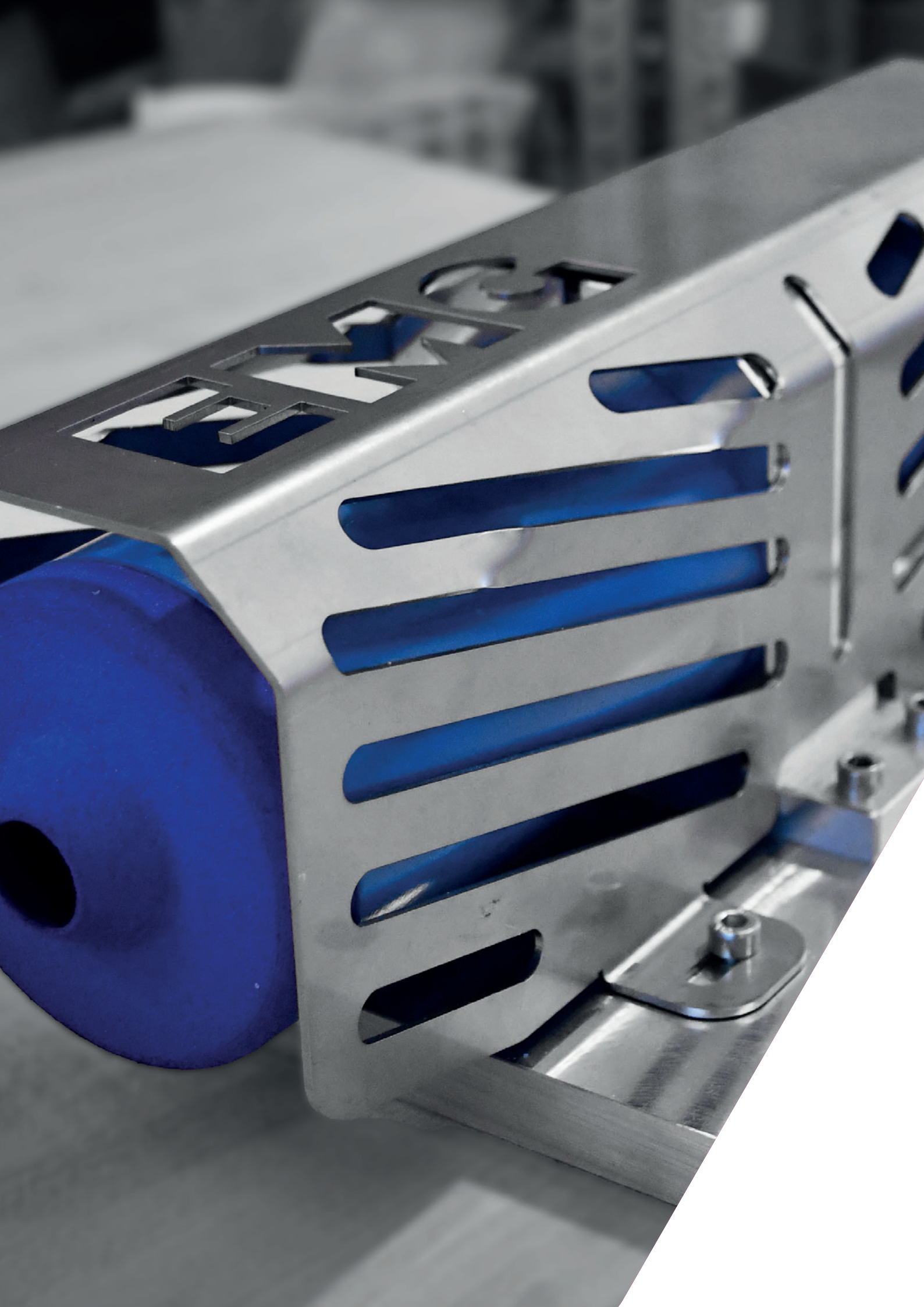
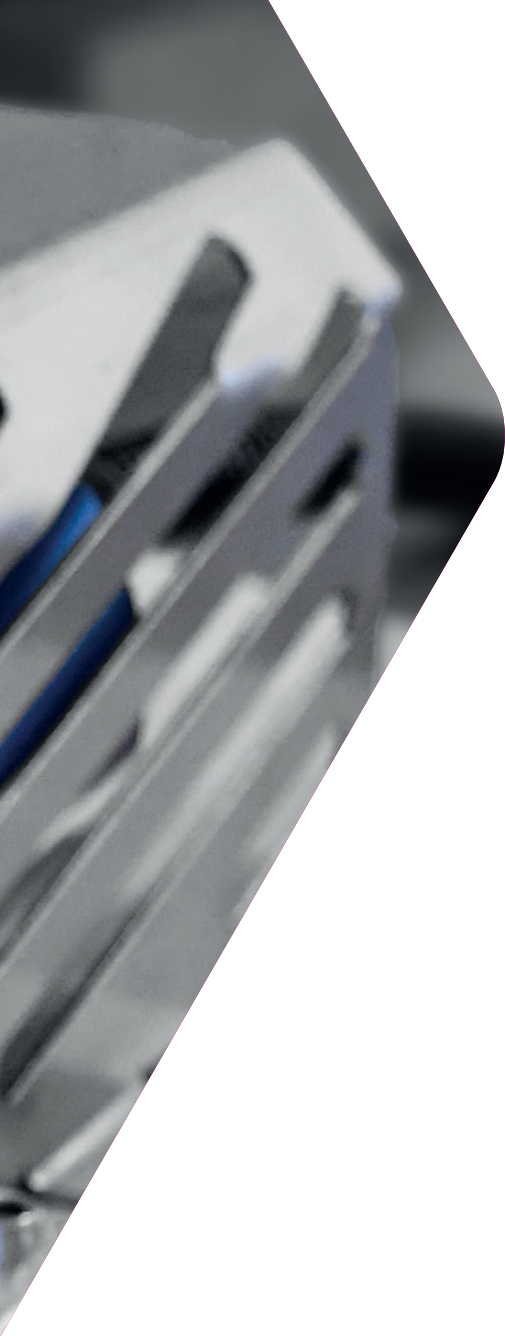


Fast online roughness measurement

# EMG SORM<sup>®</sup>







EMG SORM®

## Our solution

# Online roughness measurement

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

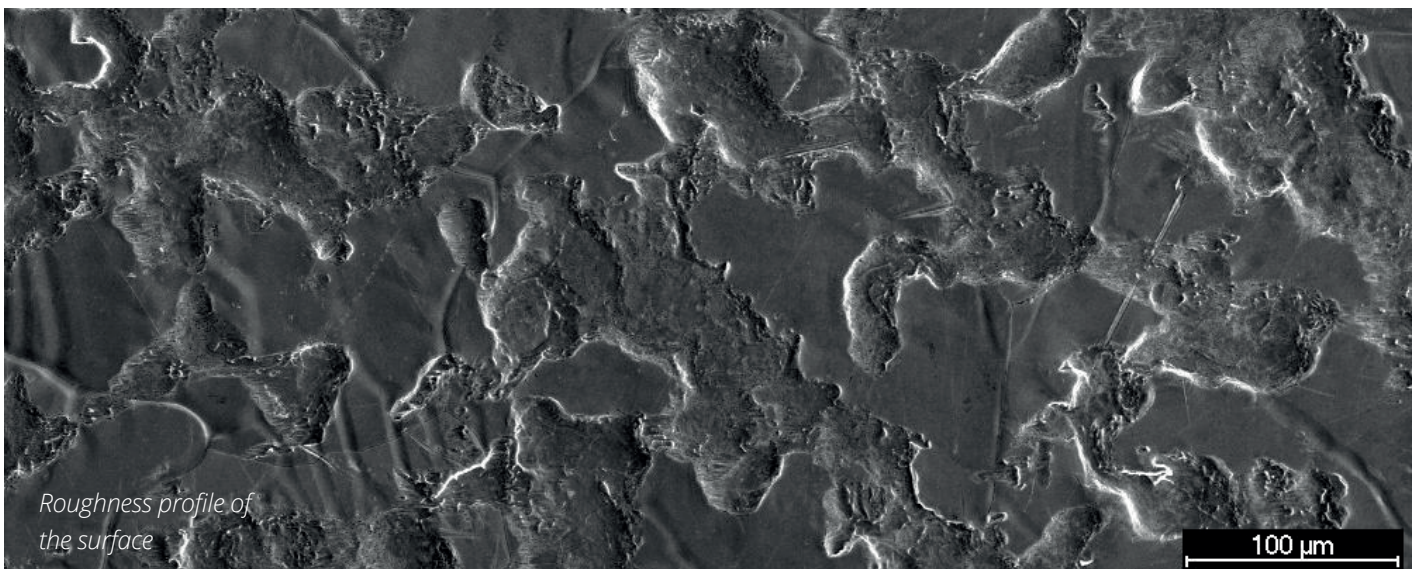
The roughness parameters are important quality features of uncoated and surface refined strips. The traditional method of measurement involves using a mechanical stylus based instrument.

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 surface roughness data 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  $W_s_a$ .



*Roughness profile of the surface*



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 laser-optical scanning method to measure the microprofile of a surface. 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, RPC) .

Together with a traversing unit EMG SORM® will establish the roughness profile across strip width and strip length. This ensures the online availability of the roughness parameters of the entire strip for the line operator. The use of EMG SORM® makes it possible to detect roughness 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 roughness parameters (Ra, RPC, ...) across strip width and strip length
- » Online visualisation of roughness parameters via the process control system
- » Set-up of measuring system from the control room (graphical user interface)
- » Long-term storage of roughness parameters of each coil processed
- » Teleservice or remote parameter assignment via Ethernet

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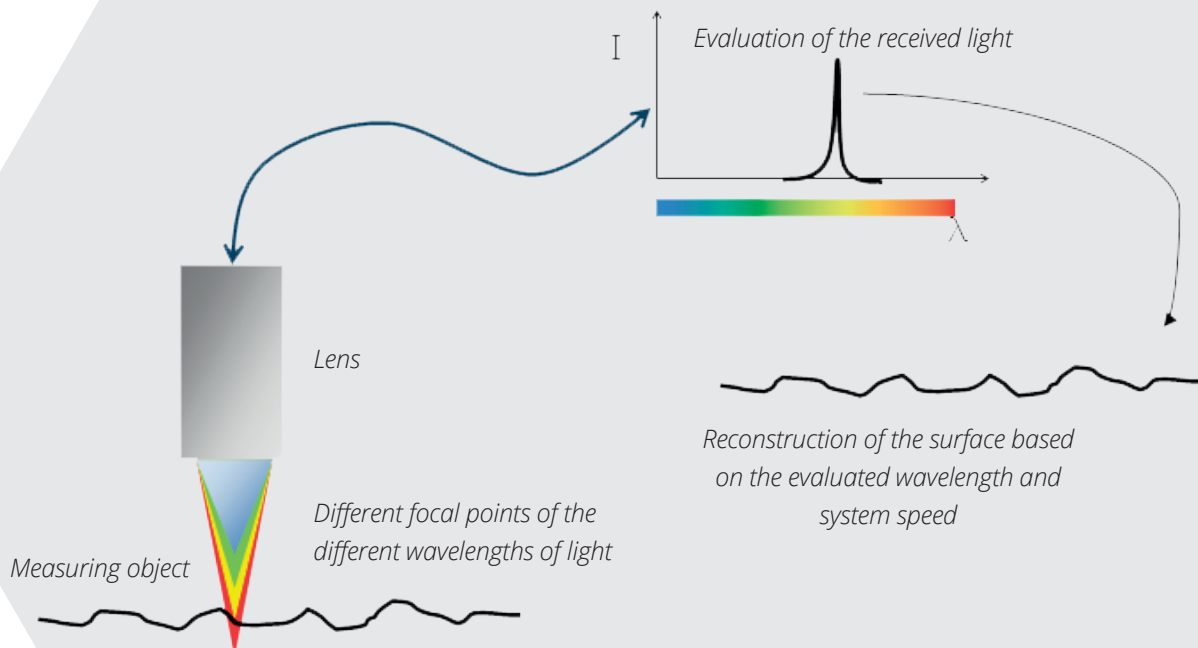
# Early fault detection

## 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

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## Measuring principle



# Technical data

Strip speed limit	350 (RPc 120) m/min
Roughness / waviness values	Ra / RPc / Wsa
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	Small (less than 400 mm, in production direction)
Measuring distance	25 mm
Accuracy Ra and Wsa*	+/- 15 % from current value (for 85 % of all values)
Accuracy RPc*	+/- 20 % from current value (for 80 % of all values)
Measuring range (Strip thickness)	3 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 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 parameters
- » Excellent coating results due to a homogeneous surface roughness



**EMC SORM**

The logo consists of the letters 'EMG' in a bold, white, sans-serif font. The background of the entire page is a blue-tinted photograph of industrial machinery, with large circular components and a metal structure visible. A white line graphic starts from the left edge, goes down, then curves around the right side of the text area, and goes back up to the top edge.

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