

SHADOW

NON CONTACT THICKNESS MEASURING DEVICE

This non-contact thickness measuring device is for films up to 3,5 mm thickness, a maximum width of 4,5 m and with a repeatability of $\pm 1,5 \mu\text{m}$. It is equipped with two sensors, laser scanner and eddy current.

Composed of:

- Measuring frame with integrated control cabinet
- Traversing unit with electrical drive
- Measuring sensor mounted on a pneumatic lift-off-device on the traversing unit
- Control cabinet with industrial PC, 17" Monitor, keyboard drawer and mouse
- Connection cable PC-measuring frame, 10m length

Visualisation

- Cross profile diagram as bolt and line chart
- Trend and SPC analysis
- Roll protocol
- Recipe storage
- Alarm and history



Technical Data:	SHADOW
Measuring system	Shadowing / eddy current
Max. measuring thickness	3,5 mm
Measuring gap	5,5 mm
Diameter of the eddy sensor	30 mm
Measuring spot diameter	0,5 mm
Sensor resolution	0,5 μm
Repeatability	$\pm 1,5 \mu\text{m}$
Measuring speed	10 – 300 mm/s adjustable
Diameter of the reference roller	200 mm
Dimension of control cabinet	600x600x1960 mm
Colour:	RAL 7035/7022

Thickness gauges



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Electrical Supply:	SHADOW
Supply voltage:	115/230 VAC
Supply frequency:	50/60 Hz
Max. power consumption:	700 W
Max. current consumption:	5 A
Electrical equipment to EN 60204	

Supply compressed air:	
Operating pressure:	6 bar

Ambience:	
Max. ambient temperature:	40°C
Max. air humidity:	95%, without condensation
Max. film temperature:	90°C
Documentation:	Every EU Language



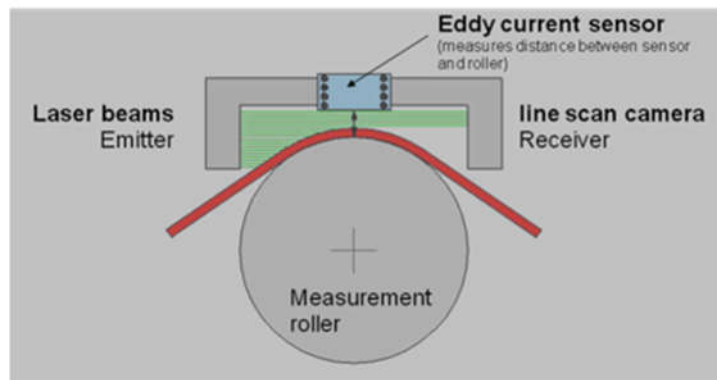
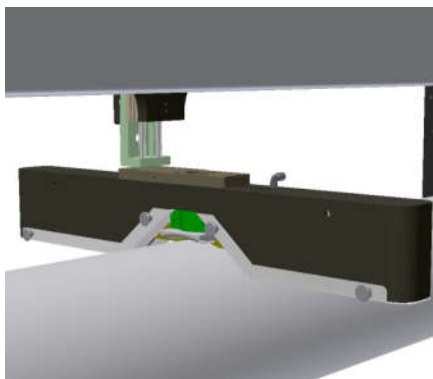
Measuring principle:

A light curtain is guided over the measurement roller and the sheet.

A receiver (line scan camera) detects light beams or shadow due to the thickness of the sheet.

An eddy current sensor detects the distance between the laser sensor and the roller.

With the result of both measurements (shadowing and eddy current) the thickness of the sheet is calculated.



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Calibration:

No calibration with an external calibre is needed; measurement is independent from sheet properties!

Features/Screen frames:

Description of most important screenshots

Line chart:

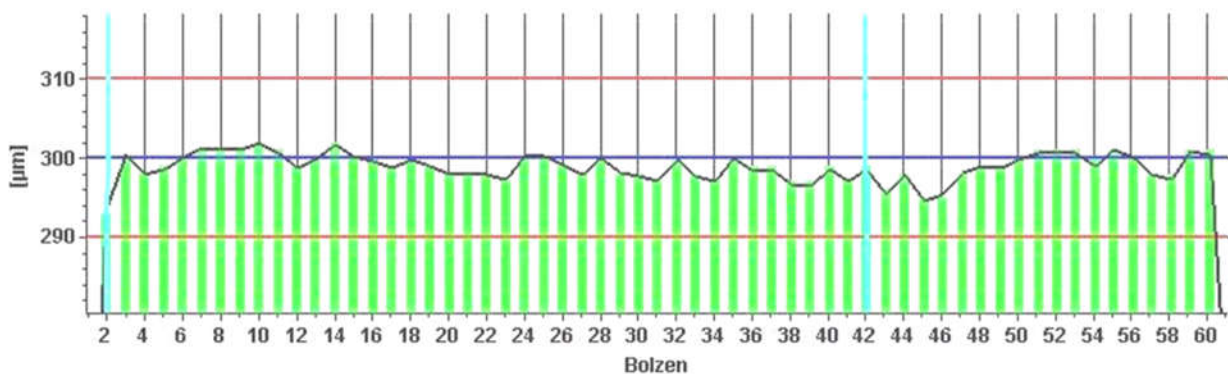
- Actual thickness profile displayed over measuring width
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

Bolt diagram:

- Actual thickness profile displayed over bolt numbers
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

Numeric displays

- Actual thickness (μm) according displayed sensor position
- Average thickness according cross profile, 2 Sigma value, min. and max. thickness
- Tolerance set values
- Thickness set value
- Net width set value



Bolt diagram

Trend diagram:

- Trend diagram shows process over 24 hours
- Most important values like set value, actual/average thickness according cross profile, min. and max. 2 Sigma, tolerances and line speed will be displayed in a line diagram.

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Inspect mode

Zoom in graphics (thickness profile and bolt diagram) for close inspection

Buttons

- Production parameter (opens frame: production parameter)
- Analysis (opens frame: analysis)
- Password (enables setting of passwords for different protected frames)
- Alarms (displays alarm in readable text)
- Print
- Roll changing (reset parameters of frame production parameters, running meter e.g.)
- Roll protocol (report of every roll can be displayed, stored and printed)

Production parameter

Frame for setting production parameter

- Data of order: order nr., customers name, article nr.,
- Production parameter: thickness set value, + and – tolerances, resolution of displays, net width, etc.

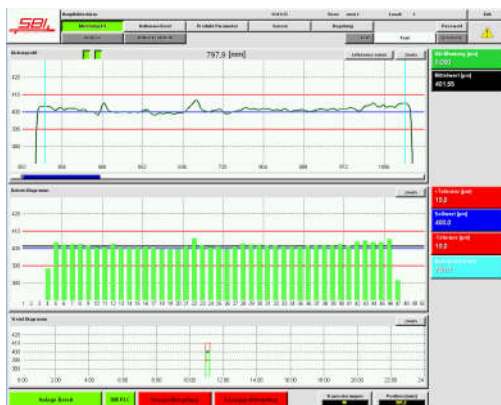
Analysis:

This frame displays production data and trends

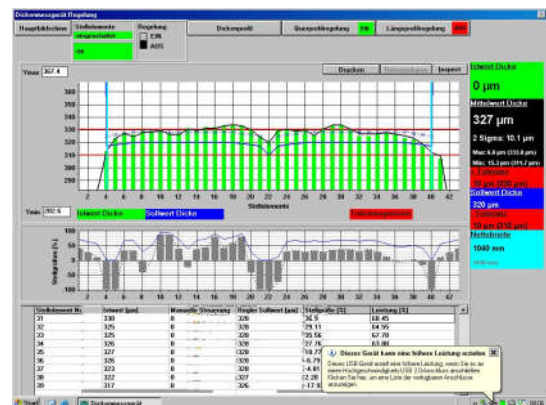
- Production data: time of start, time since start or roll changing, running meter since roll changing, weight, speed, etc.
- Trend: Displays trend graphics of last 24 hours, older trends are stored and can be loaded for viewing and printing. Trend graphics shows thickness average, set value and tolerances.

Thickness Control

Optional frames for control of thickness with automatic extrusion dies.



Main screen: thickness- and bolts diagram



Thickness control (option)

Subject to technical changes and mistakes!