

OIL LAYER MEASUREMENT



With ongoing expansion of automation within the metal processing sector, slight irregularities in raw materials may have a profound impact on production continuity.

A constant and even oil film is essential for handling sheet metal material. Dry or over-oiled sheets lead to costly post processing or insufficient product quality.

The new Limax Oil Layer Thickness Measurement System constantly monitors the oil film according to given parameters and warns the user in case of compliance errors.

This feedback opens opportunities to readjust oiling processes immediately and helps reducing costs for system downtimes and rectification to a drastic minimum.

With our expertise as a manufacturer of electrostatic oiling machines, we have developed a fully automized measuring system that includes the Infralytic NGO3 infrared spectroscopy sensor as well as an evaluation unit. The system is available with a variety of mounting options.



SENSOR

The system's infrared spectroscopy sensor measures oil layer thicknesses on metal sheet material - contactless.

It automatically compensates band vibration and therefore delivers continuously exact data. Being mounted on a linear drive, it constantly monitors the sheet oiling process and validates the data for you.

Common oil qualities are pre-calibrated to ensure dedicated measurement. The band speed independency makes the adaption to your individual process flawless.



Measurement method	infrared spectroscopy
Measured variables	Oil and water layers in g/m ² and mg/m ²
Distance to strip	200 mm
Allowed Strip hight deviations	+/- 20 mm
Ambient temperature range	0 °C up to +55 °C
Measurement frequency	≤ 120 Hz
Measurment range	Standard: $0,3 - 6 \text{ g/m}^2$, > 0,02 g/m ² possible with special calibration
Strip Materials	All metals and ceramics
Quantifiable coatings	All translucent organic substances
Repeatability (1 Sigma noise equivalent)	1 nm (1 mg/m²)
Absolute accuracy	< 200 nm for group calibrations and < 30 nm for specialized calibrations
Data transfer	RS 422 or ethernet
Protection class	IP65



Infrared light from internal emitting source

- 2 Reflected infrared light
- Internal infrared spectrometer and wavelength filter

Metal sheet material

Measurement Principle

The infrared sensor head makes use of the Lambert-Beer law. According to this, the oil layer thickness is related to the total absorption of emitted light. Infrared light penetrates the oil layer and reflects at the metal sheet. The evaluation of the reflected light by the sensor head's internal spectrometer leads to a precise layer thickness measurement.

Benefits of Oil Layer Measurement

High quality metal sheet material, mainly used within the automotive industry, requires very accurate oiling. Dry spots or over oiled areas lead to increased abrasion of pressing tools and therefore to complaint processes and liability issues. Oil layer measurement helps to prevent additional costs for increased tool repairs or reworking. Metal sheets are under constant quality control and can leave the plant with a certificate.





MOUNTING OPTIONS

Our Oil Layer Measurement System is available with several mounting options tailored to the individual operating area.

Each system can be installed directly to our Electrostatic Oiling Machines or 3rd party machines.

Also, the system can be attached to poles for stand-alone purposes.

Individual designs and mounting options are possible per request.

First Time: Mobile Oil Layer Measurement Device



We proudly announce a world novelty: Mobile in-line Oil Layer Measurement.

Besides the regular mounting options we now offer a mobile version of our sensor. Making the measurement process mobile has many advantaged. Sheet material that needs to be monitored or certified no longer is required to be processed in the line with a fixed system. This way a single device can be implemented in several lines, only when needed. Process times will increase and investment costs for underutilized measuring units will decline. Sheet purchasing departments can hand out mobile units to production facilities to monitor suppliers temporarily. Service companies can rent out devices for third party measuring service and many more use cases are possible.

Mobile devices can be transformed into fixed devices at any time. Due to the overall modular design of the system's mounting accessories, changes throughout the general operating time are possible.



Untreated cold sheet Hot-dip galvanized sheet Fire-aluminum sheet Electrolytically galvanized sheet (automatic phosphating detection) Galvannealed

Aluminium (Millfinish and EDT)

Graphic presentation of measurement results.

All results within a given threshold can be hidden for easier interpretation.

Applications



STUTTGART

Limax GmbH is located in Solingen, Germany. Solingen as well as the whole surrounding of the Rhine-Ruhr area is world famous for highquality manufactured steel producing and processing facilities and machinery. All Limax machines and products are engineered and manufactured with highest precision, accuracy and German craftsmanship. Limax has established a multi national trade gateway for proven, sustainable and promising technology. While providing its customers with most sophisticated products, Limax also introduces emerging technology from all over the world to the German domestic and the European market to strengthen distribution, infrastructures and networks.

Limax GmbH Flensburger Straße 5b 42655 Solingen Germany +49 212 23387688 info@limaxgmbh.de www.limaxgmbh.de