



# More Precision

**thicknessCONTROL** MTS 9202.LLT // Thickness measurement in hot rolling mills





- Material thickness up to 400 mm
- Measuring thickness / thickness profile
- High accuracy with very large operating range
- Comprehensive software

#### thicknessCONTROL MTS 9202.LLT

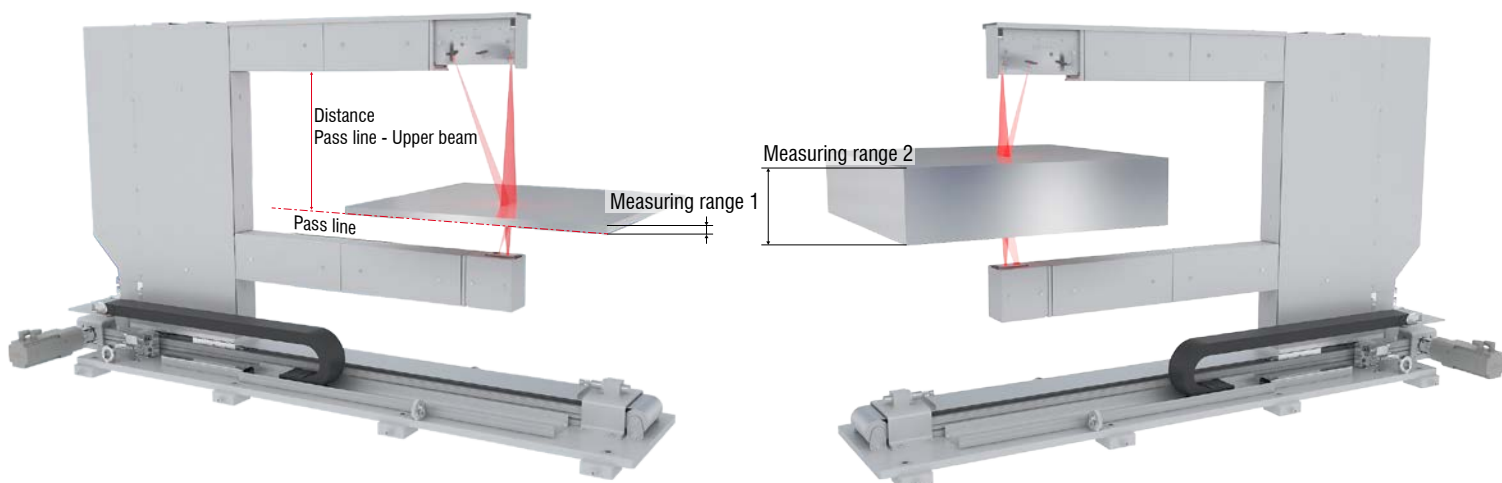
The new generation of thickness laser gauges, the thicknessCONTROL 9202.LLT stands for exceptional performance and overcomes the challenges of one of the most difficult applications for optical thickness measurements. The C-frame-shaped systems are designed for use in hot rolling mills. They are resistant to harsh environmental conditions and provide high precision results in different operating modes.

#### Sequential measuring ranges for more precision and process reliability

The thicknessCONTROL MTS 9202.LLT-400/xxx models are equipped with a special triangulation sensor which provides two sequential measuring ranges. This perfectly covers the varying thicknesses of the rolled material enabling increased measurement accuracy with thinner material. In addition, this innovative approach ensures significantly increased process reliability due to a very large distance between the pass line and the upper beam.



Pneumatic mechanism protects optical system from dirt



**thicknessCONTROL MTS 9202.LLT-60**

Description	60/250	60/500	60/1000	60/1500	60/2000	60/2500
Article no.	4350127.301	4350127.302	4350127.303	4350127.304	4350127.305	4350127.306
Measuring width	250 mm	500 mm	1000 mm	1500 mm	2000 mm	2500 mm
Operating range (total)	190 mm					
Operating range (until pass line)	110 mm					
Measuring range	60 mm					
Resolution	1 $\mu\text{m}$					
Accuracy*	$\pm 2 \mu\text{m}$					
Material temperature	up to 1200 °C					

\*2 sigma

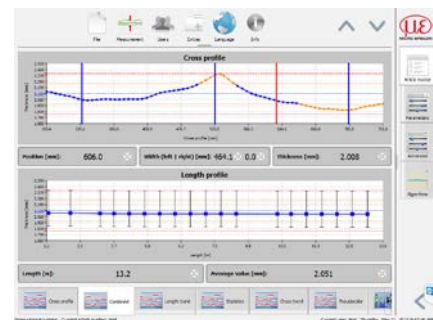
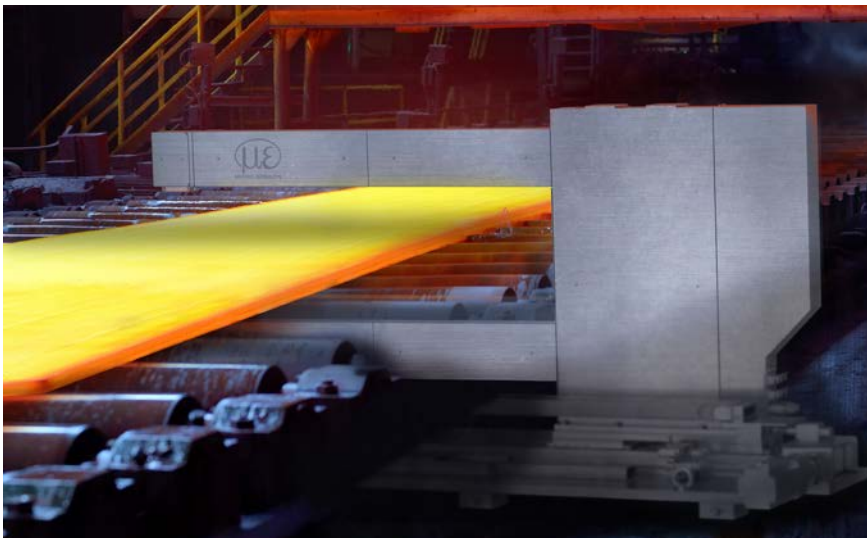
**thicknessCONTROL MTS 9202.LLT-400**

Description	400/250	400/500	400/1000	400/1500	400/2000	400/2500
Article no.	4350127.334	4350127.335	4350127.336	4350127.337	4350127.338	4350127.339
Measuring width	250 mm	500 mm	1000 mm	1500 mm	2000 mm	2500 mm
Operating range (total)	850 mm					
Operating range (until pass line)	700 mm					
Measuring range 1	300 mm (pass line + 100 to pass line + 400 mm)					
Resolution 1	8 $\mu\text{m}$					
Accuracy* 1	$\pm 20 \mu\text{m}$					
Measuring range 2	300 mm (pass line to pass line + 100 mm)					
Resolution 2	2 $\mu\text{m}$					
Accuracy* 2	$\pm 5 \mu\text{m}$					
Material temperature	up to 1200 °C					

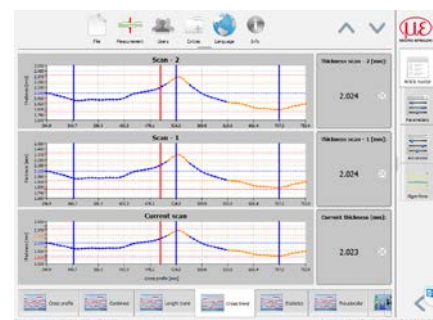
\*2 sigma

**Intelligent measuring mechanics for high temperatures**

The mechanics of the MTS9202.LLT series is designed to partially compensate for changes induced by temperature gradients. In addition, a network of temperature sensors controls the state and stabilizes the measuring range using powerful signal processing. An additional, regulated cooling register and deflector plates even enable use in steel hot rolling mills at material temperatures of 1200 °C.



Screenshot combining cross-sectional and longitudinal trend



Screenshot cross-section trend



## High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Optical micrometers, fiber optic sensors and fiber optics



Color recognition sensors, LED analyzers and color inline spectrometer



Measurement and inspection systems