
IMS Measuring Systems Aluminium Rolling Mills



Precision out of passion,
quality out of conviction and
innovation out of tradition

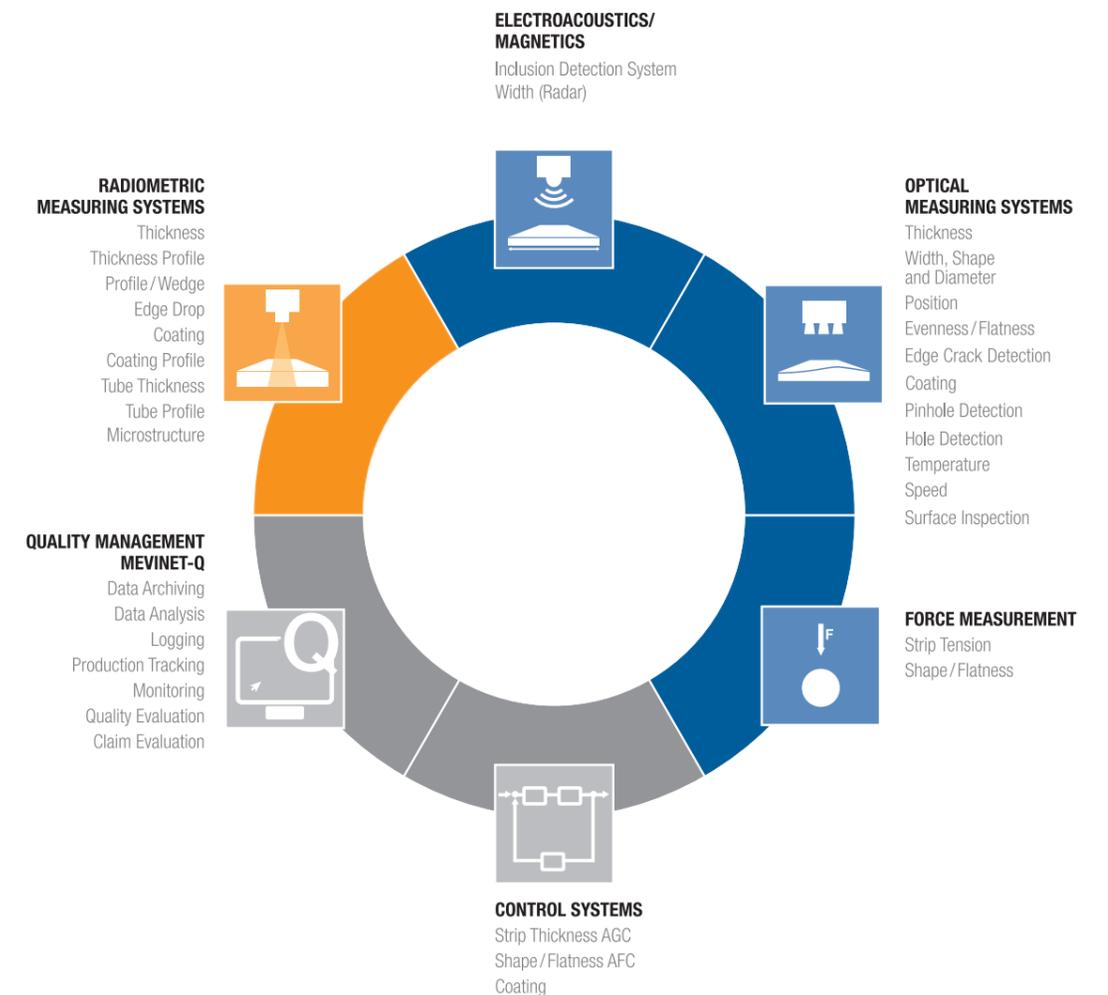
X-ray measuring systems, isotope measuring systems and optical measuring systems from the world's leading manufacturer IMS have been a guarantee for highest product quality in the production and processing of steel, aluminium and non-ferrous metals since 1980.

Our non-contact detection systems are used in the steel, metal and aluminium industries wherever meticulous material testing is required to guarantee the highest standards of quality – worldwide under the toughest operating conditions.

Both in hot production, such as continuous casting plants, hot rolling mills and tube mills, where shimmering surfaces, heat, dirt and moisture are common, as well as in cold rolling mills and service centres, measuring systems from IMS measure and detect reliably and with highest precision.

Exactly reproducible measurements and evaluations in real time optimise your production lines and increase product quality while simultaneously reducing production costs and reject rates.

IMS MEASURING SYSTEMS AT A GLANCE



Aluminium, an Indispensable Raw Material for the Industry of Tomorrow

Aluminium boasts an optimum strength-to-weight ratio, high energy efficiency, exceptional tolerance to extreme temperatures as well as excellent forming properties and resilience

Aluminium boasts an optimum strength-to-weight ratio, high energy efficiency, exceptional tolerance to extreme temperatures as well as excellent forming properties and resilience.

Thanks to all these positive properties, aluminium has become an indispensable raw material for the most important industrial sectors of our modern world.

Aluminium is already being used in all industries where weight savings, stability, a low coefficient of expansion and high corrosion resistance are required. The fields of application are many and form a cross-section of the most important industrial sectors of our globalised world:

- Automotive industry
- Packaging industry
- Mechanical and electrical engineering
- Architecture and construction
- Transportation
- Aerospace

As a component of solar and wind power plants as well as high-voltage power lines, and, as the basis of lightweight automotive parts and rechargeable batteries, aluminium is already essential in the manufacture of modern products. The energy and mobility turnaround so desired by us would be almost inconceivable without aluminium as a material.

A further advantage of aluminium is its almost unlimited recyclability. Not for this reason alone, many manufacturers use aluminium in their production processes as part of their sustainability initiatives as only 5% of the energy required to manufacture original aluminium is needed to recycle the same material. This makes, without doubt, a clear contribution to climate protection as CO2 emissions, and thus the greenhouse gas emissions generated during production, can also be reduced significantly. There are therefore many reasons why aluminium has become an indispensable raw material of tomorrow, as reflected in the statistics. In 2015, for example, more than 58 million tonnes of aluminium were produced worldwide; by 2020, this figure had risen to over 65.3 million tonnes.

The raw material for the aluminium products of the processing industry is produced in aluminium casting and rolling mills, where awesome aluminium ingots are first cast, before they are rolled – as wanted by the indi-



vidual customer – into aluminium strips, trimmed and wound into coils.

The high-precision and innovative measuring systems from IMS Messsysteme GmbH contribute decisively in each of these production steps to meeting the ever-growing demands of the market for more quantity and more quality.

In the wake of ever-tighter tolerance limits and the growing demands on the properties of the material, accompanied by wants for a maximisation in output and productivity, the measuring systems used need to meet the highest performance expectations.

The market demands innovative and technically advanced measurement and control technology to fulfil a wide variety of measuring tasks. It wants systems that measure, control, log and document with constant precision under even the harshest environmental conditions – and that during ongoing operation at strip speeds in cold mills of up to 2,000 m/min.

The product portfolio of IMS Messsysteme GmbH offers an impressive range of state-of-the-art measuring systems optimised for the aluminium industry and perfectly matched to each other. They already fulfil the most significant measuring tasks precisely in their

standard versions. However, our interdisciplinary research and development team also develops, designs and manufactures customised solutions.

The robust housings of IMS measuring systems, which boast high long-term resistance even to aggressive rolling oils, protect the high-tech measuring components inside them. Mechanics and technology, perfectly matched to each other, guarantee consistent high precision and stability.

Positioned at all significant points in production lines, our radiometric and optical measuring systems grant a detailed overview of the production process as well as concrete insights into the production result with the help of modern visualisations.

Top availability and reproducibility of all measurement results form the basis for optimal automated control of production processes. Only with this 100% automation is it possible to increase output while simultaneously reducing reject rates.

IMS solutions for measurement, control, logging & documentation of:

	Thickness / Thickness Profile	Width	Coating
	Hole Detection	Edge Crack Detection	Slit Strip Width
	Pinhole Detection	Sheet Geometry	Evenness
	Flatness	Surface Inspection	Strip-/ Web-Tension

www.ims-experts.com

Measuring Systems Aluminium Hot Rolling Mills

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Measuring Systems for Hot Rolling Mills

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Aluminium Casting and Rolling Mills

Strip casting: the fastest way from the melt of pure aluminium, scrap, recycled aluminium and alloying elements to finished rolled aluminium coil or sheet

The shortest route from raw aluminium to aluminium coil or sheet is the casting process. One production variant here is continuous casting, in which the molten aluminium is poured between two water-cooled steel strips, caterpillar moulds or rolls. At speeds of up to 5 metres per minute, the melt solidifies into endless strips up to 20 mm thick, which are immediately rolled out further.

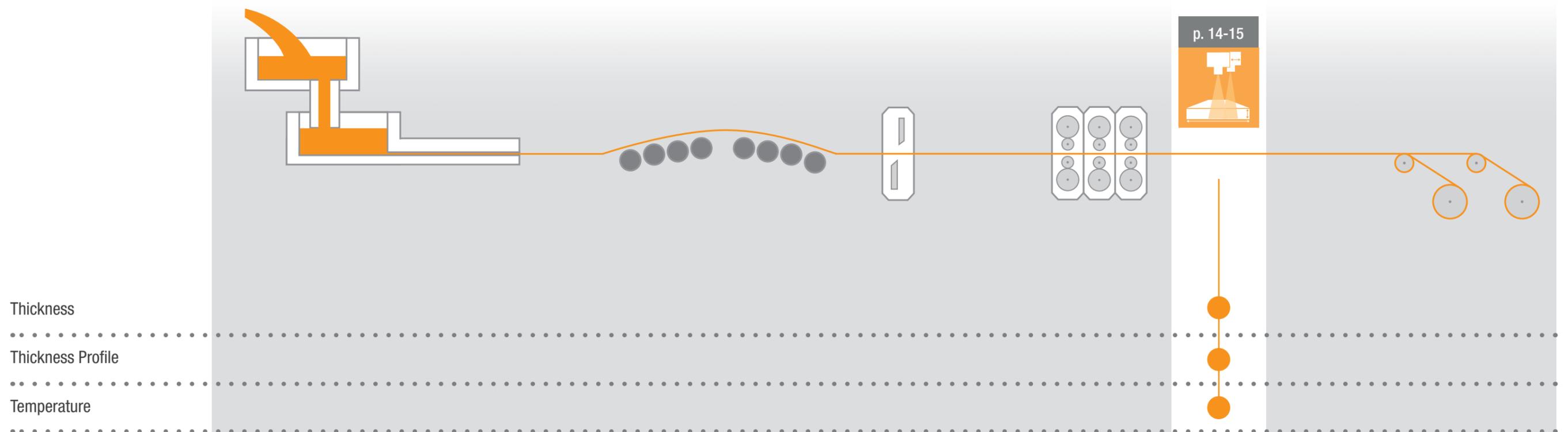
Depending on the process, thin strips between 1 mm and 8 mm can already be cast from the melt, which shorten the subsequent rolling process due to their low initial thickness.

For the production of low-alloyed aluminium, as used for the manufacture of foil material, strips for lacquering and also strips for further processing in the deep-drawing process, this production process has become established, not least for economic reasons.

The most important quality feature of the rolled strips is the exact determination of the transverse thickness profile. Even at this early stage in the production of aluminium products, IMS measuring systems in casting and rolling mills guarantee the highest measuring accuracy in determining thickness, thickness profile and temperature.



Measuring Systems Casting and Rolling Mill



Aluminium Hot Rolling Mills

Rolled from formidable aluminium ingots to millimetre-thin strip

The starting material for hot-rolled end products is usually aluminium rolling slabs. Despite the lower material density of aluminium compared to steel, these reach an impressive total weight of over 32 tonnes with the common dimensions of $W = 2,200$ mm, $L = 9,000$ mm and $D = 600$ mm.

As the first production step, these large ingots are first sawn to size and milled, and then reheated in preheating furnaces to a temperature of $500 - 600^{\circ}\text{C}$.

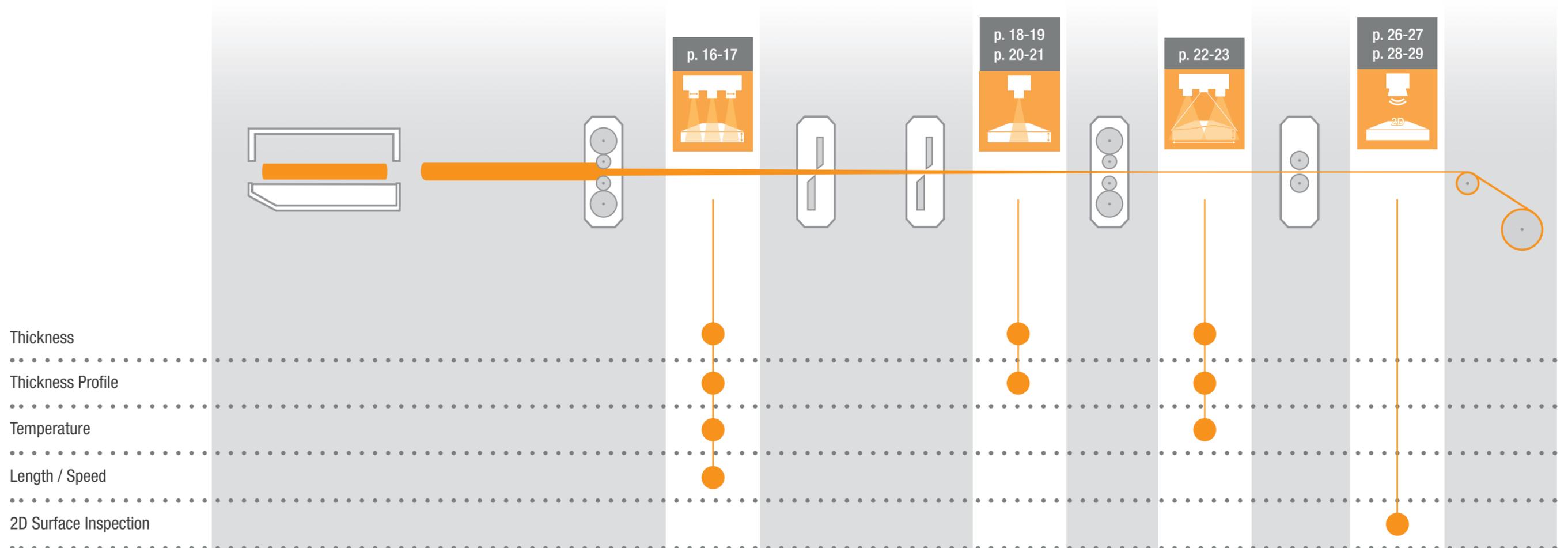
The ingots thus optimally prepared for the rolling process are rolled down to a thickness of a few millimetres in the various rolling mills, such as reversing and multi-stand tandem finishing mills. The resulting aluminium

strip can reach a length of up to 2,000 m and is wound into a coil in the final step of the hot rolling process.

The demands on the precision of the production equipment of the rolling mills rise at the same rate as the demands on the production capacity and quantity as well as the quality of the end product. Each of these factors is optimised through the use of high-precision, automated measuring and control technology. Another positive effect here is that the reject rate is also significantly reduced through the use of optimally coordinated measuring systems.



Measuring Systems 1+1 Hot Rolling Mill



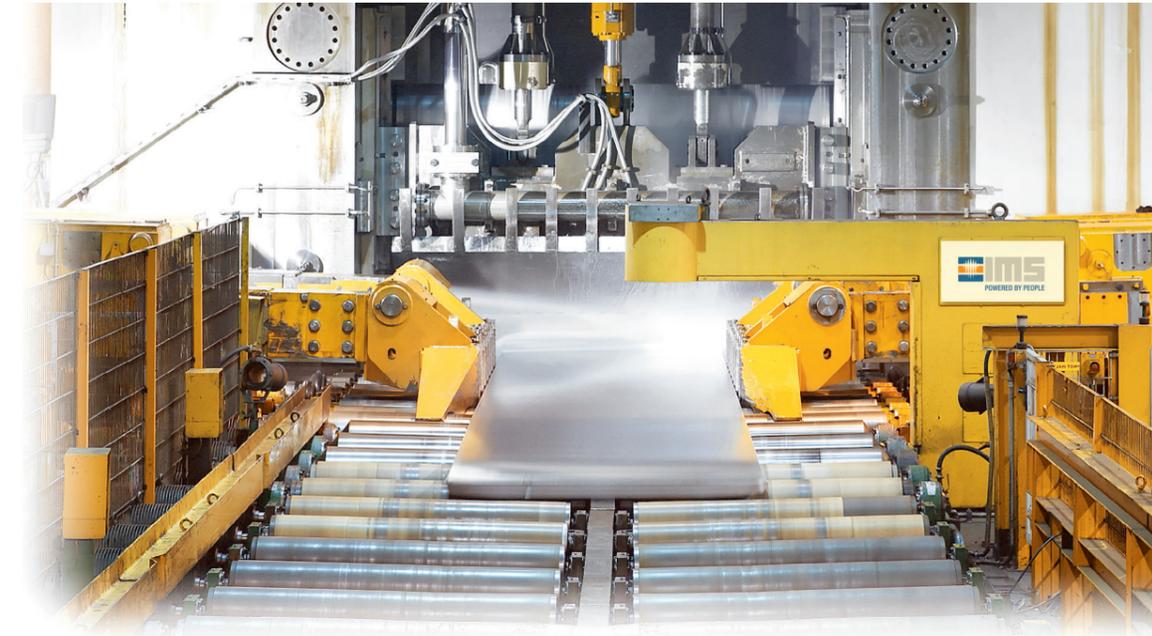
Measuring Systems in Hot Rolling Mills

The most important quality criterion in hot rolling of aluminium is the exact measurement and control of the thickness and thickness profile of the material to be measured

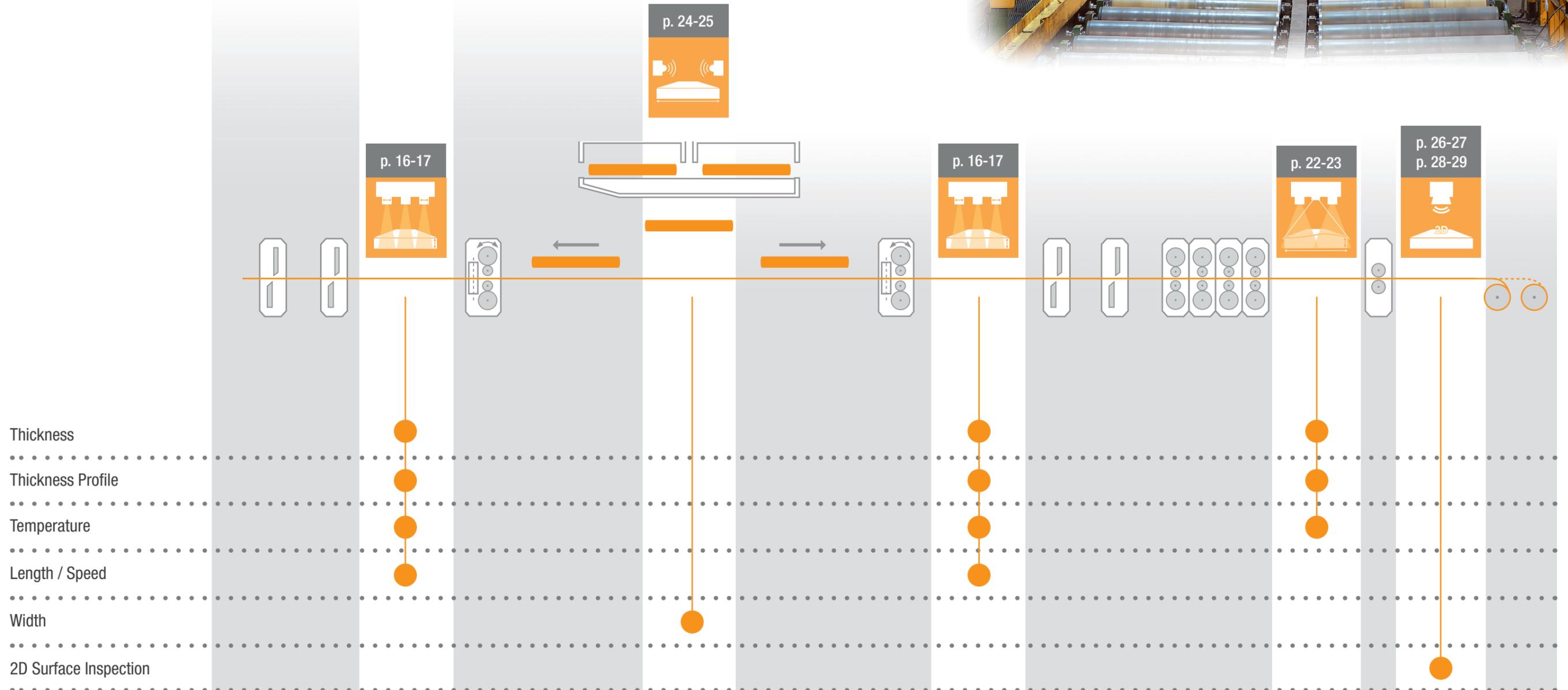
We thus provide our customers with optimised measurement systems for a wide variety of measurement tasks and installation situations.

The extensive product portfolio of IMS Messsysteme GmbH includes various radiometric centre thickness and profile measuring systems, which differ not only in terms of the specified material data and measurement tasks, but also in their mechanical design.

The surcon 2D surface inspection advanced, which detects, visualises and records even the smallest surface defects using specially developed and coordinated camera and lighting technology, completes the 100% automated quality control in aluminium hot rolling mill.



Measuring Systems 1+1+4 Tandem Mill



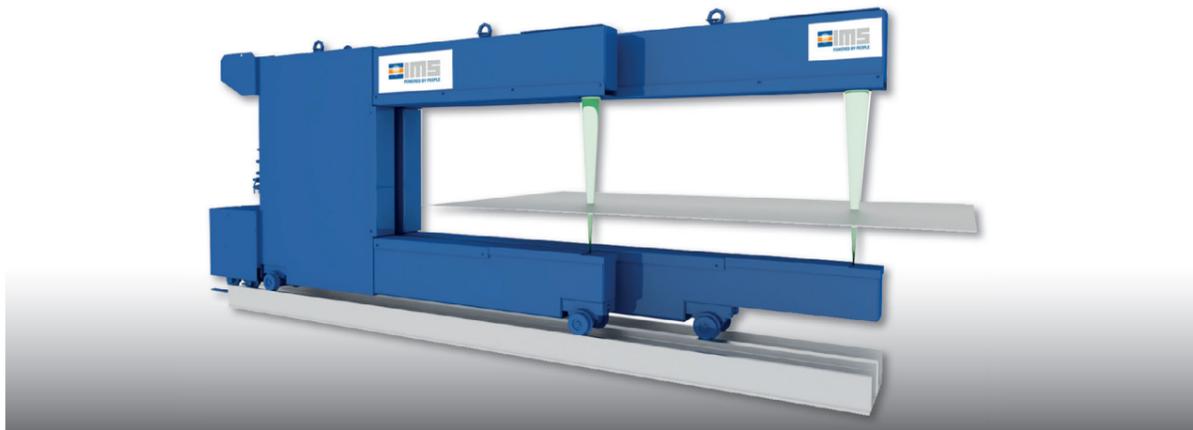


XR Twin Set Centreline Thickness & Profile Measuring System

The XR Twin Set centreline thickness and profile measuring system detects both strip thickness in the centre of the roller table and the strip thickness cross profile by means of continuous, non-contact, real-time measurement. This is achieved with two separate C-frames combined constructively to form one measuring system.

The upper beam of the C-frame contains a task-based number of ionisation chambers to receive the radiation emitted by the x-ray tube installed in the lower beam and which passes through the material.

This residual radiation, which is dependent on the thickness of the material, is converted in the ionisation chambers into electrical signals, which are then used to determine and record the exact thickness of the material.



Measuring Task

- Gauge 1: Thickness measurement in the centre of the roller table
- Gauge 2: Continuous measurement of the strip thickness cross profile by traversing over the entire strip width

Special Features

- c-frame with customisable dimensions
- optionally available with integrated temperature measurement
- x-ray high voltage generator:
 - made by IMS Messsysteme GmbH, Germany
 - compact system, easy installation
 - no or reduced maintenance intervals for the connectors and the high voltage cable
 - constant x-ray high voltage, no standard magazine required
- ionisation chambers (detectors):
 - made by IMS Messsysteme GmbH, Germany
 - pluggable design
 - no separate cooling necessary
 - mechanically highly resilient
 - very long service life
 - excellent stability (drift behaviour)
 - redundancy when using multiple detectors

Material data

Typical thickness range:	> 0 mm up to 80 mm
Speed:	> 0 - 12 m/s
Width:	up to 3,000 mm

Measurement system data

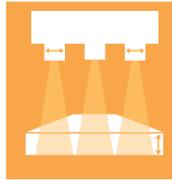
Gauge type:	movable c-frame
Radiation source:	X-ray tube (approx. 110 kV/ 2.5 mA, depending on the measuring task)

Measuring dynamics

Analogue time constant:	approx. 10 ms
Cycle time data processing:	10 ms
Cycle time data output CL:	10 ms
Cycle time data output profile:	after full cross profile scan (depending on strip width)

Measuring accuracy

Reproducibility:	≤ 0.07%
Linearity:	≤ 0.05%
Long term drift (10 hrs):	≤ 0.1%
Statistical noise (10 ms):	≤ 0.1 %



XR Triple-Head Thickness Profile Measuring System

The XR triple-head thickness profile measuring system measures strip thickness and the thickness profile continuously and in real time.

The upper beam of the C-frame contains a task-based number of ionisation chambers to receive the radiation from the x-ray tubes installed in the lower beam. The ionisation chambers convert the thickness-dependent quantity of x-rays that pass through the material into

electrical signals, which are then used to calculate the exact thickness of the material.

The centre measuring head of the system supplies the data for control (AGC) of the mill stand. The traversing outer measuring heads determine the thickness at the edges of the material for calculation of the important wedge and crown values.



Measuring Task

- continuous thickness measurement in the centre of the roller table
- continuous measurement of the strip thickness profile by counter or synchronous traverse of the edge measuring heads
- measurement of width and centreline deviation
- calculation of wedge and crown values
- faster cross-profile acquisition compared to an XR Twinset measuring system
- permanent guarantee of centreline thickness measurement with the option to select the measuring head at will

Special Features

- c-frame with customisable dimensions
- optionally with integrated temperature measurement
- x-ray high voltage generator:
 - made by IMS Messsysteme GmbH, Germany
 - compact system, easy installation
 - no or reduced maintenance intervals for the connectors of the high voltage cable
 - constant x-ray high voltage, no standard magazine required
- ionisation chambers (detectors):
 - made by IMS Messsysteme GmbH, Germany
 - pluggable design
 - no separate cooling necessary
 - mechanically highly resilient
 - very long service life
 - excellent stability (drift behaviour)
 - redundancy when using multiple detectors

Material data

Typical thickness range:	> 0 mm up to max. 180 mm
Speed:	> 0 - 12 m/s
Width:	up to 4,300 mm

Measurement system data

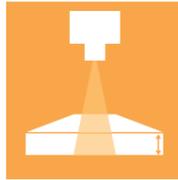
Gauge type:	movable c-frame
Radiation source:	X-ray tube (approx. 180 kV/ 2.5 mA, depending on the measuring task)

Measuring dynamics

Analogue time constant:	approx. 10 ms
Cycle time data processing:	10 ms
Cycle time data output CL:	10 ms
Cycle time data output profile:	after full cross profile scan (depending on strip width)

Measuring accuracy

Reproducibility:	≤ 0.07%
Linearity:	≤ 0.05 %
Long term drift (10 hrs):	≤ 0.1 %
Statistical noise (10 ms):	≤ 0.1 %, not better than ±10 µm (for the max. thickness range)

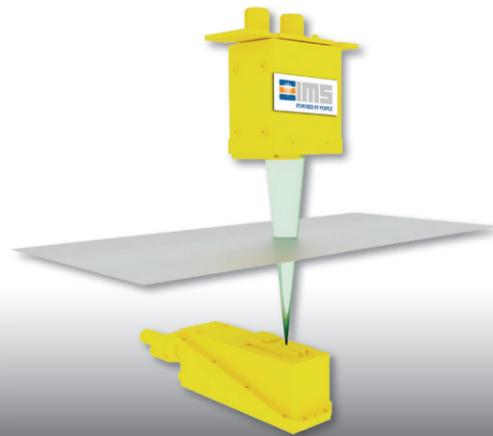


XR Centreline Thickness Gauging System non-retractable gauge

The XR centreline thickness measuring system detects material thickness in the centre of strip by means of continuous, non-contact, real-time measurement.

With this measuring method, a single x-ray source mounted in the roller table underneath the material is used to focus radiation on the measurement area.

A detector unit with a task-based number of ionisation chambers is installed above the material to receive the radiation that passes through the material. The ionisation chambers convert this residual radiation into electrical signals, which are then used to calculate and record the exact thickness of the material.



Measuring Task

- centreline thickness measurement

Special Features

- customisable design and software
- automatic calculation of alloy correction
- remote maintainability
- key components, such as measuring transducers and ionisation chambers (detectors), are developed and manufactured by IMS Messsysteme GmbH, Germany
- compact x-ray generator incl. x-ray controller:
 - high shock and vibration resistance
 - maintenance-free / low-maintenance high-voltage connectors
 - easy to maintain
- ionisation chambers (detectors):
 - pluggable
 - no cooling necessary
 - very long service life
 - highest signal stability
 - maintenance-free
- x-ray source (metal-ceramic tubes)
 - operated at a constant high voltage level, no standard magazines
 - large difference between maximum and operational load (long service life)

Material data (typical for aluminium hot rolling mills)

Typical thickness range:	> 0 up to 180 mm
Speed:	720 m/min, but not limited to
Width:	up to 4,300 mm, but not limited to

Measurement system data

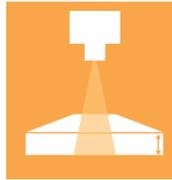
Gauge type:	fixed mounted, non-traversable measuring point
Radiation source:	X-ray tube (approx. 180 kV/ 2.5 mA, depending on the measuring task)

Measuring dynamics

Analogue time constant:	10 ms
Cycle time data processing:	10 ms
Cycle time data output:	10 ms

Measuring accuracy (2 sigma values)

Linearity:	0.05 %
Long term drift (10 hrs):	0.1 %
Reproducibility:	0.07 %
Statistical noise (10 ms):	0.1 %, not better than $\pm 10 \mu\text{m}$ (for the max. thickness range)



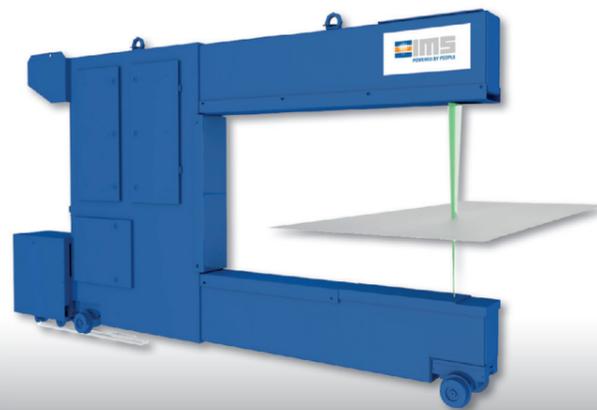
XR Centreline Thickness Measuring System XR Traversing Thickness Profile Measuring System

The XR centreline thickness measuring system detects material thickness in the centre of strip by means of continuous, non-contact, real-time measurement. The C-frame can optionally be designed as a traversing measuring system and thus measure the thickness cross profile.

focus radiation on the measurement area.

The upper beam of the C-frame contains a task-based number of ionisation chambers that convert the radiation that has passed through the material into electrical signals, which are then used to calculate and record the exact thickness of the material.

With this measuring method, a single x-ray source mounted in the lower beam of the C-frame is used to



Measuring Task

- centreline thickness measurements (also available as non-retractable gauge)
- optional:
 - measurement of thickness cross profile
 - integrated temperature measurement

Special Features

- c-frame with customisable dimensions
- automatic calculation of alloy correction
- remote maintainability
- key components, such as measuring transducers and ionisation chambers (detectors), are developed and manufactured by IMS Messsysteme GmbH, Germany
- compact x-ray generator incl. x-ray controller
 - high shock and vibration resistance
 - maintenance-free / low-maintenance high-voltage connectors
 - easy to maintain
- ionisation chambers (detectors):
 - pluggable
 - no cooling necessary
 - very long service life
 - highest signal stability
 - maintenance-free
- x-ray source (metal-ceramic tubes)
 - operated at a constant high voltage level, no standard magazines
 - large difference between maximum and operational load (long service life)

Material data (typical for aluminium cold rolling mills)

Typical thickness range:	> 0 up to 180 mm
Speed:	720 m/min, but not limited to
Width:	up to 4,300 mm, but not limited to

Measurement system data

Gauge type:	movable c-frame
Radiation source:	X-ray tube (approx. 180 kV/ 2.5 mA, depending on the measuring task)

Measuring dynamics

Analogue time constant:	10 ms
Cycle time data processing:	10 ms
Cycle time data output:	10 ms

Measuring accuracy (2 sigma values)

Linearity:	0.05 %
Long term drift (10 hrs):	0.1 %
Reproducibility:	0.07 %
Statistical noise (10 ms):	0.1 %, not better than $\pm 10 \mu\text{m}$ (for the max. thickness range)



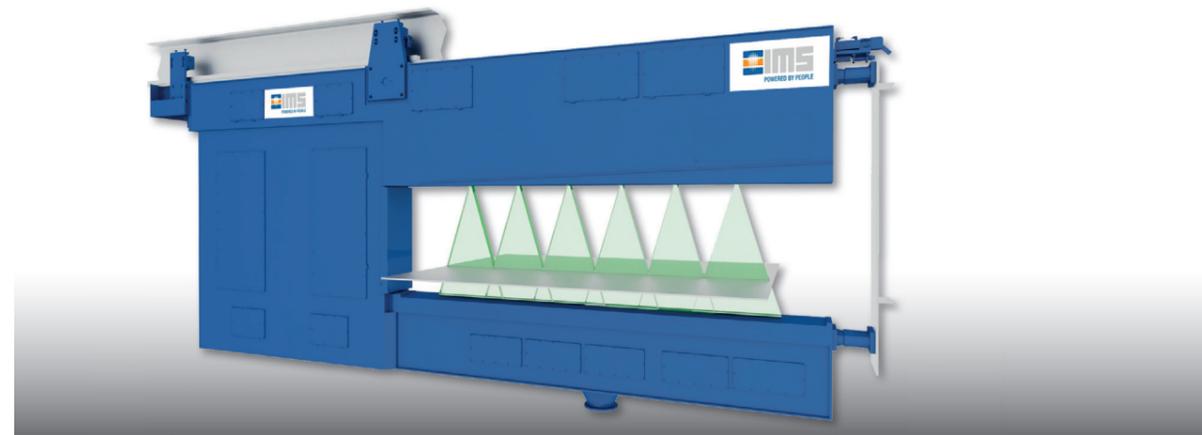
XR SSMC Multichannel Thickness Profile Measuring System

The XR SSMC multichannel thickness profile measuring system measures both strip thickness and the strip thickness cross profile continuously and in real time.

To this end, the C-frame is equipped with a series of segments, each consisting of a radiation source in the upper beam and a width-dependent number of detectors in the lower part of the frame, each forming a measuring channel. In this system the radiation passes through the material from top to bottom.

The ionisation chambers (detectors) convert the radiation which has passed through the material into electrical signals, which are then used to calculate the exact thickness of the material.

The centre gauge supplies the data for control (AGC) of the mill stand. The other detectors supply the profile data for calculation of the important wedge and crown values.



Measuring Task

- continuous thickness measurement in the centre of the roller table
- continuous measurement of strip thickness cross profile
- measurement of width and centreline deviation
- calculation of wedge and crown values
- fastest and continuous cross profile measurement
- compared to other measuring systems with cross profile function
- continuous guarantee of centreline thickness detection
- stereoscopic design and thus detection of the cross contour influence

Special Features

- c-frame, narrow construction
- all measuring points in one line across the strip
- optionally available with integrated temperature measurement
- x-ray high voltage generator:
 - made by IMS Messsysteme GmbH, Germany
 - compact system, easy installation
 - constant x-ray high voltage, no standard magazine required
- maintenance-free high voltage cables
- ionisation chambers (detectors):
 - made by IMS Messsysteme GmbH, Germany
 - pluggable design
 - no separate cooling necessary
 - mechanically highly resilient
 - very long service life
 - excellent stability (drift behaviour)
 - redundancy when using multiple detectors

Material data

Typical thickness range:	> 0 up to 40 mm
Speed:	> 0 - 12 m/s
Width:	up to 3,000 mm

Measurement system data

Gauge type:	c-frame
Radiation source:	X-ray tube (max. 75 kV/2.5 mA)

Measuring dynamics

Analogue time constant:	approx. 20 ms
Cycle time data processing:	10 ms
Cycle time data output CL:	10 ms
Cycle time data output profile:	adjustable scanning time

Measuring accuracy

Reproducibility:	≤ 0.07%
Linearity:	≤ 0.05 %
Long term drift (10 hrs):	≤ 0.1 %
Statistical noise (10 ms):	≤ 0.1 %



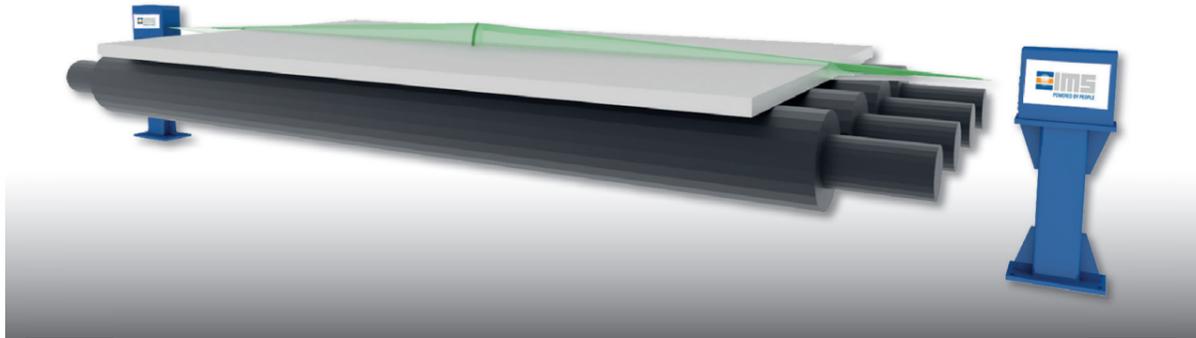
Radar Width Measuring System

The radar width measuring system consists of two columnar system units positioned outside the roller table on opposite sides of the material to be measured.

A part of the electromagnetic waves emitted is reflected by the material and received by two further, identical antennas.

Each unit has a radar sensor in which electromagnetic waves are generated and which are emitted by means of an antenna. The radar beams of both units are aimed at the outer edge of the material.

The radar waves are frequency modulated. The difference in frequency between the radar waves emitted and received thus results in the distance to the reflection point or the exact distance to the material.



Measuring Task

- measurement of material width
- measurement of centreline deviation

Special Features

- gauges are installed at a sufficient distance from the roller table (low temperature influence)
- no need to build over the roller table
- insensitive to water, steam and dust (outstanding advantage over optical measuring systems)
- harmless to humans (in contrast to laser radiation)
- maintenance-free measuring device

Material data

Typical thickness range:	> 5 up to 400 mm
Speed:	> 0 - 3 m/s
Width:	up to 4,000 mm

Measurement system data

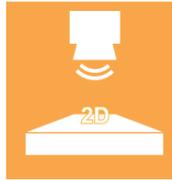
Gauge type:	radar unit
Sensor:	radar sensor, carrier frequency 60 GHz

Measuring dynamics

Cycle time data output:	≥ 1 ms
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Measuring accuracy

Reproducibility:	≤ 0.1 %
Long term drift (10 hrs):	≤ 0.05 %
Measuring accuracy:	≤ ± 0.5 mm



Surface Inspection System surcon 2D advanced

Certain defects change their appearance when viewed from different angles. The use of an additional dark field configuration takes advantage of this fact and results in even more precise defect detection.

Parallel image acquisition ensures that no defect will be missed.

The modular design of all IMS surcon 2D surface inspection systems allows the uncomplicated retrofitting of an additional dark field module

An additional high-resolution dark field module to highlight defect is particularly recommended for the demanding surfaces in aluminium rolling mills.



Measuring Task

- 100% online inspection with fast line scan cameras and high-performance LEDs
- advanced automatic defect detection at different illumination angles
- immediate detection of periodic defects indicating roll damage using all image channels

Special Features

- reliable IMS hardware and housing with integrated cooling ensure long-lasting and low-maintenance operation
- customised solutions and individual adaptation to local conditions
- optional, integrated blower to protect the system from dust, dirt and splash water and to reduce maintenance requirements
- optionally available as C-frame for maximum convenience and easy maintenance in service position
- powerful toolsets for performance optimisation and data analysis
- apply surface inspection to each processing step for conclusive root cause analysis
- online visualisation of results and report generation via customised results interface
- integrated quality assessment tool – create your own rules for instant results evaluation

Material data

Max. speed:	up to 1,900 m/min for 0.4 mm length resolution
Width:	not limited
Length:	no restriction / continuous inspection possible

Measurement system data

Configuration:	2D bright field and dark field
Installation type:	fixed installation or movable c-frame
Camera type:	CMOS line scan camera / Gigabit Ethernet / Camera Link
Illumination source:	High Power LED 450 nm / 630 nm / white more than 500 W/m ² at 500 mm working distance
Typical working distance:	400-1,500 mm

Performance data

Chip size / framerates:	up to 8,192 pixels up to 140 kHz
Typical resolution:	0.2 mm x 0.2 mm / 0.2 mm x 0.4 mm
Image storage:	defective areas in full resolution full background in reduced resolution short intervals can be stored in full resolution
Image storage capacity:	typical 25 TB (up to 55 TB)
Image type:	open, lossless compressed tiff format
Database:	Microsoft SQL Server

Evaluation

Classification:	feature based, pre-trained AI parallel classification using multiple classifiers
Features for classification:	> 400 feature values per defect (using both images)
Quality management:	rule based quality grading



Mobile Inspector App (MIA) for Surface Inspection Systems



All surface inspection results at hand at all times!

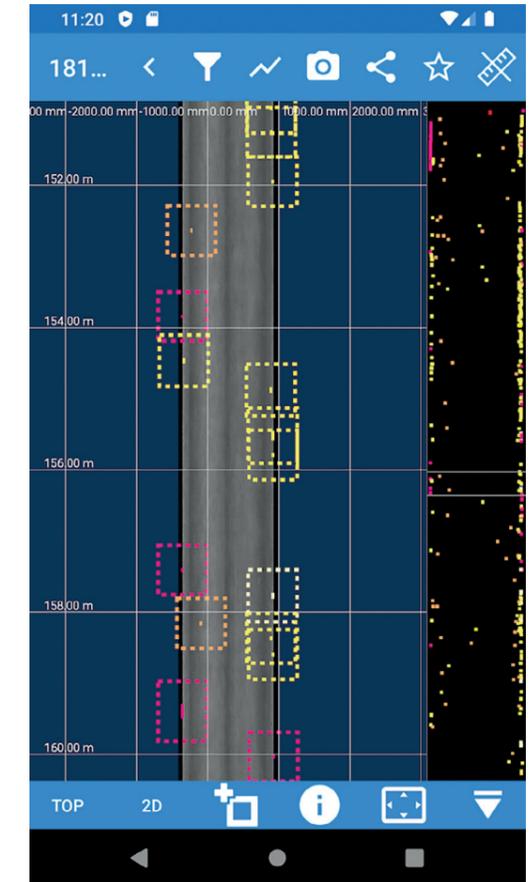
With the help of the IMS Mobile Inspector App (MIA) for surcon 2D and 3D surface inspection systems (available for iOS and Android), inspection results can be viewed while on the move.

Regardless of your whereabouts – whether in a conference room or in the plant – all data is always just a finger swipe away.

The surface map, which can be controlled via gestures, enables fast, intuitive navigation through the inspection results of all surcon 2D and 3D surface inspection systems.

In this way, the detected surface defects can be compared directly with the actual surface of the material. You can of course add your own images quickly and easily to complete the inspection report.

The IMS MIA Inspector App supports all surcon 2D and 3D surface inspection systems. Even simultaneous access to several systems is possible, thereby bundling all inspection results in your hands.



Special Features

- touch screen optimised operation – available for iOS and Android
- easy access to all inspection results wherever they are needed
- W-LAN connection to local inspection server
- no cloud
- easy addition of defect images
- freely scalable defect map



Measuring Systems Aluminium Cold Rolling Mills

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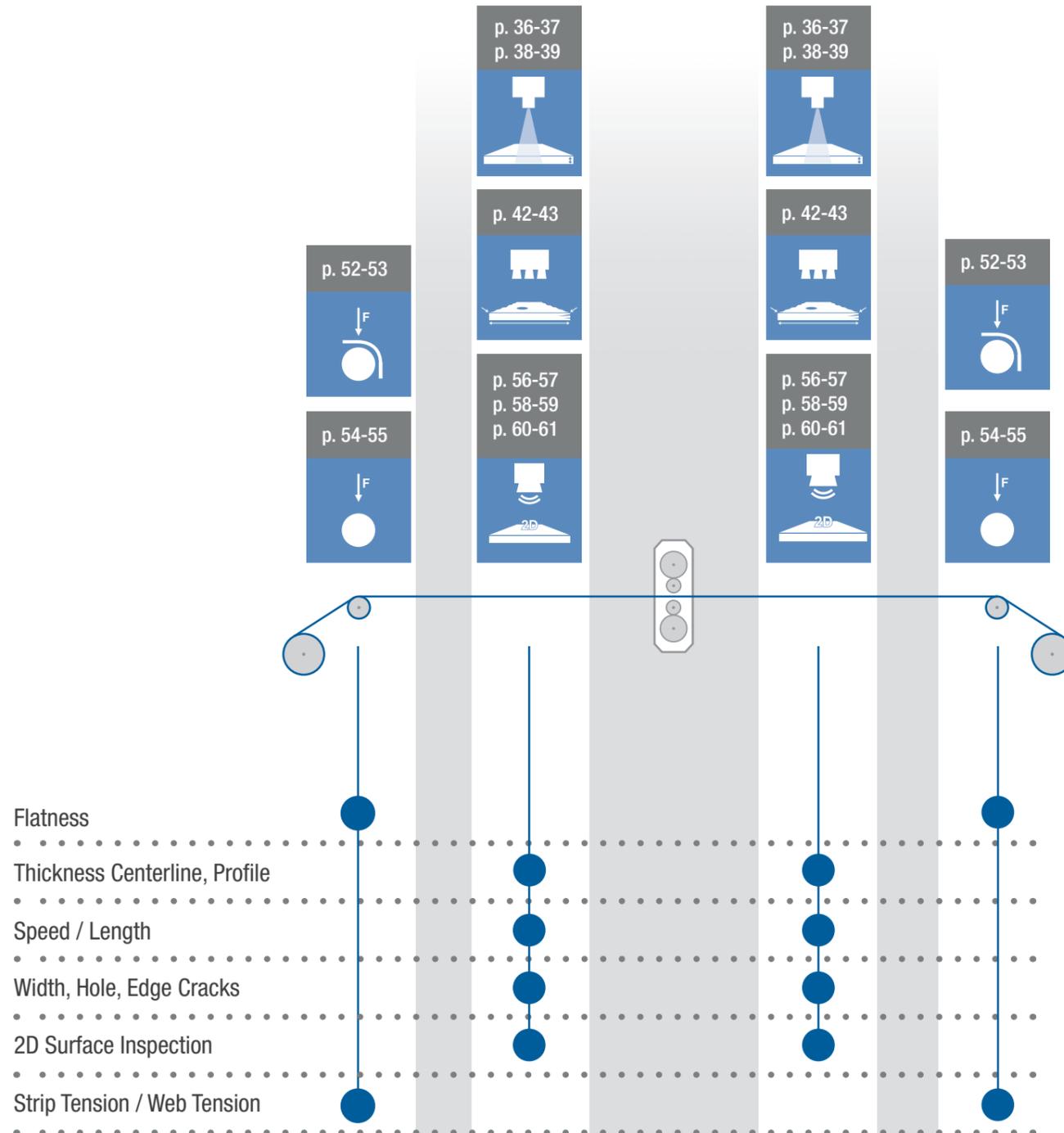
Measuring Systems in Cold Rolling Mills

Rolled strip as thin as a sheet of paper

The final starting material for the various industries that process aluminium products is produced in aluminium

cold rolling mills. To this end, the material prepared in the hot rolling mills is rolled down to the thickness of a sheet of paper, cut to different widths and then wound on to coils again.

Measuring Systems Cold Rolling Mill

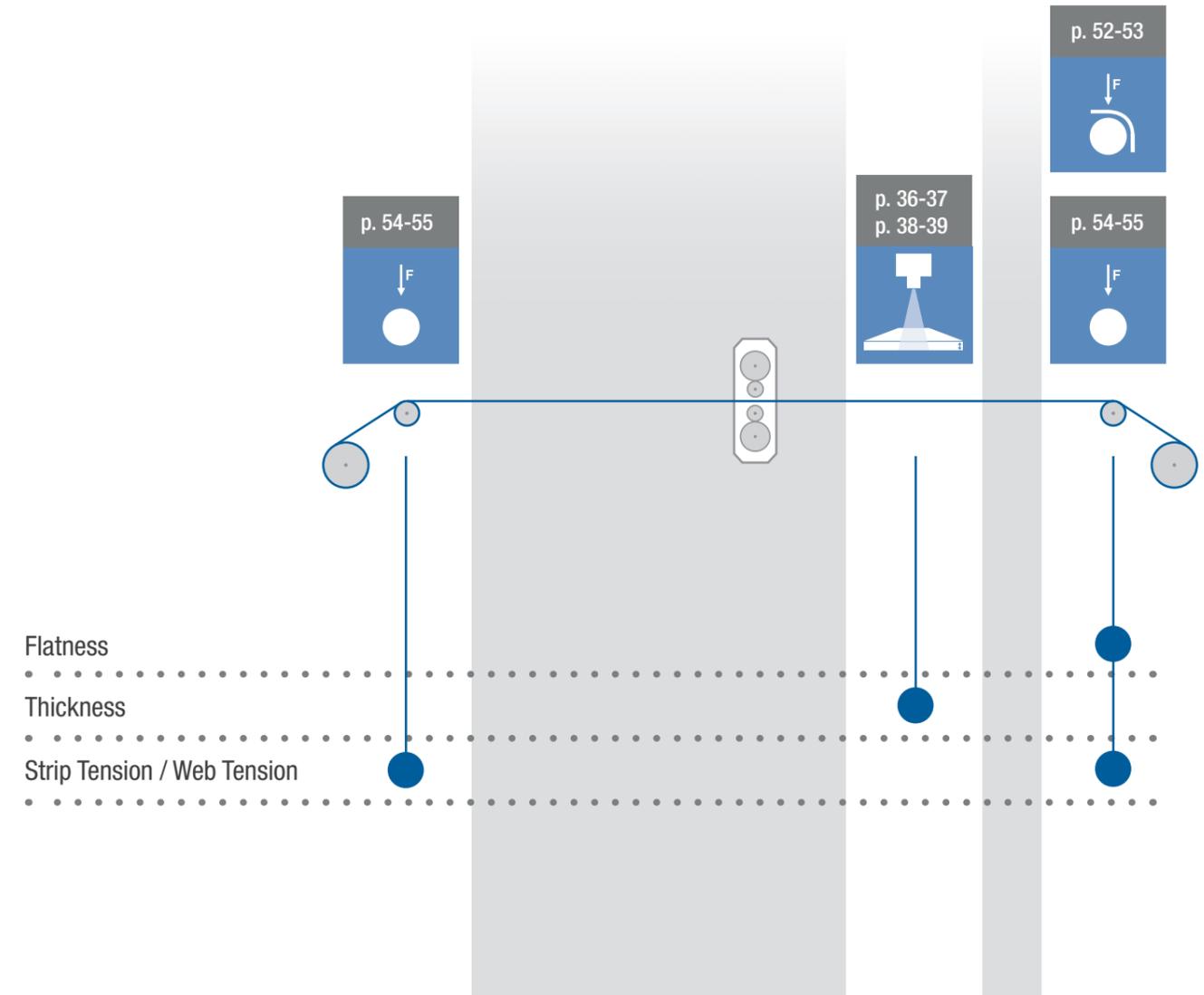


IMS Messsysteme GmbH also provides a convincing product portfolio of inline precision measuring systems for this stage of production in order to reliably fulfil the diverse measuring tasks in modern aluminium cold rolling mills and to document the measurement results as part of quality control.

specation, coating thickness as well as strip and web tension as part of the efficient production of high-quality products within minimum tolerance limits. Output and productivity of the rolling lines are significantly increased and the reject rate is minimised.

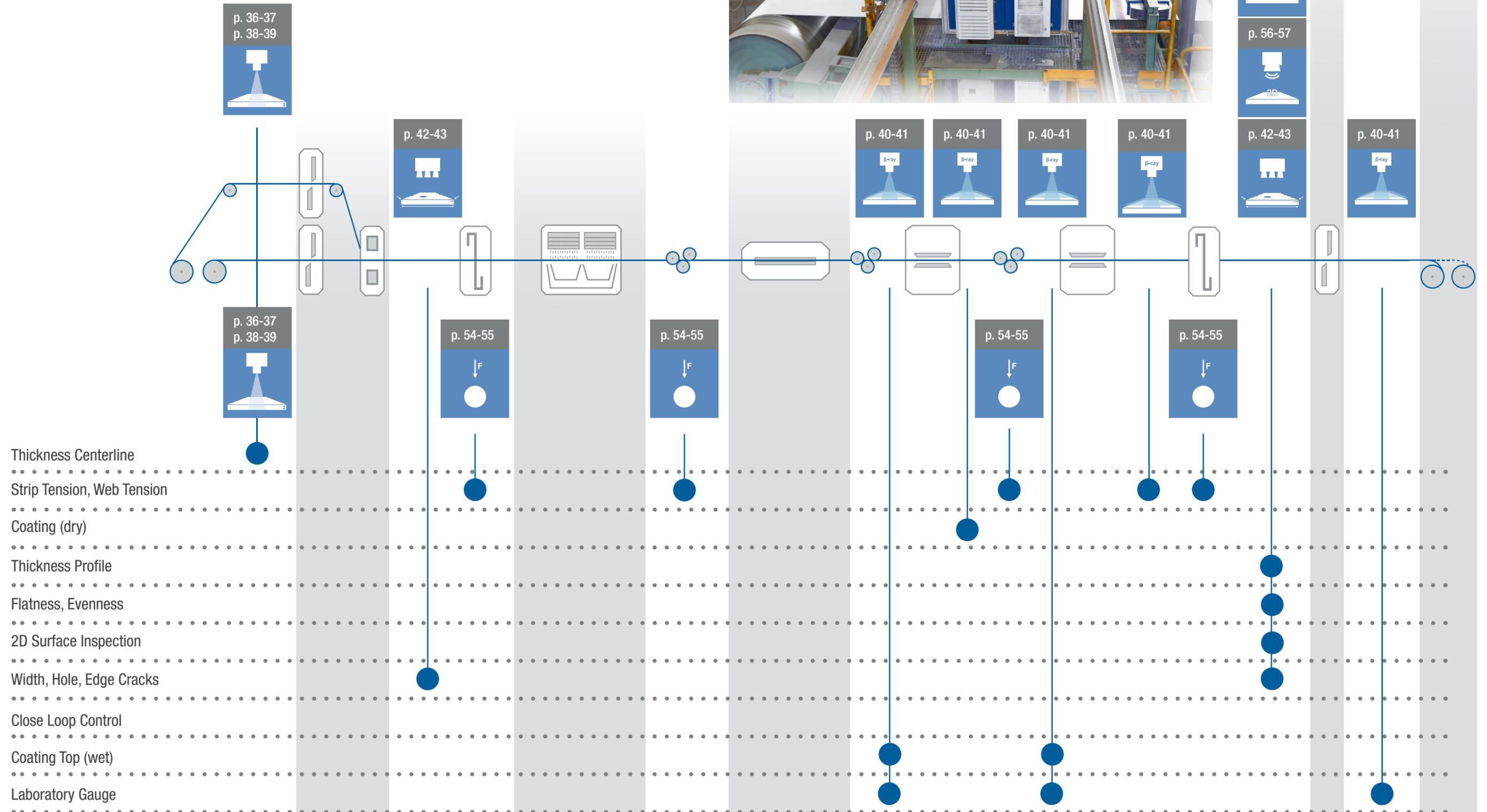
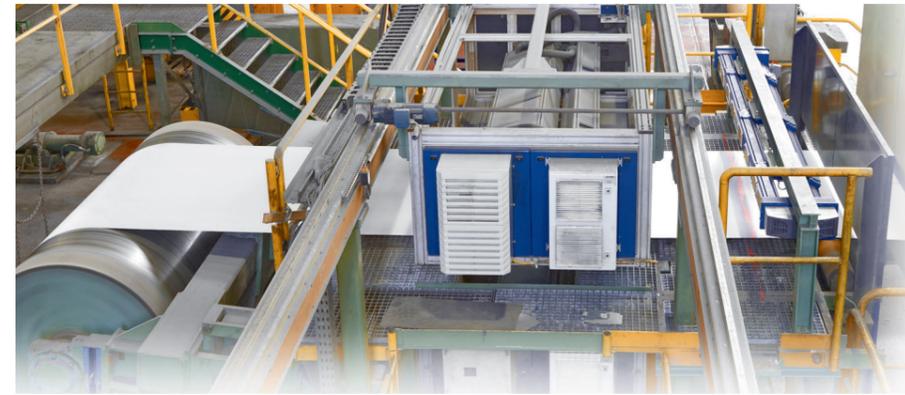
Operators of tandem mills, cold rolling mills and foil stands, as well as downstream process lines such as colour coating lines, benefit from the fully automated systems for measuring thickness, speed, length, width, flatness, hole and edge crack detection, surface in-

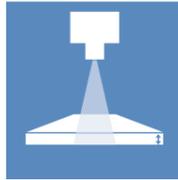
Measuring Systems Foil Mill



Aluminium Coil Coating Line

Measuring Systems Coil Coating Line



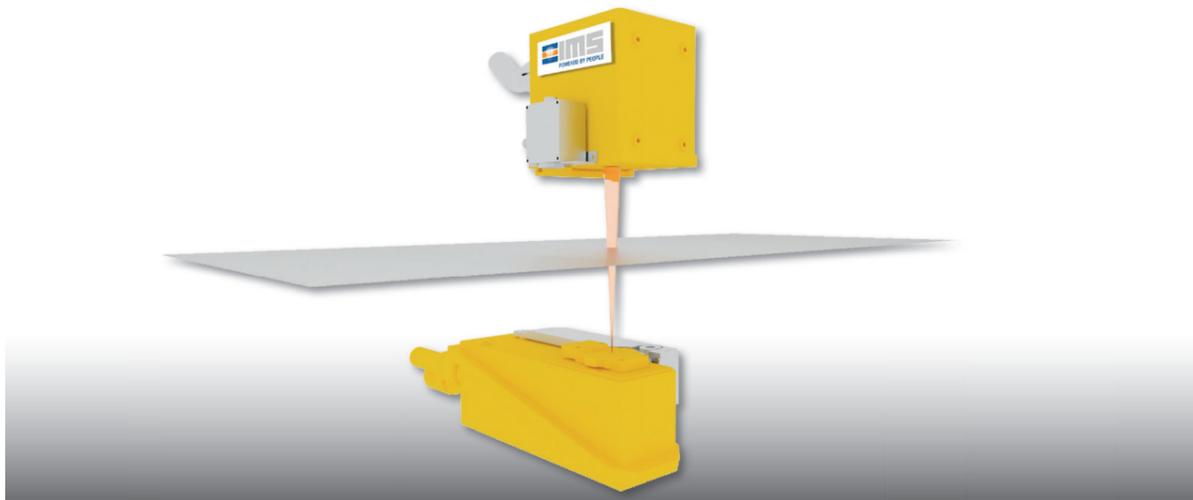


XR Centreline Thickness Gauging System non-retractable gauge (Foil Mill)

By means of continuous, non-contact, real-time measurement, the x-ray thickness gauging system measures the centreline thickness of the foil.

One or three ionisation chambers, installed in the upper housing of the gauge, receive and convert the remaining radiation into electrical signals. Further realtime processing calculates the accurate thickness of the foil.

With this measuring method, the material is irradiated by a single x-ray source, mounted in the lower housing of the gauge.



Measuring Task

- centreline thickness measurement
- optional:
 - fixed mounted non-retractable C-frame
 - swivel mechanism for the detector head

Special Features

- customised design and software
- automatic calculation of alloy correction
- remote maintainability
- key components, such as measuring transducer, compact x-ray generator incl. x-ray control unit and ionisation chambers (detectors) are developed and manufactured by IMS
- compact x-ray generator incl. x-ray control unit:
 - high shock and vibration resistance
 - maintenance-free / low-maintenance high-voltage connectors
 - easy to maintain
- detectors (ionisation chambers):
 - pluggable
 - no cooling required
 - very long lifetime
 - highest signal stability
 - maintenance-free
- x-ray source (metal-ceramic tubes):
 - operated at a constant high voltage level, no standard magazines
 - large difference between maximum and operational load (very long lifetime)

Material data (typical for foil mills)

Typical thickness range:	0.012 to 0.4 mm, but not limited to
Speed:	2,200 m/min, but not limited to
Width:	2,000 mm, but not limited to

Measurement system data

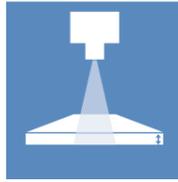
Gauge type:	fixed mounted, non-traversable measuring point
Radiation source:	X-ray tube (metal-ceramic)

Measuring dynamics

Analogue time constant:	5 ms
Total time constant:	5 or 10 ms
Cycle time data output:	2 ms

Measuring accuracy (2 sigma values)

Linearity:	0.05 %, not better than $\pm 0.075 \mu\text{m}$
Long term drift (10 hrs):	0.1 %, not better than $\pm 0.10 \mu\text{m}$
Reproducibility:	0.1 %, not better than $\pm 0.10 \mu\text{m}$
Statistical noise (10 ms):	0.1 %, not better than $\pm 0.10 \mu\text{m}$



XR Centreline Thickness Measuring System XR Traversing Thickness Profile Measuring System (cold rolling mill)

By means of continuous, non-contact, real-time measurement, the x-ray thickness gauging system measures the centerline thickness of the strip.

One or three ionisation chambers, installed in the upper beam of the c-frame, receive and convert the remaining radiation into electrical signals. Further realtime processing calculates the accurate thickness of the strip.

With this measuring method, the material is irradiated by a single x-ray source, mounted in the lower beam of the c-frame.



Measuring Task

- centreline thickness measurement
- optional:
 - measurement of thickness cross profile
 - strip speed / length measurement with integrated strip velocity gauge in the upper beam

Special Features

- customised design and software
- automatic calculation of alloy correction
- remote maintainability
- key components, such as measuring transducer, compact x-ray generator incl. x-ray control unit and ionisation chambers (detectors) are developed and manufactured at IMS
- compact x-ray generator incl. x-ray control unit
 - high shock and vibration resistance
 - maintenance-free / low-maintenance high-voltage connectors
 - easy to maintain
- detectors (ionisation chambers):
 - pluggable
 - no cooling necessary
 - very long lifetime
 - highest signal stability
 - maintenance-free
- x-ray source (metal-ceramic tubes)
 - operated at a constant high voltage level, no standard magazines
 - large difference between maximum and operational load (very long lifetime)

Material data (typical for aluminium cold rolling mills)

Typical thickness range:	0.15 up to 8 mm, but not limited to
Speed:	2,000 m/min, but not limited to
Width:	up to 2,200 mm, but not limited to

Measurement system data

Gauge type:	movable C-frame
Radiation Source:	X-ray tube (metal-ceramic)

Measuring dynamics

Analogue time constant:	2 ms
Total time constant:	5 or 10 ms
Cycle time data output:	2 ms

Measuring accuracy (2 sigma values)

Linearity:	0.05 %, not better than $\pm 0.20 \mu\text{m}$
Long term drift (10 hrs):	0.1 %, not better than $\pm 0.20 \mu\text{m}$
Reproducibility:	0.1 %, not better than $\pm 0.25 \mu\text{m}$
Statistical noise (10 ms):	0.1 %, not better than $\pm 0.25 \mu\text{m}$



Kr Coating Weight Measuring System

The Kr coating weight measuring system is used for continuous, non-contact measurement of coating layers using the isotope-based backscatter method.

The traversing measuring system measures the individual coat layers (primer & finisher) over the entire strip width.

The number of measuring heads required depends on the type of application (wet or dry).

To this end, the characteristic properties of different types of coating can be stored in a database.



Measuring Task

- coat thickness measurement
- quality control
- coating database
- coat layer control (optional)

Special Features

- quick and accurate measurements
- high reproducibility of measured values
- modular measuring head
- low maintenance costs
- highest availability
- fast return of investment
- savings in production costs (lower paint consumption)

Material data

Carrier material:	aluminium
Thickness carrier material (aluminium):	0.2 up to 3 mm
Width:	600 up to 2,100 mm
Coating material:	lacquers (epoxy, acryd, acrylate, acrylic, polyester, polyurethane, HDP, PVDF, plastisol, clear lacquers)
Typical coating area:	5.0 – 400.0 µm (dry)

Measurement system data

Gauge type:	traverse with one measuring head (traversing)
Radiation Source:	Kr-85 spotlight activity from 7.4 GBq
Detector type:	KG 90
Measurement spot size:	Ø 120 mm
Typical working distance:	approx. 30 mm
Traversing speed:	0.5 up to 8 m/min

Measuring dynamics

Sampling rate transmitter:	10 ms
Measuring time constant (analogue) TCA:	200 ms
Total time constant:	200 - 2,000 ms (adjustable)
Measured value output and processing:	10 ms

Measuring accuracy (2 sigma values)

Short-term drift, 4h (IEC 61336):	≤ ± 0.2%, not better than ≤ ± 0.1µm
Reproducibility:	5 - 25 µm coating thickness ≤ ± 0.3 µm 25 - 50 µm coating thickness ≤ ± 0.5 µm 50 - 100 µm coating thickness ≤ ± 1.0 µm 100 - 200 µm coating thickness ≤ ± 2.0 µm 200 - 400 µm coating thickness ≤ ± 4.0 µm
Statistical noise (2σ) : (effective time constant) TCE = 2.000 ms, TCE=TCA+TCD)	5 – 25 µm coating thickness ≤ ± 0.1 µm 25 – 50 µm coating thickness ≤ ± 0.2 µm 50-100 µm coating thickness ≤ ± 1.0 µm bei 100.0 – 200.0 µm coating thickness bei 200.0 – 400.0 µm coating thickness



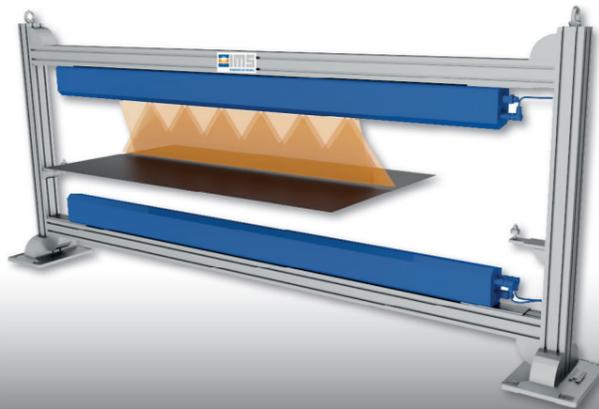
CCS Width, Hole, Edge Crack Detection

The non-contact CCS strip width measuring system is optimally suited for flexible use in many production lines.

From rolling to process and finishing lines, width, holes and edge cracks are detected reliably everywhere.

The measurement beams can be mounted easily on existing plant components or integrated into the line with the help of customised frames.

With an optional software add-on, the system can also be extended to include edge crack and/or hole detection. The exact position of the defects is detected reliably both along the length and across the width of the material.



Measuring Task

- strip width
- strip position
- side shift
- optional:
 - edge crack detection
 - hole detection

Special Features

- reliable IMS hardware ensures long-lasting and low-maintenance operation in a compact and lightweight design
- CCS uses the stereoscopic effect to compensate for changes in position
- intelligent light source with intensity control
- automatic dirt detection and warning
- stationary CCS measuring devices require no maintenance
- optical filters eliminate the influence of extraneous light almost completely
- online visualisation of the results as well as reporting via a user-defined results interface
- optional:
 - blow-off or air wipe system
 - mechanical protection for rough environmental conditions
 - DAkkS-certified calibration standard
- storage of defects as a photo

Material data

Typical thickness range:	up to 6 mm, but not limited to
Max. speed:	up to 1,000 m/min, but not limited to
Width:	up to 2,400 mm, but not limited
Length:	not limited / continuous inspection

Measurement system data

Gauge type:	fixed mounted frame or moveable C-frame
Radiation source:	intelligent LED backlight
Camera type:	CCS (16 cameras per cluster)
Typical working distance camera:	350 mm to 800 mm
Typical working distance backlight:	150 mm to 300 mm

Measuring dynamics

Sampling rate:	up to 28 kHz
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Measuring accuracy for width measuring

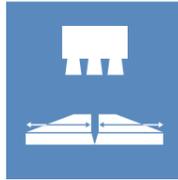
Width accuracy:	$\pm 0.1 \text{ mm } (2 \sigma)^{**1)}$
Max. permitted passline fluctuation:	$\pm 3 \%$ of distance between camera unit and material

^{**1)} The measuring accuracy depends on the distance between the material and camera unit. The above specifications are valid at a maximum distance of up to 400 mm between the material and camera unit.

Measuring accuracy for hole & edge crack detection

Size of hole:	$\geq 0.2 \text{ mm} \times 0.2 \text{ mm}^{**2)}$
Size of edge crack:	$\geq 1.0 \text{ mm} \times 1.0 \text{ mm}$
Max. permitted passline fluctuation:	$\pm 3 \%$ of distance between camera unit and material

^{**2)} The detectable hole size depends on the thickness and speed of the material. Exact details are specified on a system basis.



CCS Slit Strip Width Measurement

With its CCS slit strip width measuring system, IMS offers a width measuring system for slit strips especially for use in slitting lines.

The slit strip width measuring system not only provides exact measurement results when the line is at a stand-

still, but also continuously over the complete length of the coil – individually for every strip.

Transgressions of width tolerance ranges are detected immediately during production and indicated.



Measuring Task

- slit strip width
- optional:
 - strip edge fault detection

Special Features

- reliable IMS hardware ensures a long-lasting and low-maintenance operation, in a compact and lightweight design
- intelligent light source with intensity control
- automatic dirt detection and warning
- stationary CCS measuring devices require no maintenance
- online visualisation of the results and reporting via user-defined results interface for each individual strip
- optional:
 - blow-off and air wipe system
 - DAkkS-certified calibration standard

Material data

Typical thickness range:	up to 6 mm, but not limited
Max. speed:	up to 350 m/min, but not limited to
Width:	up to 2,400 mm, but not limited to
Number of strips:	not limited
Min. strip width:	3 mm
Min. distance between strips:	1 mm
Length:	not limited / continuous inspection

Measurement system data

Gauge type:	fixed mounted frame or moveable C-frame
Radiation source:	intelligent LED backlight
Camera type:	CCS (16 cameras per cluster)
Typical working distance camera:	235 mm
Typical working distance backlight:	125 mm

Measuring dynamics

Sampling rate:	up to 28 kHz
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Measuring accuracy

Slit strip width accuracy:	± 0.05 mm (2 σ) typical
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CCS Pinhole Detector

The IMS pinhole detector is recommended as a high-performance solution especially for rolling mills and processing lines.

In this way, the CCS pinhole detector reliably detects, localises and classifies even the smallest perforations that can occur in the production of strips and foils.

The measurement method is based on the detection of finest quantities of light by CMOS photo sensors.



Measuring Task

- detection of pinholes
- optional:
 - detection of strip edge defects
 - large hole detection
 - width measurement
 - dynamic performance monitoring

Special Features

- reliable IMS hardware ensures long-lasting and low-maintenance operation in a compact and lightweight construction
- multiple classes for pinholes and detection of larger holes
- intelligent, water-cooled, high-performance light source with intensity control
- automatic dirt detection and corresponding warning
- reliable detection, localisation and classification
- online visualisation of the results and reporting via user-defined results interface
- optional: IMS calibration master

Material data

Typical thickness range:	up to 0.1 mm, but not limited
Max. speed:	up to 1,500 m/min, but not limited to
Width:	up to 2,400 mm, but not limited
Length:	not limited / continuous inspection

Measurement system data

Gauge type:	fixed mounted frame or moveable C-frame
Radiation Source:	intelligent high-power LED backlight (water-cooled)
Camera type:	CCS (16 cameras per cluster)
Typical working distance camera:	90 mm
Typical working distance backlight:	100 mm

Measuring dynamics

Sampling rate:	up to 28 kHz
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Measuring accuracy

Pinhole size (diameter):	5 µm (in foils) ^{*)} 10 µm (in strip) ^{*)}
Edge blackout:	≤ ± 3 mm (no mechanical edge masks)
Max. permitted passline fluctuation:	± 3 mm

^{*)}The detectable hole size depends on the strip thickness and strip speed. Exact details are specified on a system basis



CCS Sheet Geometry Measuring System

The CCS sheet geometry measuring system is usually installed between the shear and stacking system.

diagonals (D1, D2), angles (A, B) and squareness (S) for every sheet.

The measurement is based on optical reflection, in which the entire cut edge is detected. The measuring system is able to measure the length (L), width (W),

Storage of the measurement results is, of course, an integral part of the system.



Measuring Task

- length
- width
- squareness
- parallelism
- optional:
 - camber
 - sheets with scrap-minimizing shapes such as trapezoid, rhombus and scroll

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
- continuous sheet geometry measurement from the first to last with extremely high accuracy
- suitable for cut-to-length lines as well as multi-cut-to-length lines
- quality reports for each individual sheet / plate
- online visualisation of results and report generation via user-defined results interface

Material data

Typical thickness range:	up to 6 mm, but not limited
Max. speed:	up to 150 m/min, but not limited to
Width:	up to 2,400 mm, but not limited to
Sheet- / Plate length:	from 300 mm up to 12,000 mm, but not limited to

Measurement system data

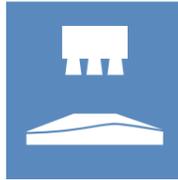
Gauge type:	customized frame with moveable CCS
Radiation source:	High Power LED
Camera type:	CCS (16 cameras per cluster)
Typical working distance:	350 mm with 60 mm field of view

Measuring dynamics

Sampling rate:	depends on application
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Measuring accuracy

Length & width accuracy:	0.1 mm/m (2 σ) typical
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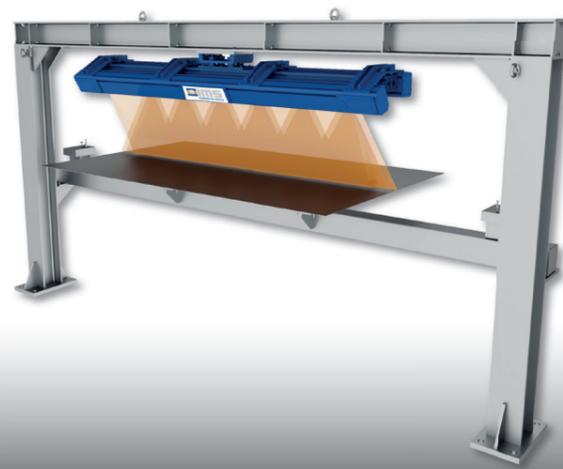
CCS Flatness and Evenness Measurement

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.



Measuring Task

- flatness [I-Unit]
- evenness [μm 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

Measurement system data

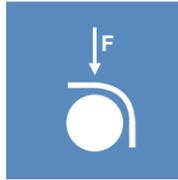
Gauge type:	fixed mounted frame or moveable C-frame
Radiation Source:	Laser (safety class 2M)
Camera type:	CCS (16 cameras per cluster)
Typical working distance camera:	350 mm

Measuring dynamics

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

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

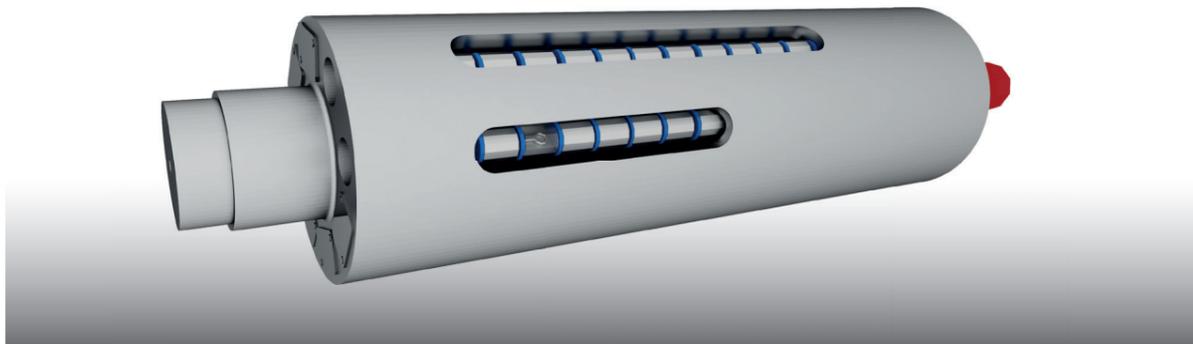


Shapemeter Roll

The shapemeter roll (BFI principle) consists of a solid roll body equipped with a project-specific number of piezoelectric sensors.

The sensors are distributed over the entire roller body as required for the specific measurement task.

The measured value of each sensor is amplified in the roll body, digitised and transferred from the rotating part (rotor) to the static part (stator) of the shapemeter roll via an optical and wear-free rotary transmitter.



Measuring Task

- strip flatness measurement (tensile stress distribution)
- optional:
 - relative strip temperature profile measurement
 - high temperature roll up to 300°C
 - drive system

Special Features

- solid roller body (seamless)
- selectable roll diameter 200 – 500 mm
- selectable measuring zone widths 15 – 60 mm
- roller surface:
 - hardened & ground
 - hard chrome
 - tungsten carbide
 - rubber coating
- low number of electronic and transmission units
- piezo-quartz sensors in single wire technology with low risk of failure
- maintenance-free and digital roller electronics with optical rotary transmitter

Material data

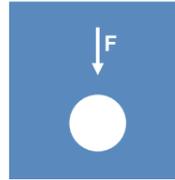
Typical thickness range:	0.006 – 10 mm, but not limited to
Max. speed:	2,000 m/min, but not limited to
Width:	up to 2,800 mm, but not limited to
Length:	not limited / continuous inspection

Measurement system data

Gauge type:	Force Measurement (Piezo-quartz sensors in single wire technology)
Max. Measurement density (number of measurement points per metre of strip):	96 standard version 192 special version
Transmission:	contactless rotary transformer with charge amplifier (24-channel standard version, 48-channel special version)

Measurement accuracy

Measuring range per zone:	0.2–60,000 N
Max. mechanical load per zone without the need to recalibrate the roll:	72,000 N
Dynamically measurable force change per zone:	0.2 N
Accuracy of the measuring device (2σ):	11-Unit oder 10 μm/m

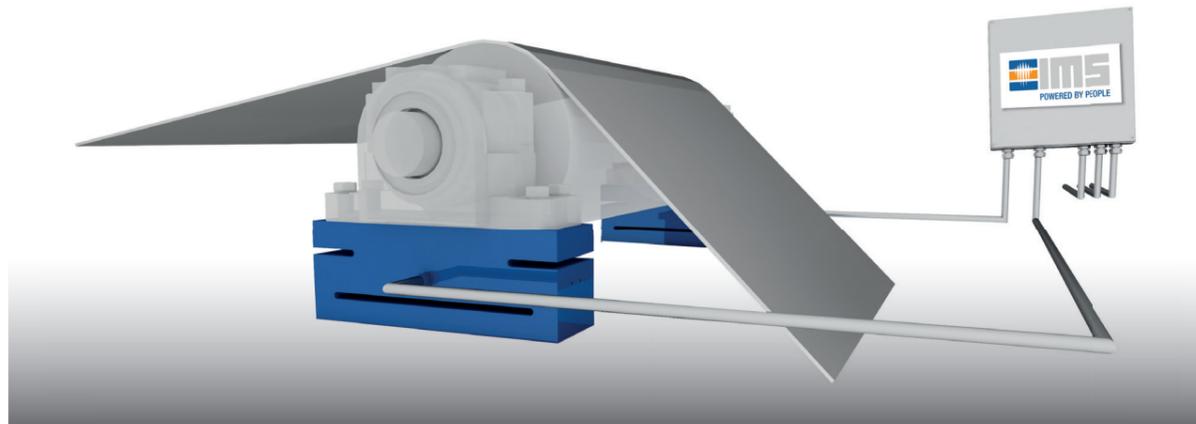


Force Measurement System Strip- / Web-tension Meter

IMS force measuring systems measure strip tension continuously and in real time.

Strain-gauge based force transducers are mounted underneath the bearing housings to measure the reaction force as a function of the wrap angle of the measuring roll.

Optional wrap angle compensation is available for use of a strip tension measuring system to control strip tension during coil winding.



Measuring Task

- measurement of the horizontal or vertical force
- calculation of the strip tension in dependence on the wrap angle

Special Features

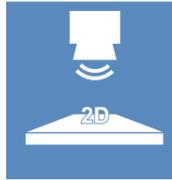
- maintenance and wear free
- long service life
- small, compact and customised
- high dynamics and fast reaction to load changes
- high measuring accuracy and stability
- designed for up to 20-fold overload
- installation in virtually any environment due to hermetically sealed measuring body
- all common standard interfaces available
- sensors from other manufacturers can be adapted
- easy installation and commissioning due to the integrated calibration system and the electronic data sheet (EDS)

Force Transducer HMK / VMK

Nominal sensitivity:	0.5 mV/V
Non – Repeatability / – Linearity:	≤ 0.05 % / ≤ 0.2 %
Zero drift:	≤ 50 ppm / °C
Limit – / Breaking – load:	800 % / 1,200 %
Operating temperature / Protection class:	-10 ..+80 °C / IP67
EDS (Electronic Data Sheet):	yes

Measuring Amplifier MMV

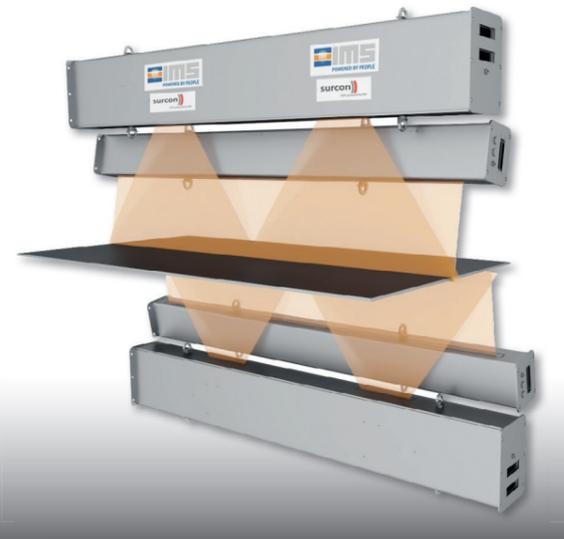
Input channels:	2 optionally 4
Permitted bridge resistance:	≥ 175 Ω
Excitation voltage / Measuring range per channel:	0..15 VDC / ± 0.125..2 mV/V (programmable)
Resolution A/D (input) – / D/A (output) converter:	± 32,767 digit
Sampling rate per channel:	up to 1,000 per second
Length of transducer cable:	≤ 30 m
Operating temperature / Protection class:	-10 ..+60 °C / IP65
EDS (Electronic Data Sheet) Function:	yes
Wide range of fieldbus modules available:	EtherCat, Profibus-DP, Profinet, Ethernet I/P (others on request)
Analog outputs:	2 (current ± 20 mA or voltage ± 10 V)
Digital in- / output:	each 4
Operating voltage (mains voltage):	24 VDC (0,2 A) optionally 85-264 VAC 50-60 Hz (0,8 A)



Surface Inspection System surcon 2D

Surcon 2D surface inspection systems detect and visualise even the smallest defects and anomalies as on-line inspection systems. They impress with a synergy from decades of expertise in the development of precision measuring systems, combined with technically high-end surface inspection.

Surface inspection of the smallest defects is thus possible even under the most difficult conditions such as confined spaces, acidic vapours or oils. In addition, a powerful, intuitive HMI ensures that the most relevant measurement results are always available.



Measuring Task

- 100% online inspection with fast line scan camera and high-performance LED
- automated defect detection and classification
- immediate detection of periodic defects indicating roll damage

Special Features

- reliable IMS hardware and housing with integrated cooling ensure long-lasting and low-maintenance operation
- customised solutions and individual adaptation to local conditions
- optional, integrated blower to protect the system from dust, dirt and splash water and to reduce maintenance requirements
- optionally available as C-frame for maximum convenience and easy maintenance in service position
- powerful toolsets for performance optimisation and data analysis
- apply surface inspection to each processing step for conclusive root cause analysis
- online visualisation of results and report generation via customised results interface
- integrated quality assessment tool – create your own rules for instant results evaluation

Material data

Max. speed:	up to 1,900 m/min for 0.4 mm length resolution
Width:	not limited
Length:	no restriction / continuous inspection possible

Measurement system data

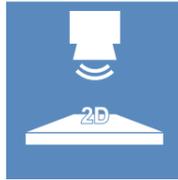
Configuration:	2D bright field
Installation type:	fixed installation or movable C-frame
Camera type:	CMOS line scan camera / Gigabit Ethernet / Camera Link
Illumination source:	High Power LED 450 nm / 630 nm / white more than 500 W/m ² at 500 mm working distance
Typical working distance:	400-1,500 mm

Performance data

Chip size / framerate:	up to 8,192 pixels / up to 140 kHz
Typical resolution:	0.2 mm x 0.2 mm / 0.2 mm x 0.4 mm
Image storage:	defective areas in full resolution full background in reduced resolution short intervals can be stored in full resolution
Image storage capacity:	typical 25 TB (up to 55 TB)
Image type:	open, lossless compressed tiff format
Database:	Microsoft SQL Server

Evaluation

Classification:	feature based, pre-trained AI parallel classification using multiple classifiers
Features for classification:	> 400 feature values per defect
Quality management:	rule based quality grading



Surface Inspection System surcon 2D advanced

Certain defects change their appearance when viewed from different angles. The use of an additional dark field configuration takes advantage of this fact and results in even more precise defect detection.

Parallel image acquisition ensures that no defect will be missed.

The modular design of all IMS surcon 2D surface inspection systems allows the uncomplicated retrofitting of an additional dark field module.

An additional high-resolution dark field module to highlight each defect is particularly recommended for the demanding surfaces in aluminium rolling mills.



Measuring Task

- 100% online inspection with fast line scan cameras and high-performance LEDs
- advanced automatic defect detection at different illumination angles
- immediate detection of periodic defects indicating roll damage using all image channels

Special Features

- reliable IMS hardware and housing with integrated cooling ensure long-lasting and low-maintenance operation
- customised solutions and individual adaptation to local conditions
- optional, integrated blower to protect the system from dust, dirt and splash water and to reduce maintenance requirements
- optionally available as C-frame for maximum convenience and easy maintenance in service position
- powerful toolsets for performance optimisation and data analysis
- apply surface inspection to each processing step for conclusive root cause analysis
- online visualisation of results and report generation via customised results interface
- integrated quality assessment tool – create your own rules for instant results evaluation

Material data

Max. speed (m/s):	up to 1,900 m/min for 0.4 mm length resolution
Width:	not limited
Length:	no restriction / continuous inspection possible

Measurement system data

Configuration:	2D bright field and dark field
Installation type:	fixed installation or movable C-frame
Camera type:	CMOS line scan camera / Gigabit Ethernet / Camera Link
Illumination source:	High Power LED 450 nm / 630 nm / white more than 500 W/m ² at 500 mm working distance
Typical working distance:	400-1,500 mm

Performance data

Chip size / framerates:	up to 8,192 pixels up to 140 kHz
Typical resolution:	0.2 mm x 0.2 mm / 0.2 mm x 0.4 mm
Image storage:	defective areas in full resolution full background in reduced resolution short intervals can be stored in full resolution
Image storage capacity:	typical 20 TB (up to 55 TB)
Image type:	open, lossless compressed tiff format
Database:	Microsoft SQL Server

Evaluation

Classification:	feature based, pre-trained AI parallel classification using multiple classifiers
Features for classification:	> 400 feature values per defect (using both images)
Quality management:	rule based quality grading



Mobile Inspector App (MIA) for Surface Inspection Systems



All surface inspection results at hand at all times!

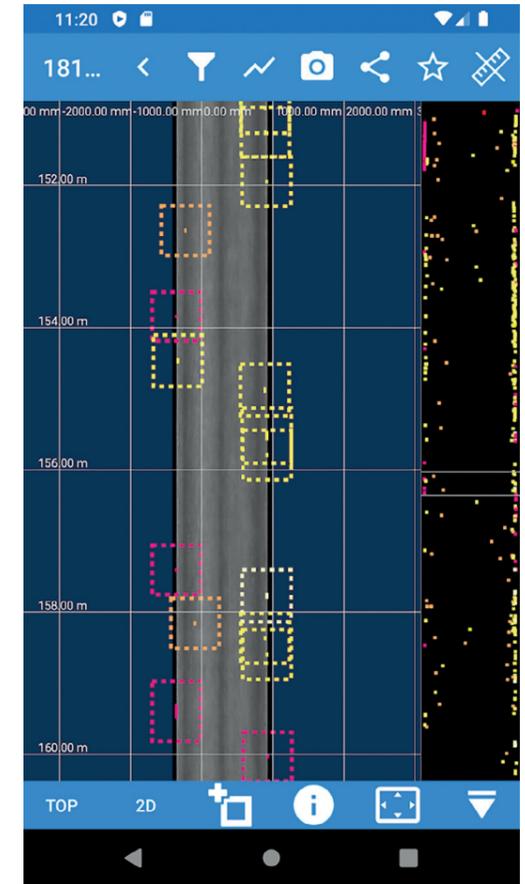
With the help of the IMS Mobile Inspector App (MIA) for surcon 2D and 3D surface inspection systems (available for iOS and Android), inspection results can be viewed while on the move.

Regardless of your whereabouts – whether in a conference room or in the plant – all data is always just a finger swipe away.

The surface map, which can be controlled via gestures, enables fast, intuitive navigation through the inspection results of all surcon 2D and 3D surface inspection systems.

In this way, the detected surface defects can be compared directly with the actual surface of the material. You can of course add your own images quickly and easily to complete the inspection report.

The IMS MIA Inspector App supports all surcon 2D and 3D surface inspection systems. Even simultaneous access to several systems is possible, thereby bundling all inspection results in your hands.



Special Features

- touch screen optimised operation – available for iOS and Android
- easy access to all inspection results wherever they are needed
- W-LAN connection to local inspection server
- no cloud
- easy addition of defect images
- freely scalable defect map





MEVIweb Human Machine Interface (HMI)

MEVIweb

User software developed in-house by IMS with excellent user experience

The impressive performance of all IMS measuring systems is not only defined by their reliable functionality, consistently accurate measuring results and impressive service life. The extremely user-friendly control and regulation software is also an important factor in the success of our radiometric and optical measuring systems.

MEVIweb is the logical further development of the well-known and previously used automation system MEVI-net. Developed by IMS, this human machine interface uses the latest technology standards and always focuses on the user and his or her individual requirements.

As an automation system of the latest generation, MEVIweb fulfils the following tasks using the latest software and hardware technologies:

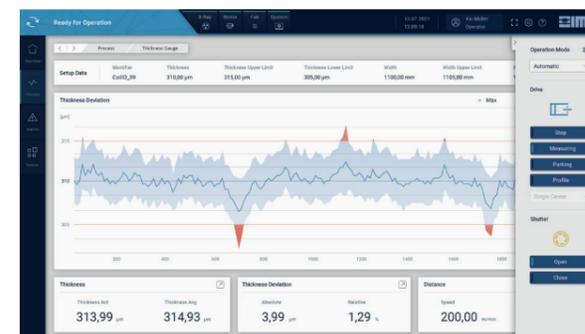
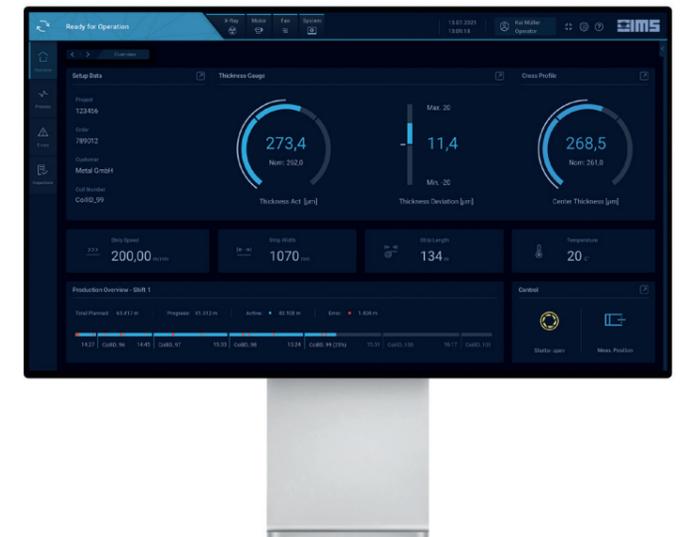
- measurement
- control
- regulation
- visualisation
- quality management

In addition to precise measurement technology, special emphasis was placed during development on diagnostic and maintenance support, including the possibility of remote diagnosis. Programming is effected with modules according to IEC 61131 of the logi.CAD system, using standardised operating systems and interfaces.

The following software extension packages are available to our customers for their individual control and regulation software requirements:

- Q Lite
- Q Basic
- Q Professional
- Q Data Exporter *
- SPS Programming

* (can only be used with Q Lite, Basic or Professional)



CONVINCING USABILITY THROUGH:

- Use of newest technologies (JavaScript, NodeJS, HTML5, CSS, JSON)
- Open communication with standardised, non-proprietary interfaces
- Large test coverage with unit tests, integration tests and simulation
- Scalability
- Platform independence (reduction of dependencies)
- Unified configuration tools & improved user experience
- Web configuration
- Use of smartphones and tablets possible
- Modern appearance with various customisable themes
- Clearly structured, user-friendly interface
- Enhanced functionality



reddot winner 2021
interface design

The Way Forward

We at IMS see ourselves as a self-learning organisation whose corporate concept is geared towards maintaining a high level of know-how at all times as the basis for our highly developed measuring systems: non-contact detection systems which, thanks to their innovative and customer-specific developments, are often not only ahead of the times, but also of our competitors.

We can only achieve and guarantee this market lead over the long term if we work together closely with our customers as partners as the concrete and very individual problems of our customers are our challenges for constant new developments of advanced technology that withstands the harshest conditions thanks to precise yet robust mechanics. Strong partners from research and engineering round off our competence team. The result: precision systems of the highest order for optimally monitored processes in hot rolling mills, cold rolling mills and service centres.

24/7 Service Worldwide

As the world market leader for measuring systems, we know that high-precision technology requires a maximum focus on quality. This also applies to our high-performance and comprehensive service, which turns our measuring systems into true full-business solutions.

Worldwide service around the clock – which we offer and guarantee our customers through our IMS Service Centres distributed strategically around the globe. Even before delivery of the new measuring system, your employees can undergo intensive training in our in-house academy to ensure optimal integration and high-performance operation of the system in your process sequences from the very beginning. Our service team will of course take care of maintenance, repair and any spare parts that may be required for constant smooth operation in your production chain.

Through remote maintenance at the highest technological level, we are able to carry out error diagnoses directly when required and guarantee immediate competent support for your employees on site. Your benefit: optimal service life of all components, while the systems are and remain adapted to the constant development in technical requirements.

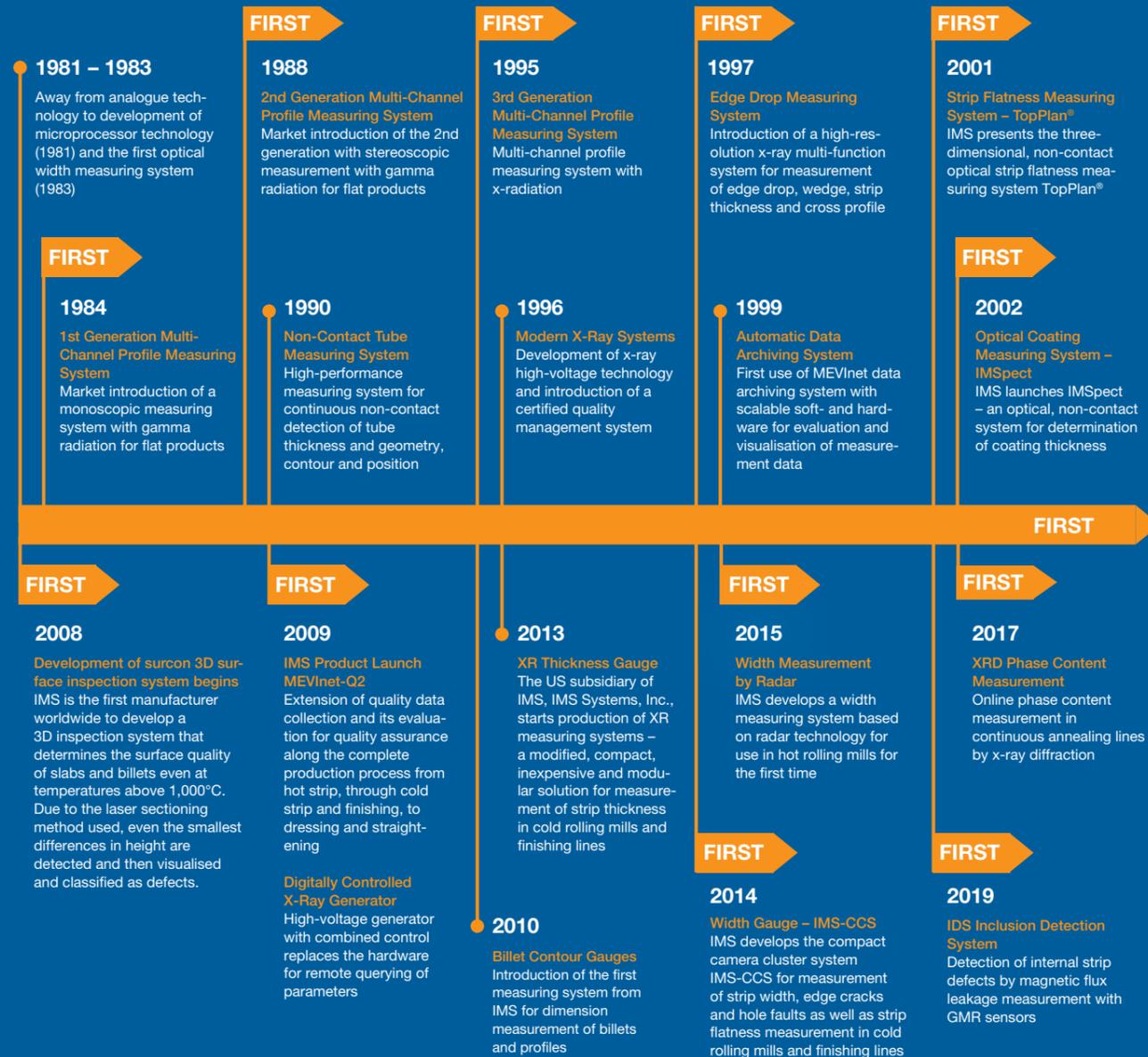
With our three service packages – Basic, Silver and Gold – we offer you exactly the service that is tailored to your requirements and needs. Support via our toll-free 24/7 telephone hotline is already part of our Basic package, and direct remote support is available from Silver onwards. Finally, our IMS Gold service as an all-round carefree package ensures that our service technicians are deployed on site in the event of a malfunction and that spare parts are available and delivered in less than 24 hours.

You want a quote for your system? With pleasure! Simply contact us.



IMS as Pioneer

Since its foundation in 1980, IMS has successfully faced the ever-growing requirements of the rolling industry for high-performance measuring systems. The result: a product portfolio of high-precision, non-contact detecting systems that covers all measuring tasks arising in your production lines. We would like to present outstanding system developments, some of which IMS was the first manufacturer worldwide to bring to market, thereby establishing itself as market leader.



IMS worldwide



- ARGENTINA**
AMPEXA
- AUSTRALIA**
FEC Australia
- BRASIL**
IMS do Brasil Ltda
- CHINA**
IMS Messsysteme (Shanghai) Co., Ltd.
Hongjian Autome Int., Ltd.
- EGYPT**
A.T.S. Company
- FINLAND**
Beijer Oy
- GERMANY**
IMS Messsysteme GmbH
IMS Röntgensysteme GmbH
- INDIA**
IMS Maco Services Pvt. Ltd.
- INDONESIA**
PT. Indojaya Mitra Sarana
- ITALY**
Mediter S.A.S.
- JAPAN**
Nireco Corporation
- KOREA**
IMS Systems Korea Co., Ltd.
- MEXICO**
IMSSYS Mexico S.A. de C.V.
- RUSSIA**
IMS SERVICE LLC
- SERBIA**
UNICOM d.o.o.
- SOUTH AFRICA**
REMAC (PTY) LTD.
- SPAIN**
Industrial Equipment and Consumables, S.L.
- SWEDEN**
Olsson & Falck AB
- TAIWAN**
Litefluid Engineering Co., Ltd.
- THAILAND**
Eurosia Trading Co., Ltd
- TURKEY**
IMS Metalurji Servis Ltd. Sti
Tarakcioglu Makine Techisat Ltd. Sti
- UNITED ARAB EMIRATES**
IMS Maco Measuring Systems (FZC)
- USA**
IMS Systems, Inc.
- VENEZUELA**
IMS Venezuela C.A.
- VIETNAM**
IMS Messsysteme GmbH Vietnam
Representative Office
Cuong Phat Import and Export
Trading Co., Ltd

A close-up photograph of a clear glass globe resting on a vibrant green leaf. The globe is slightly tilted, and its surface reflects the surrounding light and the leaf's texture. The background is softly blurred, showing more of the leaf and a hint of a person's face in the distance.

„Responsibility means to blame yourself for the lack of sustainability.“

(Ronny Boch, geologist, free author)

Conservation of resources through precision out of passion and quality out of conviction

We at IMS, as the world market leader for measuring systems, are aware of our social responsibility of sustainable management!

To give our customers, suppliers and stakeholders a transparent insight into concrete measures we have implemented in the IMS Group, we launched the project IMSocial in close adherence to the principles of Corporate Social Responsibility (CSR).

But for us at IMS, IMSocial is more than just a project! IMSocial is a belief and stands for the values of our corporate philosophy.

We not only want to achieve sustainability in our products and customer relations, but also place the same demands on our social, ecological and economic responsibility.

The first thought that comes to mind in connection with the non-contact measuring systems from IMS for the steel, non-ferrous metal and aluminium industries is certainly not one of active conservation of resources.

However, our isotope, x-ray and optical measuring systems do exactly that: they save and preserve resources!

The IMS product portfolio comprises numerous measuring systems and processes for various types of measurement. Our systems deliver and document exceptionally precise measurement results under the toughest conditions in hot and cold rolling mills as well as service centres. In this way it is possible to detect material defects, surface irregularities, tolerance and dimensional deviations and many other factors that, in the worst case, would lead later to material rejects at an early stage during the manufacturing process.

After all, the sooner even minor defects – which in steel products can already render them useless – are detected, the faster machining processes can be corrected. And precisely this contributes significantly to active climate protection as it is no longer necessary to produce new products to substitute defective ones, thereby saving energy and water, and also reducing reject rates significantly.

Learn more about IMSocial and visit us at www.imsocial.info!

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