

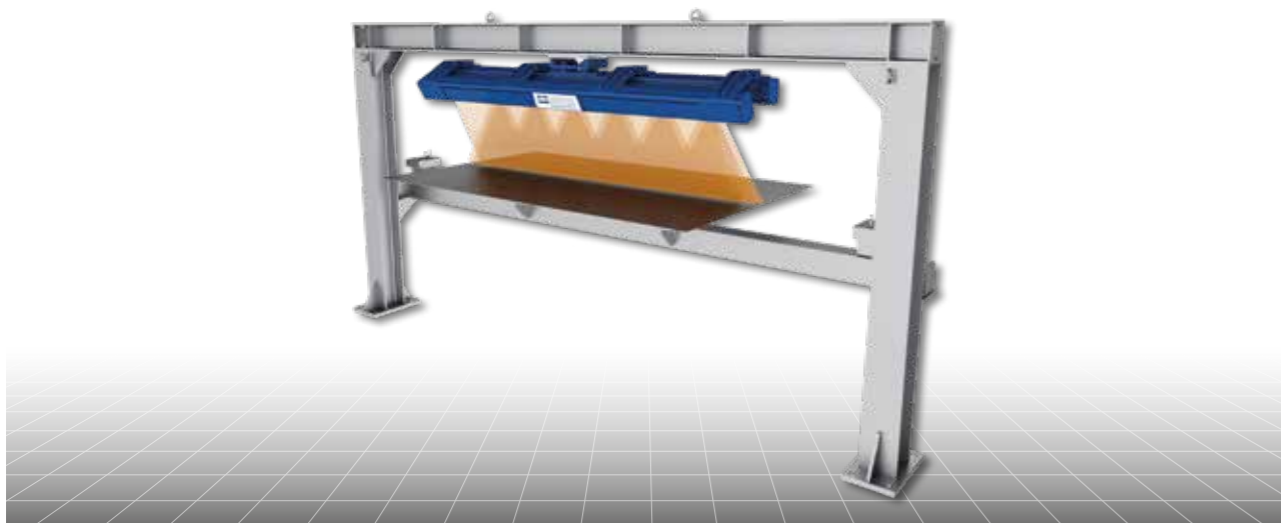
## CCS Flatness and Evenness Measuring System

Flatness and evenness are decisive key features for the quality of flat products in the metal industry.

Their measurement and control are therefore important success factors that help to improve the quality of the manufactured products and reduce critical factors such as process disturbances, equipment damage and scrapping of defective products.

IMS uses the globally unique and patented Camera Cluster Systems (CCS) for non-contact measurement of flatness and evenness.

These systems measure and quantify both flatness and evenness defects in plates, sheets and strips – online or offline.



### Measurement Task

- flatness [I-Unit]
- evenness [ $\mu\text{m}$  or mm]
- optional
  - “box” height calculation
- calculation of the crossbow
- speed / length measurement with speed laser
- DAkkS certificated standardization straight edge

### Special Features

- reliable IMS hardware ensures long-lasting and low-maintenance operation in a compact and lightweight construction
- high-precision measurements on a wide range of material surfaces (from matt to glossy)
- high sampling rates through embedded FPGA image processing
- measurement insensitive to vertical shift and vibrations
- interface to control systems
- online visualisation of the results and reporting via customised results interface

### Material Data

Typical thickness range:	not limited
Max. speed:	up to 350 m/min, but not limited to
Width:	up to 2,400 mm, but not limited to
Length:	not limited / continuous inspection

### Measuring System Data

Gauge type:	fixed mounted frame or moveable C-frame
Radiation Source:	Laser (safety class 2M)
Camera type:	CCS (16 cameras per cluster)
Typical working distance camera:	350 mm

### Measuring Dynamics

Sampling rate:	up to 1 kHz (depends on the material surface)
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### Measuring Accuracy

Height resolution:	better than $\pm 0.05$ mm ( $2\sigma$ ) possible, depends on application
Width resolution:	up to 200 measurement zones per meter (5 mm raster)