

Aurubis Finland Oy in Pori – successful installation of Millmate Thickness Gauging systems in three cold rolling mills



Aurubis Finland's (former Luvata Copper) three rolling mills are running with three double systems with all together six MTG thickness gauges.

Measurement made easy

Background

In 2001, at that time, the former Outokumpu PoriCopper carried through a MTG test installation in one of the rolling mills at the Pori site in Finland. The MTG gauge was tested in a reversing cold rolling mill and in this mill both copper strips (0.2 to 2.0 mm) and different Cu-Zn-Ni alloys (1.7 to 3.0 mm, coin material) was processed.

The test resulted in very good feedback, highlighting the potential and benefits with the Millmate Thickness Gauging system and the underlying PEC measurement technology, Pulsed Eddy Current technology.

“We want to emphasize the reliability with all the ABB measurement equipment in our rolling mills.”

Toni Ketonen, Maintenance Engineer, Electrical Automation at Aurubis Finland in Pori.

Further, the test manifested the ability of the MTG-system to fulfil precision measuring of rapid thickness changes, measurement stability over the strip length and long-time accuracy.

These positive functions of the Millmate Thickness Gauging system have resulted in sofar six MTG gauges installed in the Aurubis Finland mill in Pori, Finland.

What are the main benefits with the Millmate Thickness Gauging system?

We ask Mr. Toni Ketonen, Maintenance Engineer, Electrical Automation:

“The Millmate Thickness Gauging systems (MTG) are robust and accurate and they have been working very well with no problems since they were installed. A major benefit is that we can mix different alloys without any re-calibration in between.”

“After the installations of the MTG-gauges there are no problems with scratches anymore. Our clients are very satisfied with what we deliver to them.”

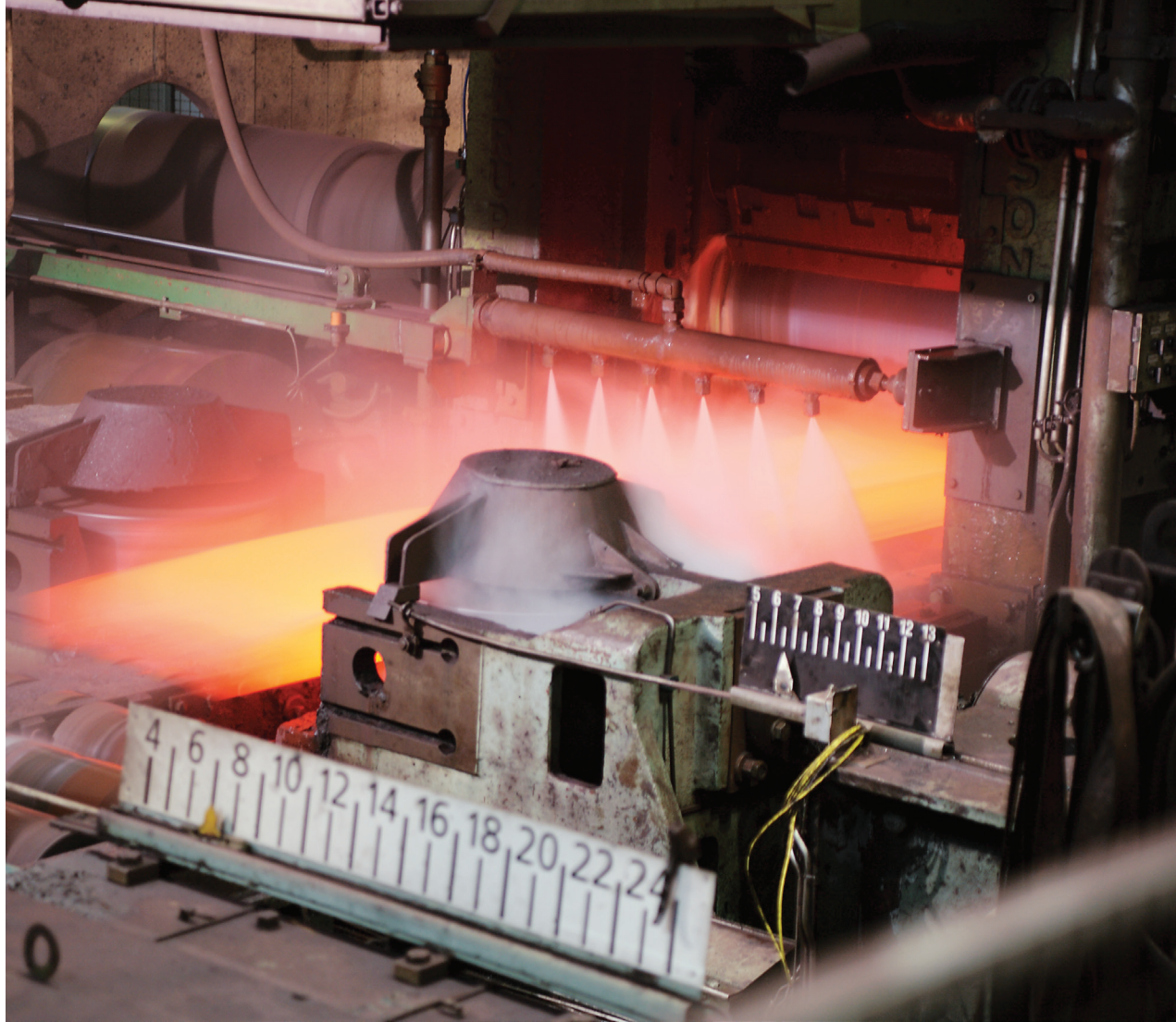
“ABB is a reliable supplier and we appreciate all the ABB experience with thickness gauging and measurement equipment in rolling mills.”

01 The material for the cold rolling comes directly from the rougher mill. Aurubis Finland is an integrated plant controlling the quality through hot and cold rolling.

02 The operators find it easy to use the ABB equipment and they are very satisfied with the user-friendly HMI-screen.

03 Mr. Toni Ketonen appreciates ABB's extensive experience in thickness gauging and flatness measurement leading to higher productivity in the rolling mills.

04 Aurubis realizes the benefits with the high measurement density that ABB's Force Measurement products deliver. In this rolling mill 2 x LPBT, 1 x MTG, 1 x STR, 2 x MRF.



"We have experienced a higher productivity in the mills with MTG and Stressometer systems. On the same time we want to emphasize the reliability with all the ABB measurement equipment in our rolling mills."

Aurubis Finland is very satisfied with the ABB measurement equipment. They are one of the most complete ABB customers in the rolling mill industry with Stressometer flatness control, Millmate Thickness Gauging, Large PillowBlock Tensiometers and Millmate Roll Force measurement from the ABB Force Measurement product portfolio.

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Aurubis Finland's three cold rolling mills are running with MTG Thickness Gauges, Stressometer flatness control systems, PillowBlock strip tension systems and Millmate Roll Force systems, all from the ABB Force Measurement portfolio.

Aurubis – a leading worldwide provider of non-ferrous metals

Our main area of expertise is the processing and optimal recovery of concentrates and raw recycling materials with complex qualities. Aurubis is Europe's leading integrated copper group and the world's largest copper recycler.

Aurubis Finland Oy

The rolling mill in Pori is a state-of-the-art hot and cold rolling mill, and it is fully integrated from casting to finishing.

In 2018, our 260 employees produced 38,100 tons of strip, sheet, plate, and circles as well as 54,400 tons of shapes, of which more than half was for internal use. The selection of high-quality products covers a wide range of copper and copper alloys.

Copper scrap is the main input for production; recycling materials account for around 75 % of the raw materials used in the foundry. The waste heat that arises in the foundry is sold to the local power plant Pori Energia. The waste heat produced during the hot rolling process is reused to preheat combustion air during processing.

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Mill data

Rolling mill 1

Mechanical supplier	Achenbach rolling mills
Work roll diameter	410 to 450 mm
Thicknesses	11.0 to 0.10 mm
Min. – max. width	660 to 1150 mm
Rolling speed	200 m/min
Total ABB portfolio	2 MTG

Rolling mill 2

Mechanical supplier	Schloemann rolling mills
Work roll diameter	195 to 215 mm
Thicknesses	4.5 to 0.10 mm
Min. – max. width	500 to 760 mm
Rolling speed	300 m/min
Total ABB portfolio	2 MTG, 1 STR, 2 LPBT, 2 MRF

Rolling mill 3

Mechanical supplier	Sundwig rolling mills
Work roll diameter	650 to 690 mm
Thicknesses	3.5 to 0.08 mm
Min. – max. width	600 to 1150 mm
Rolling speed	260 m/min
Total ABB portfolio	2 MTG, 1 STR, 2 LPBT, 2 MRF

MTG = Millmate Thickness Gauge

STR = Stressometer flatness control system

LPBT = Large PillowBlock Tensiometers, strip tension measurement

MRF = Millmate Roll Force system, rectangular load cells



ABB Force Measurement product portfolio installed at Aurubis Finland in Pori

Stressometer flatness control – the unsurpassed way to become more competitive

The Stressometer system is since more than fifty years recognized as the world standard in flatness measurement and control in flat rolling mills. Based on our experience from more than 1200 installations the Stressometer system provides the advanced automated control system needed to produce the high quality flat strip demanded by producers.

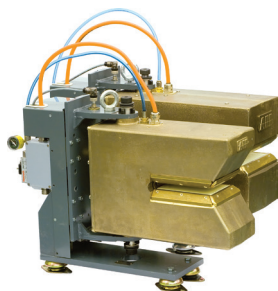


Millmate Thickness Gauging in non-ferrous metals

The Millmate Thickness Gauging system, based on the Pulsed Eddy Current technology, opens up new dimensions in metal foil and strip gauging. Weak magnetic fields are used for the measurement and the gauge is completely safe to use.

The technology is completely insensitive to anything in the measuring zone, except the metal strip. The gauge will therefore measure true strip thickness unaffected by coolant, dirt, steam, air temperature variations, etc.

Since the MTG is material-independent there is no need for alloy compensation and calibration. Measurement can be done close to the roll gap, without removal of emulsion.



Large PillowBlock Tensiometers – strip tension measurement

One of the crucial parameters in achieving correct strip thickness during hot and cold rolling is the strip tension. In order to reach the highest possible accuracy, a strip tensiometer is the best and most reliable alternative. It keeps the strip tension constant within the desired range, during both acceleration and deceleration.

The strip tensiometer system consists of a Millmate Controller 400, a junction box and two load cells matched to the desired measuring range. The load cells are available for measurement in two different directions, one for vertical measurement and the other for horizontal measurement.



Millmate Roll Force systems – roll force measurement

A truly measured roll force is crucial in achieving correct roll gap settings, true force distribution from operator side to drive side of your mill and supervision of the backup bearings and roll eccentricity. The Millmate Roll Force system incorporates all three essential features.

The Millmate Roll Force system consists of a Millmate Controller 400 and two load cells with matching units. The various types and the wide load range of the Millmate Roll Force load cells cover practically all conceivable force measurement applications.

