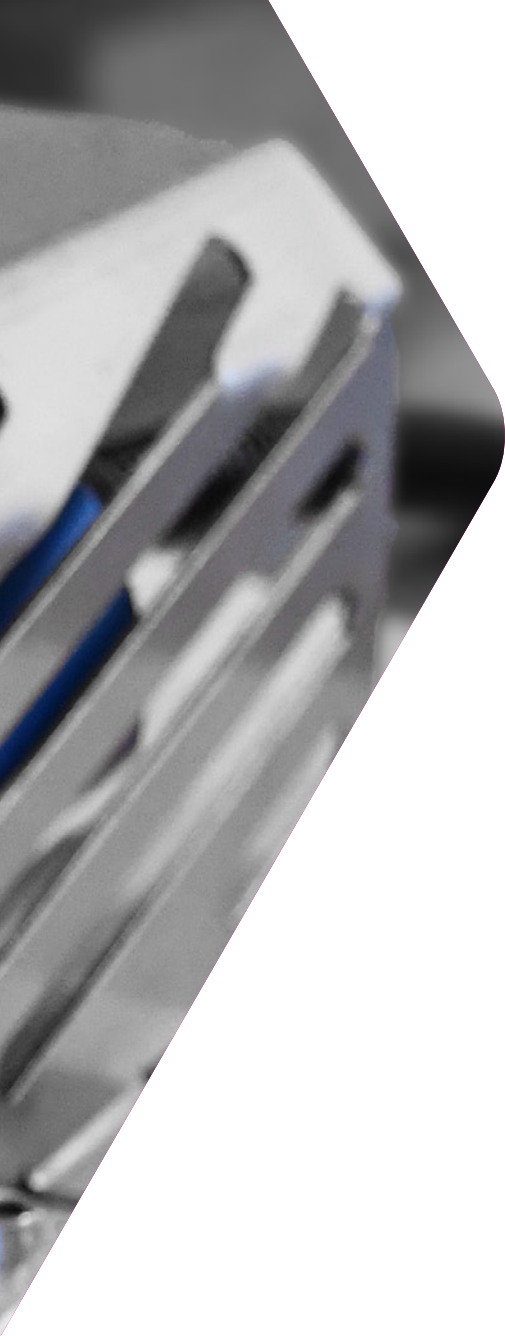


Fast online roughness and waviness measurement

EMG SORM[®]







EMG SORM®

Our solution

Online roughness and waviness measurement

EMG SORM® is an online measurement system of waviness and roughness parameters during continuous strip processing. Increased requirements for new materials and more complex components call for ever increasing process safety.

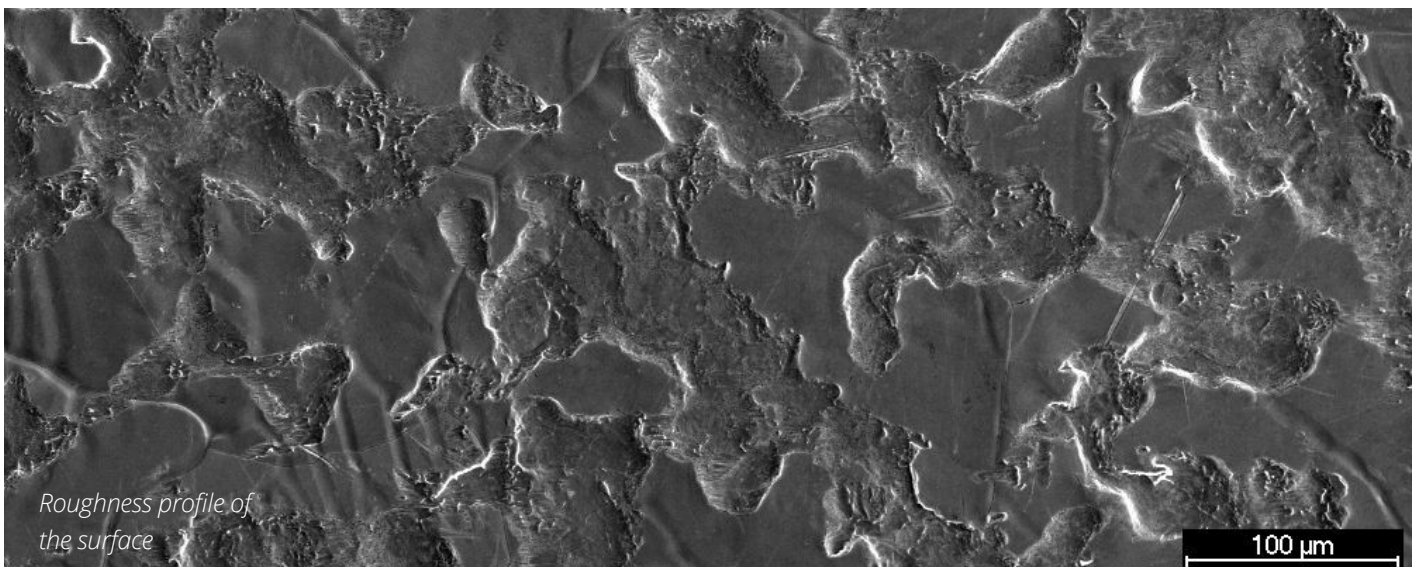
The roughness parameters are important quality features of uncoated and surface refined strips. The traditional method of measurement involves using a mechanical stylus based instrument.

For this purpose the operator must stop the production line or samples are taken from the end of the coil and measurements are made offline in the lab.

EMG SORM®, however, is a non-contact, online surface roughness measurement system that can be used for metallic and many non-metallic surfaces at strip speeds of up to 350 m/min.

The measuring values are stored, displayed to the operator and if needed are fed into a higher-level network. The operator is alerted, if the preset limit values are exceeded or if any changes within the line will jeopardise the production process.

EMG SORM® calculates the roughness parameters defined according to DIN EN 10049 and SEP 1941, including the arithmetic centre roughness value R_a , the peak number RP_c and the waviness value W_{sa} .





EMG SORM®

Optical & contact-free 100 % the right decision

Measuring principle

EMG SORM® detects the surface roughness of a moving strip within the limits of the processing line. The system uses a light-optical scanning method to measure the microprofile of a surface. The scanning method is a distance measurement based on the confocal chromatic measurement principle. This surface profile can be compared to the profile which is detected by a stylus instrument. Then the measured profile is taken as basis to calculate the roughness parameters (Ra, R_{Pc}) as well as the waviness parameter (W_{sa}).

Together with a traversing unit EMG SORM® will establish the surface profile along strip length and at various positions over strip width.

This ensures the online availability of the waviness and roughness parameters of the entire strip for the line operator. The use of EMG SORM® makes it possible to detect defects at an early stage and to correct them during manufacturing (e. g. wear of rolls inside skin-pass mill).

Performance features

- » Contactless and online measurement of parameters (Ra, R_{Pc}, W_{sa}) across strip width and strip length
- » Online visualisation of waviness and roughness parameters via the process control system
- » Set-up of measuring system from the control room (graphical user interface)
- » Long-term storage of roughness and waviness parameters of each coil processed
- » Teleservice or remote parameter assignment via Ethernet

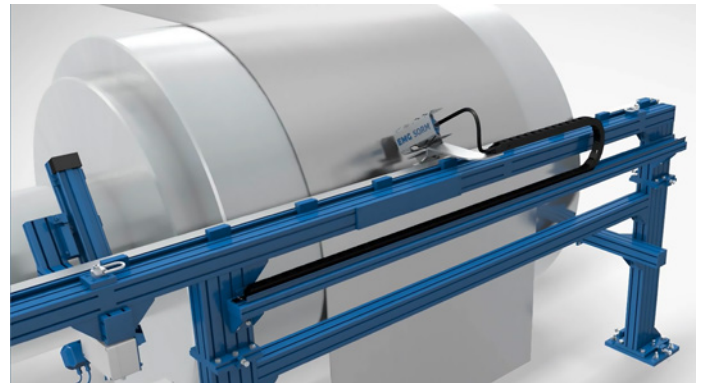


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Early fault detection

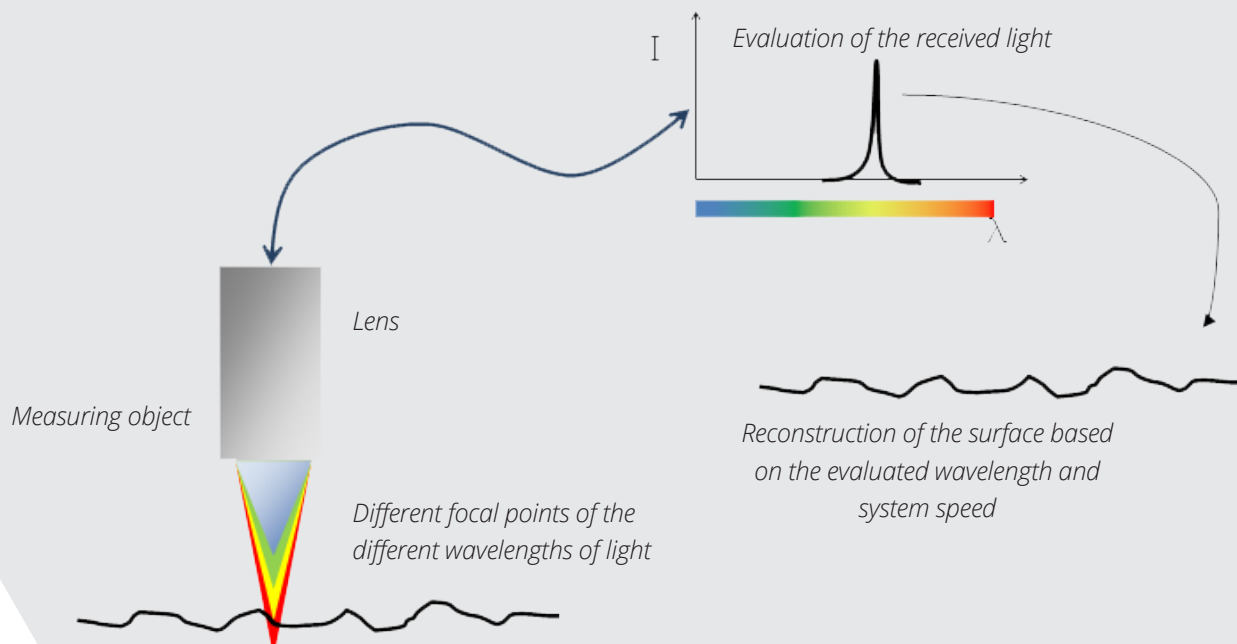
Functional principle

- » Optical distance measurement
- » Calculation of surface profile (basic data)
- » High-pass filtering of profile measured acc. to standard specification
- » Determination of roughness parameters acc. to DIN EN 10049 and SEP 1941



EMG SORM®

Confocal chromatic measuring principle



Technical data

Strip speed limit	• Ra, Wsa: 350 m/min • RPc: 120 m/min
Roughness / waviness values	Ra / RPc / Wsa
Light source	LED (no laser required)
Application fields	CGL / EGL / PL / Blanking lines / Coil Processing Lines / Slitting Lines / CTL / Stainless steel / Aluminium (other materials and lines on request)
Necessary space in plant	approx. 500 mm, in production direction)
Measuring distance	25 mm
Accuracy Ra and Wsa*	+/- 15 %, compared to tactile measurement (for 85 % of all values)
Accuracy RPc*	+/- 20 %, compared to tactile measurement (for 80 % of all values)
Measuring range (Strip thickness)	2.5 mm (without focus unit)
Ambient temperature	0 up to 40 °C (max.)

* based on experience gained in online testing

Customer benefit - Your advantages

General advantages

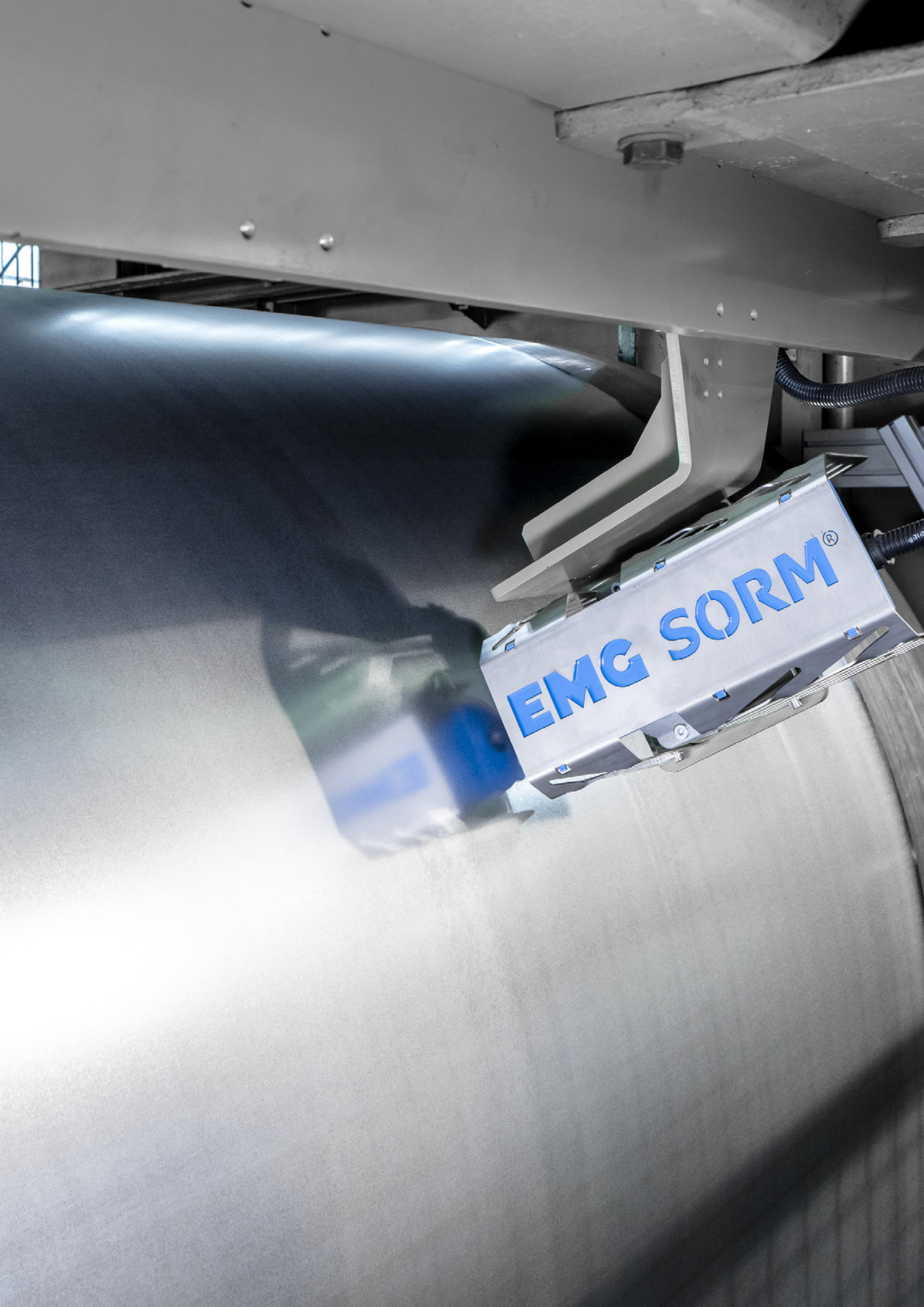
- » Improvement of product quality
- » Cost reduction by optimising the skin-pass roll lifetime
- » Cost savings over the manual stylus based measurement
- » Reduction of complaints due to the early detection of deviations from the required roughness and waviness range

Rolling process

- » Reduction of rejects during a subsequent control at the recoiling line
- » Control and optimisation of skin-pass or rolling process

Automotive

- » Stable forming operation (pressing, deep-drawing) by constant roughness and waviness parameters
- » Excellent coating results due to a homogeneous surface waviness and roughness



The logo for EMG, consisting of the letters 'EMG' in a bold, white, sans-serif font.

an **eLEXIS** company

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