reporting period, the following important projects were successfully finalized:

- Andritz successfully finished the rebuilding and rehabilitation of the stainless steel annealing and pickling lines of ThyssenKrupp Nirosta, Krefeld, Germany. These lines, supplied and installed by Andritz in 2003, had been damaged in a fire. Rebuilding was finished six weeks ahead of schedule and with even better technological parameters. By placing the order with Andritz, ThyssenKrupp Nirosta has confirmed its satisfaction with the installations and underlying services provided by Andritz.
- Wuhan Iron and Steel (WISCO) signed the final acceptance certificate for the hydrochloric acid regeneration plant supplied by Andritz. The scope of supply consisted of two regeneration plants, one silica reduction plant, and one waste acid purification plant. The total capacity is 15,200 l/h. The customized technology meets all the contractual guarantee figures for the highest quality of purified iron oxide on the market.
- Vacuumschmelze GmbH (VAC) in Hanau, Germany signed the final acceptance certificate for the engineering, erection, and commissioning of a 20-high mill, which was delivered on a turnkey basis including all necessary hydraulic, coolant circulation, and filtration systems. The customized mill technology meets all the contractual guarantee figures for the highest operational reliability and productivity of the mill as well as flatness, thickness, and quality of the product.
- Taiyuan Iron and Steel (Group) Co. (TISCO), China's largest stainless steel producer, signed the final acceptance certificate for one of the world's largest annealing and pickling lines for cold-rolled strip supplied by Andritz. The line processes stainless steel in the thickness range from 0.3 to 3.0 mm and up to 1,320 mm wide, with an annual capacity of 500,000 metric tons. In addition, Andritz received the acceptance certificate for a tension levelling line from the same customer. The strip to be treated with the tension levelling line is stainless steel in the thickness range from 0.2 to 2.0 mm and up to 1,300 mm wide; annual capacity is 200,000 metric tons.
- From voestalpine, Linz, Andritz received the acceptance certificate for an inspection line, dimensioned for a strip width of 700 – 1,759 mm. The line is equipped with two uncoiler sections, a rotating cut-to-length line in the entry section, a laser welder, side trimmer and center-cut shear, and a strip oiling system in the exit section, as well as a horizontal strip inspection cabin.

MAJOR ORDERS

- An electrolytic galvanizing plant for steel strip with an annual capacity of 300,000 tons will be delivered to Baosteel Ltd., Shanghai, the largest steel producer in China. This is the second electrolytic galvanizing plant that Andritz will supply to Baosteel, which confirms the customer's satisfaction with the performance of the Andritz system already installed.
- Baosteel Shanghai No. 1, China ordered a cold-rolled strip annealing and pickling line for stainless steel, including inline and offline skin pass mills. This is the second annealing and pickling line that Andritz will supply to Shanghai No. 1, after having received an order for a hot-rolled strip annealing and pickling line from the same customer last year.
- North America's largest integrated stainless steel producer, North American Stainless, a member of the Acerinox Group, awarded Andritz a contract for one of the world's largest annealing and pickling lines for hot-rolled stainless steel. With a capacity of approximately 1.2 million tons per year, the plant will process strip in the thickness range from 1.5 to 14 mm and up to 1,600 mm wide. In addition to the mechanical equipment, Andritz will supply the annealing furnace and the complete pickling section with all ancillary equipment.
- Several orders were received from the Russian steel company NLMK, Lipezk:
 - A complete hot-dip galvanizing plant with an annual capacity of approximately 300,000 tons. This is the second hot-dip galvanizing plant that Andritz will supply to NLMK.
 - A combined four-high/S6-high reversing cold-rolling mill for silicon strip for Lipezk, and a four-high reversing cold rolling mill for silicon strip for NLMK's affiliate Viz Stal, Jekatarinenburg. Andritz will supply the complete mechanical systems as well as all electrical and ancillary equipment.
 - A complete high-tech color coating line for applications in the automotive industry. This is the second complete line of this kind that Andritz will supply to NLMK.
- The Business Area obtained the second order for a Pyromars Mixed Acid Recovery plant from Lianzhong Stainless Steel Corporation, China, an affiliate of E-United Group, Taiwan. Each plant has a capacity of 6,500 l/h of waste mixed acid, making these two the biggest Pyromars plants ever built worldwide.
- A precision-strip 20-high cold rolling mill was sold to Luoyang Copper, the largest Chinese producer of copper and copper alloys. Andritz Sundwig will supply the rolling mill, including the complete automation and drive packages. This mill will be the first of its kind in the Chinese nonferrous industry.
- To VOSTA Stahlhandel GmbH, Germany, Andritz Sundwig will deliver a cut-to-length line, including a multi-roll leveller for a maximum thickness of 20 mm. The strip to be processed is carbon steel of up to 2,100 mm width. In addition to the mechanical equipment, Andritz will supply the complete electrical system.
- Andritz Sundwig received an order from Outokumpu Stainless AB Thin Strip, Nyby, Sweden for the supply of a grinding line for high-alloy austenitic and Duplex steels for up to 6 mm strip thickness and strip widths of up to 1,600 mm. This system will be the second Andritz Sundwig line in the Nyby mill and will have an annual capacity of 120,000 tons.
- Andritz Sundwig also received an order from ThyssenKrupp AST, Terni, Italy for extending an existing annealing and pickling line for hot-rolled stainless steel strip of up to 1,600 mm width and up to 7.0 mm thickness. The scope of supply includes two-high tandem rolling mills in the patented S6-high configuration with the complete inlet section for direct rolling of the black hot strip. With this order, Andritz has again demonstrated its leading position for this kind of cold-rolling application.
- Andritz Sundwig received an order from TPCO Yuanlong Stainless Steel Ware Corp., Ltd. for the engineering, erection, and commissioning of a tension levelling line. The material to be processed is in the thickness range from 0.15 to 2.0 mm and up to 1,350 mm wide; annual capacity is 160,000 metric tons.

RESEARCH AND DEVELOPMENT

- ThyssenKrupp USA ordered an annealing and pickling line for cold-rolled stainless steel strip of 1,890 mm maximum width and 3.5 mm thickness with an in-line skin pass mill. The line is designed for an annual production of 500,000 tons.
- Andritz Sundwig is to supply a hot-dip galvanizing plant to voestalpine Stahl GmbH in Linz, Austria, as part of the Linz 2010 project. This plant will produce strip ranging from 800 to 1,750 mm in width, with thicknesses between 0.4 and 2.0 mm. The product quality and output of 400,000 tons p.a. are geared to producing top-quality surface finish, as well as new high-strength steel grades for the automotive industry, the household goods sector, and for steel profiles/building components. This is already the third hot-dip galvanizing plant for voestalpine supplied by the Andritz Group.
- Andritz received an order from Salem Steel, a subsidiary of SAIL-India, for an annealing and pickling line for stainless steel strip with a maximum width of 1,300 mm and a maximum thickness of 6 mm. Included in the contract is an acid recovery plant based on the Pyromars technology (the first plant of this kind to be implemented in India).
- Andritz Kaiser received an order from Gutbrod Group, Germany, a subsidiary of voestalpine AG, Linz, Austria for delivery of a 2,500-ton press to manufacture parts for the automobile industry. This will be the largest press built by Andritz Kaiser to date.

In 2007, the Business Area's R&D activities focused mainly on new coating technologies using electro-galvanizing and CVD (Chemical Vapor Deposition) technology. Pilot plants for both processes produced material that is used for application tests at potential customers.

In HCl recovery systems, the iron oxide by-product is important for the economy of the process. New process routes were investigated in order to produce iron oxide for the pigment market.

The delivery program of new-generation punching and metal-forming presses was extended. The new generation of presses features a modular design, which allows flexible adaptation to customer demands. ○