

## SUCCESS STORY

Production for new markets  
due to a major revamp



화재 예방  
METALS

# THE STRIP PROCESSING LINES

AT HYUNDAI BNG, KOREA

**ANDRITZ**

ENGINEERED SUCCESS



# Major revamp ensures greater reliability

## THE CHALLENGE: A LEAP FORWARD IN PRODUCT QUALITY, CAPACITY, AND COST EFFICIENCY

HYUNDAI BNG STEEL, one of world's largest steel producers, approached us with a more ambitious goal in mind. The objective was the modernization of a 20-high reversing mill in order to improve production capacity and product quality, with focus on foil strips down to 50 µm strip thickness.

The requirements were

- to achieve the shortest possible downtime;
- to amortize the modernization in a very short time;
- to have a mill that is easy to handle and requires little maintenance;
- an increase in production output;
- to enhance product quality, especially strip surface, flatness, and thickness;

In many 20-high reversing mill modernizations the overall goal is very simple: just modernize the automation systems and technical control systems to guarantee the availability and

reliability of the plant. The upgrade from the existing automation system to Siemens S7 is necessary because spare parts for the previous S5 Siemens system are no longer available. This investigation ensures that the plant is state-of-the-art.

## OUR SOLUTION: ENGINEERING AND DESIGN REVIEW AS CLOSED LOOP DEVELOPMENT

The engineering professionals at ANDRITZ Sundwig considered every process step in order to find an innovative solution. Their exact knowledge of the line and process technology as well as many years of experience enabled them to develop sophisticated solutions that would give HYUNDAI BNG STEEL a competitive advantage for years to come.

The 20-high reversing mill at HYUNDAI BNG STEEL underwent extensive modernization by ANDRITZ Sundwig. The complete control electronics were exchanged and now reflect state-of-the-art equipment. Furthermore, the main drives were replaced and designated drive motors completely overhauled. A modular and digital control system, consisting of

automatic thickness, strip shape, and strip tension controls, as well as new spray plates with nozzles is now being used. The automation system deals with coordination of the classic sequences and media control, as well as including a technological process computer to ensure optimum production. For this purpose, the rolling mill operator is assisted by a comprehensive HMI system. Extension of the fault indication and evaluation tools permits a prompt analysis of any deviations occurring, as well as contributing to line process optimization and improved maintenance. Based on the new design of the roll change device in combination with new drives, the roll change time was significantly reduced. The hydraulic screw down of the mill and the pass line adjustment were also renewed at the same time. In the mill stand itself, the spray plates with nozzles were optimized.

## THE RESULT

The figures speak for themselves. After modernization, the requirements mentioned above were fulfilled. On the strength of our highly experienced technical and mechanical engi-

neering teams, the first saleable strip was rolled 10 days after completion of installation. As a result of the modernization, the tonnage increased by approximately 10%. The various types of technological control in combination with the new hydraulic screw down made it possible to achieve a minimum strip thickness of 50 µm and flatness tolerances (3 I-Units).

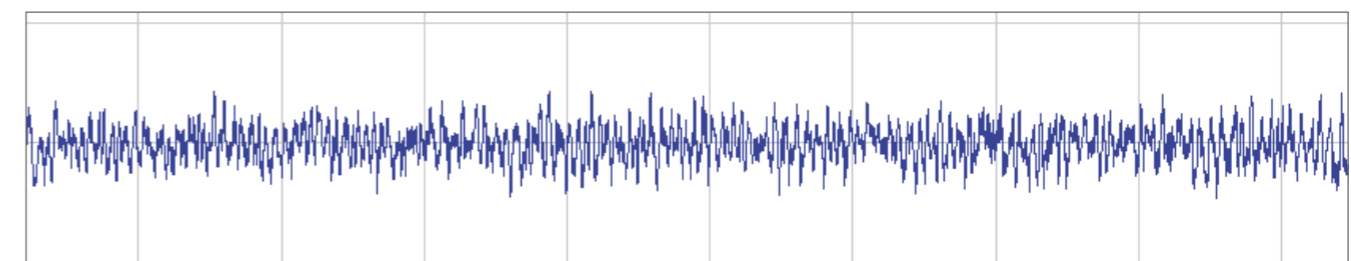
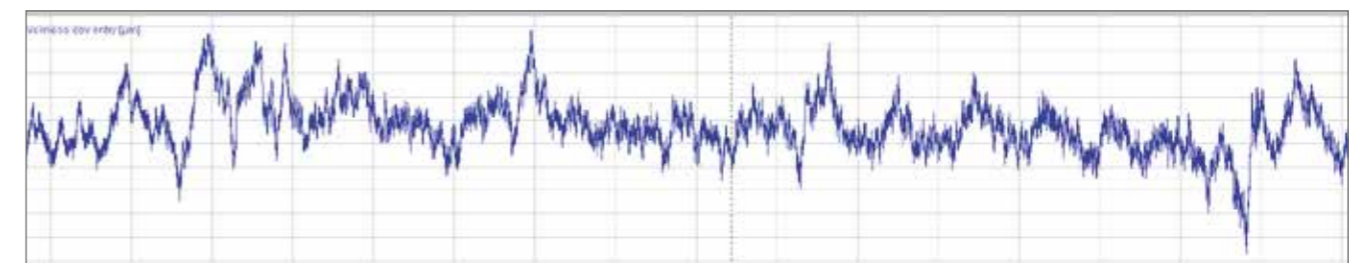
## MILL FACTS

Parameter	Before modernization	After modernization
Strip thickness	3.2–0.05 mm	4.0–0.05 mm
Strip width	450–1,020 mm	450–1,060 mm
Coil weight	18,000 kg	20,000 kg
Specific coil weight	5–17.6 kg/mm	19 kg/mm



New mill table

Material	Entry thickness	Exit thickness	Thickness deviation exit - first pass	Thickness deviation exit - last pass
Stainless steel AISI 304	3000 µm	487 µm	22.1 µm (2-Sigma)	1.5 µm (2-Sigma)



Final strip thickness deviation after last pass



## **ENGINEERED SUCCESS FOR FLAT PRODUCT PROCESSING**

ANDRITZ Metals is – via the Schuler Group – one of the world's leading suppliers of technologies, plants and digital solutions in sheet metal forming. The product portfolio also includes automation and software solutions, dies, process know-how and service. In the metals processing segment, the business area provides innovative and market-leading solutions for production and processing of flat products, for welding systems, as well as furnaces and services for the metals industry.

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