



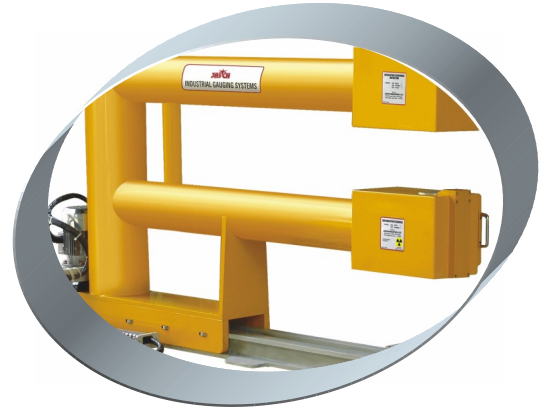
Your Partner for Online Instrumentation

Thickness Gauges for the Aluminium Industry



For all rolling machines used in the aluminium and other non-ferrous materials, the basic measurement required is the thickness of the sheet.

The measurement is displayed as microns (or mm), which is the basic parameter the operators are using to ensure that their production is always within the acceptable thickness range.



Measuring principle

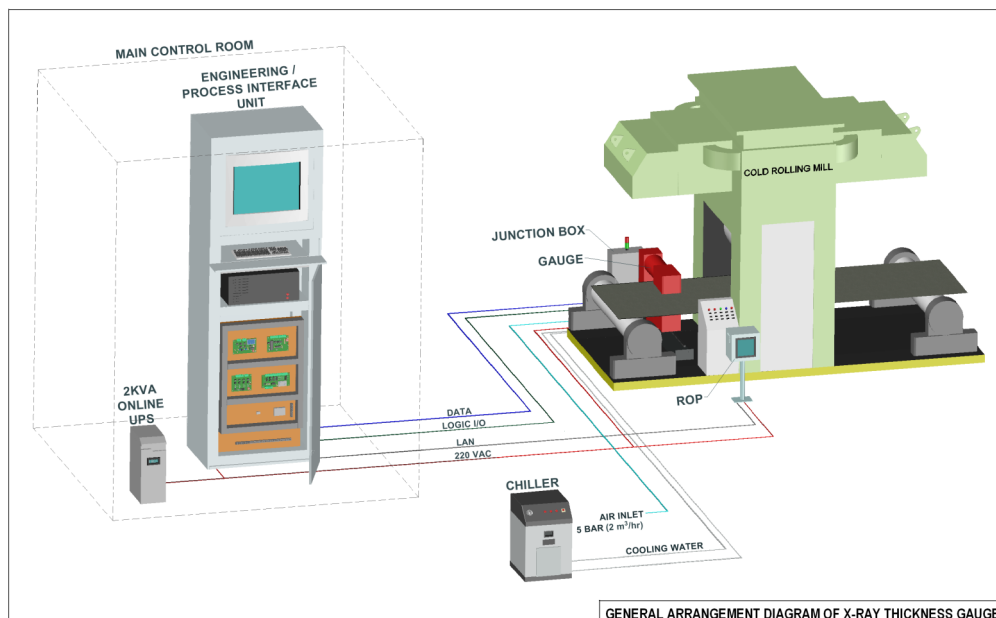
Our systems for thickness measurement are based on the attenuation of X-rays radiated by the source of known intensity (standard 30 kV), as it passes through the material. The thickness is determined by sensing variations in the residual energy, compared to reference samples (calibration and alloy correction).

The gauges are designed to be flexible and with open software architecture, without compromising on system reliability, availability ($\geq 99,8\%$) and ease of maintenance: our systems are using the latest in electronic technology and proven heavy duty mechanical components.

System Architecture

The system is designed to concentrate on the most important task of accurate and stable thickness measurements. The sensors are mounted on a precision platform (C-frame) which carries the sensors to the desired position of measurement.

The C-frame has all the function control and signal conversion/processing electronics included in a junction box. All measurement data from the gauge is sent digitally via RS485 link to a PC based engineering unit, which processes all measurements, generates running displays, implements calibration tools, display maintenance data and machine operations.



High Quality Construction

The movement platform (tracks) carries the sensors on a C-frame type mounting and continuously measures the sheet thickness. Frame precision and stability are crucial for obtaining proper measurements from the sensors.

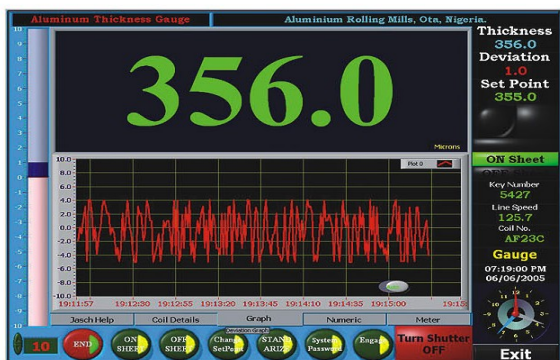
The design is based on O-Beam structures welded together to form a "C" shape construction. The resulting C-Frame structure is very strong, rigid and mechanically stable. It is only with this rigid structure that makes it possible to mount sensors and maintain high precision alignment while measuring.

During the manufacturing process, the source and detector boxes are precisely aligned to within $\pm 0.5\text{mm}$ in x, y and z directions. The materials used are chosen for precision and reliability under heavy duty daily use.

With the rigid C-Frame design, this precision alignment is mechanically locked into the system. The track movement is on heavy duty linear motion system, based on customer requirement of either motorized or pneumatic drive mechanism.



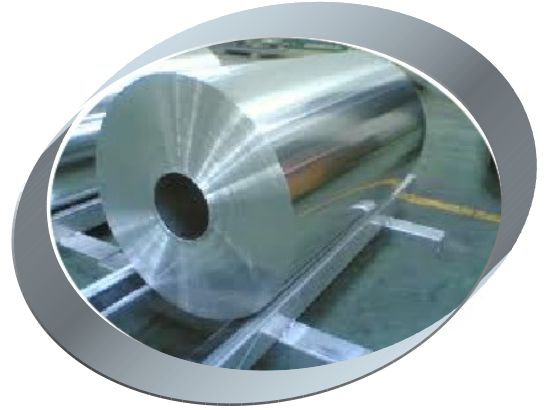
Operator Online Display



The Operator interface is implemented on another PC based system which is connected to the processing system through Ethernet link. The Operator interface is based on Labview™ which is highly user customizable and adaptable to varying mill requirements. Comprehensive production reports are generated for storage and hard copy.

Main Applications

- Continuous casters
- Hot rolling mills
- Cold rolling mills (universal and breakdown, extended range)
- Foil mills



Available Options

- Fixed measuring heads for compact foil mills
- Scanning frames for continuous casting machines, with dedicated software
- Various kV settings for extended thickness range (e.g. hot mills)

Typical Specifications

- Alloys: 1xxx, 2xxx, 3xxx, 4xxx, 5xxx, 7xxx, 8xxx Series
- Thickness range: 10 mm to 8 mm and above
- Source type: X-Ray 30 kV/5W standard, 40 kV and 60 kV optional
- Response time: 10 ms
- Global accuracy: $\pm 0,2 \mu\text{m}$ or $\pm 0,2 \%$
- Reproducibility: $\pm 0,1 \mu\text{m}$ or $\pm 0,1 \%$
- Statistical noise: $\pm 0,15 \%$ (2 s)
- Drift: $\pm 0,2 \mu\text{m}$ or $\pm 0,2 \%$ in 8 hours

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