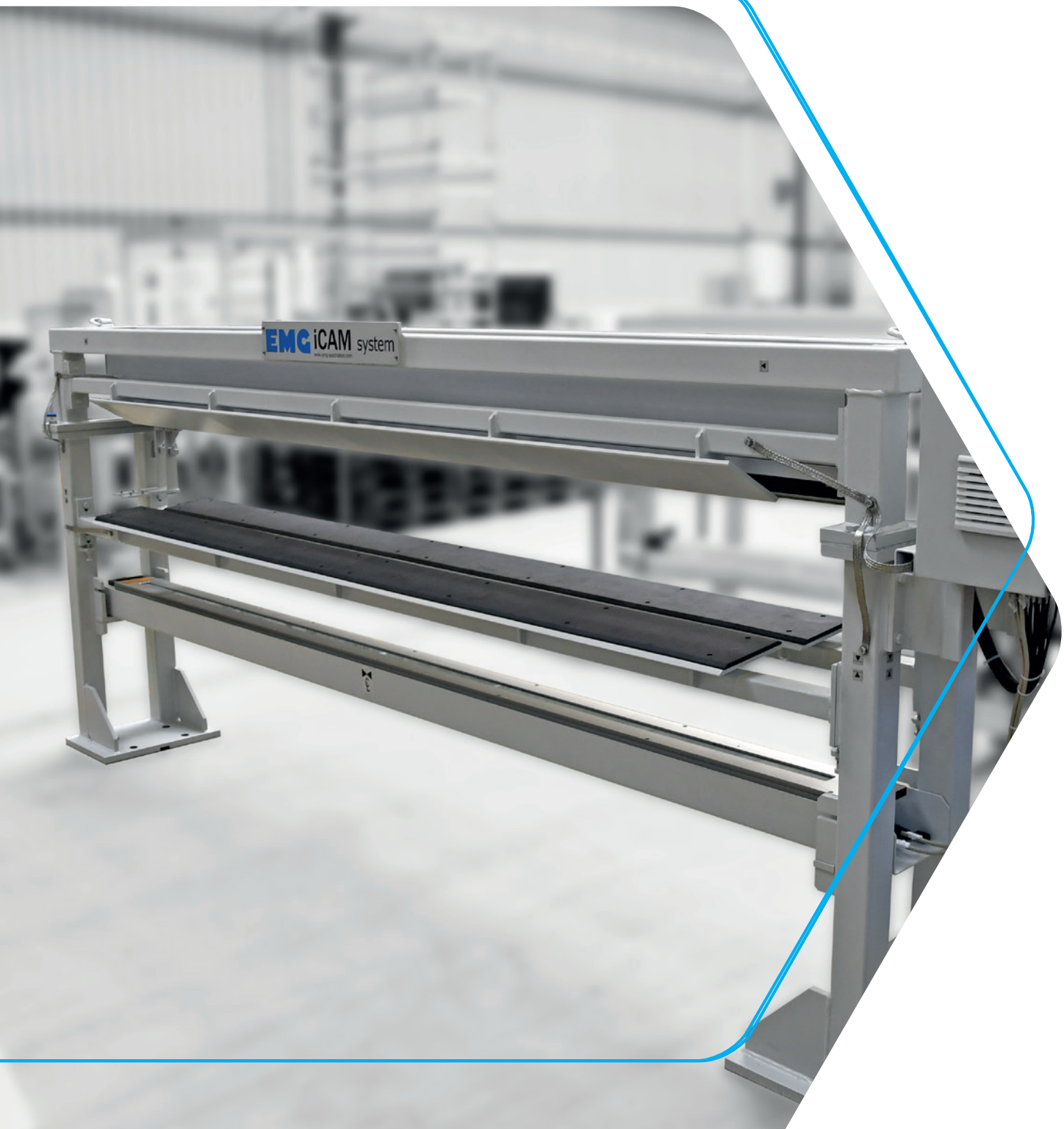
Online measurement of strip and slit strip width, edge crack and hole detection

EMG iCAM®



EMG iCAM®

Our solution
Better process stability & availability

The EMG iCAM® system is based on the multi camera array technology and can be used in multiple strip processing lines for the measurement of strip width, slit strip width, edge cracks and holes with high precision.

The high-precision measurement of of the strip and slit strip width, allows the exact control of the knife distances as well as the knife positions.

In the process of strip manufacturing, the edge crack of the strip will cause accidents such as strip tearing or even production shutdown.

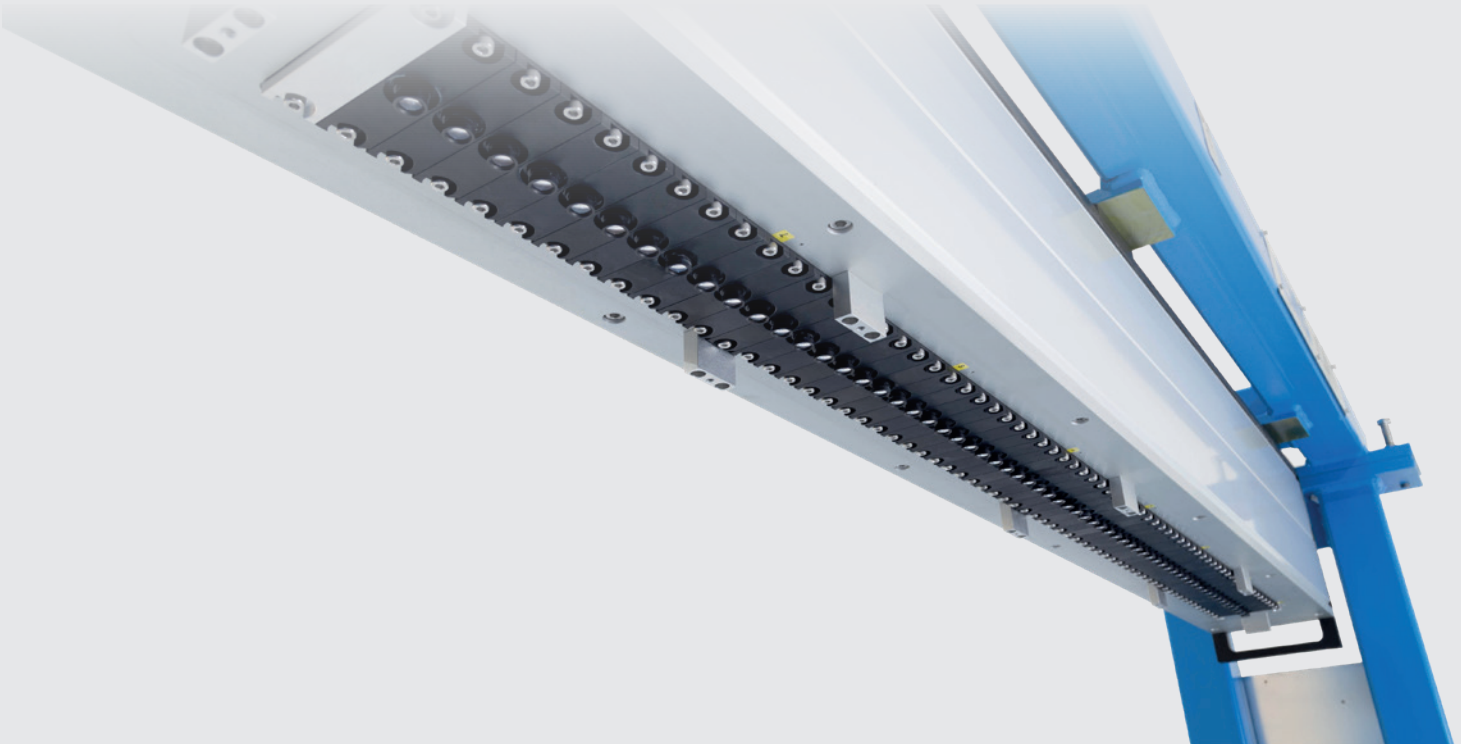
Due to defects or any foreign materials being pressed into the material within the running production process, holes will form in the strip material, which will also cause failure and shutdown of production lines.

Hole detection is a measurement method that can be used to monitor the quality of strip and and quantity and classification of holes within the coil or sections.

Holes in the strip are detected exactly and reliably as well as self-explained visualised for the operator. This information can be used as a valuable reference for the next process step to avoid defects and improve the quality of the end products.

Customer challenges

- Fast and highly accurate strip and slit strip width measurement for input / process control
- Exact detection of holes for monitoring the strip quality
- Precise detection of edge cracks to minimise the risk of strip breakage
- Classification of holes and edge cracks by size with precise location information

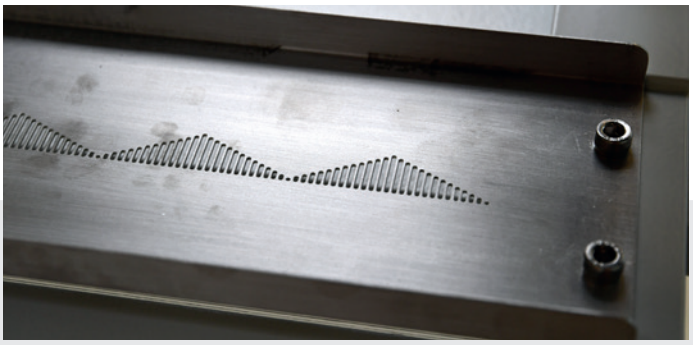


Measuring principle

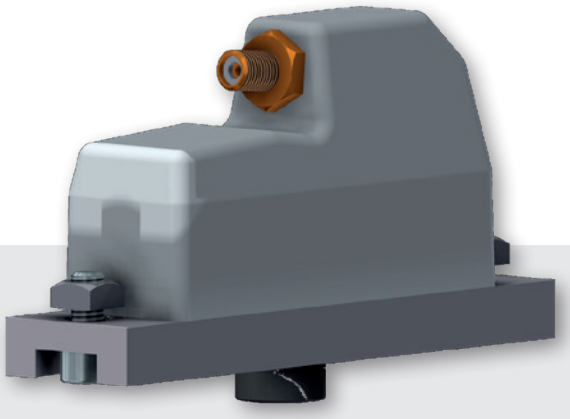
- Multi-camera detection unit above the strip
- LED-based emitter unit below the strip
- Application-based arrangement of camera modules
- Distance of camera modules to the strip 300 mm (standard)
- Distance of the LED backlight unit to the strip 200 mm (standard)
- Light detection from the backlight unit on the strip width, edge cracks or holes

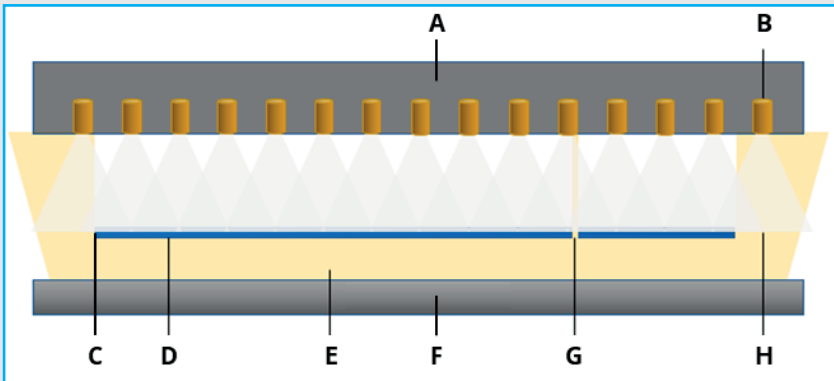
Compact camera module

- Light detection using a monochromatic CMOS chip in the camera module
- Fast image data processing based on FPGA technology
- Various camera lenses available, which can be selected according to the application
- Almost complete avoidance of extraneous light influences



Calibration sheet for the realisation of high-precision strip / slit strip width measurement as well as edge crack and hole detection





A) Multi-camera detection unit
B) Camera module
C) Strip edge
D) Strip
E) Infrared light (850 nm)
F) LED backlight unit
G) Hole
H) Detection area camera module (FOV)

EMG iCAM®

Fast and precise process control
100 % the right decision

Performance features

- High-precision and non-contact measurement method
- High-speed data processing capability
- Modular design, and custom-made by the width and precision requirements of different production lines
- Various interface solutions to meet the needs at diifferent sites
- Small installation space
- No moving parts, low maintenance cost

Customer benefits

- Improvement of process stability and plant availability
- Optimisation of the process and the strip material
- Transparent incoming inspection and precise process control
- Minimisation of edge trim
- Efficient process release through data management and visualisation of measurement data
- EMG iCAM® is based on the same hardware and software structure of all EMG systems:
  Reduction of TCO (total cost of ownership)

Technical data

Measuring technology	Camera-based technology (CMOS chip)
Applications	Stirp and slit strip width measurement, edge crack and hole detection
Strip material	All metal and non-metal surfaces with low gloss level (e.g.): » Steel (cold roll strip, hot-dip galvanized strip, electro galvanized strip) » Aluminium (uncoated, pre-treated)
Distance measuring profile / strip	typically 300 mm*
Distance emitter unit / strip	Typically 200 mm*
Passline detection area (Passline variation + thickness)	19 mm
Measuring range	up to 2,250 mm*
Measuring accuracy	up to +/-0.1 mm (2 σ)
Ambient temperature	+5 °C to +50 °C*
Relative humidity	< 80 % (non-condensing)
Power supply	110-240 VAC; 50/60 Hz

* others on request

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