

STG ... thick sheet

NON-CONTACT THICKNESS MEASURING DEVICE WITH LASER DISPLACEMENT SENSORS

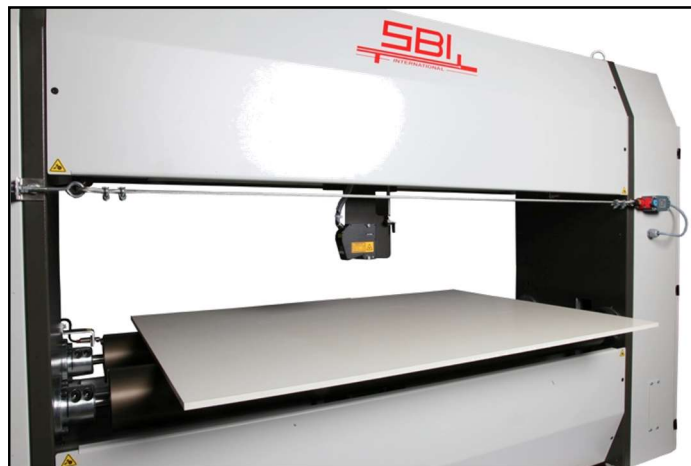
This non-contact thickness measuring device is for sheet up to 40 mm thickness, a maximum width of 4,5 m and with a repeatability of $\leq \pm 20 \mu\text{m}$ (depending on measurement range of installed sensors). It is equipped with laser displacement sensors.

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
- Batch protocol
- Recipe storage
- Alarms and history



Technical Data:	STG
Measuring system:	Laser triangulation / reflection
Measuring range:	15 mm (higher range influences accuracy)
Max. thickness	40 mm (thicker on request)
Clear height:	250 mm
Measuring spot diameter:	0,2 mm
Resolution Sensor:	1 μm
Repeatability:	$\leq \pm 20 \mu\text{m}$
Measurement speed (measurement direction):	10 – 100 mm/s adjustable
Movement speed (reverse direction):	10 – 200 mm/s adjustable
Calibration:	automatically, using a calibre
Diameter of rollers:	80 mm
Colour:	RAL 7035/7022

Thickness gauges



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Electrical Supply:	STG
Supply voltage:	230 VAC \pm 10 %
Supply frequency:	50 Hz \pm 1 %
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 (valid for control box)
Max. air humidity:	95%, without condensation
Max. sheet temperature:	120°C
Documentation:	English



Measuring principle:

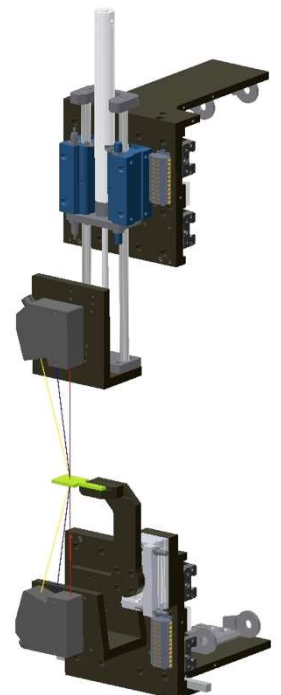
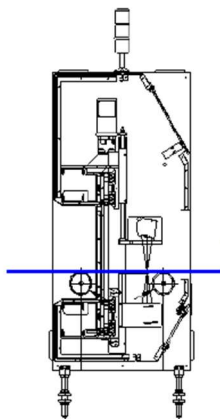
Noncontact direct thickness measurement.

On top and bottom side of the extruded sheet, two laser displacement sensors are scanning in a constant distance from the sheet.

These laser-triangulation sensors with high resolution and excellent linearity are designed for precise measurements in industrial applications.

Each sensor is guided on two linear bearings across the sheet and are driven by servo motors.

Utilising a calibration curve of the measuring frame (detected on a calibration scan without sheet) the measured values of the laser sensors determine a thickness profile, it is displayed on the screen.



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Features/Screen frames:

Description of most important screenshots

Line chart:

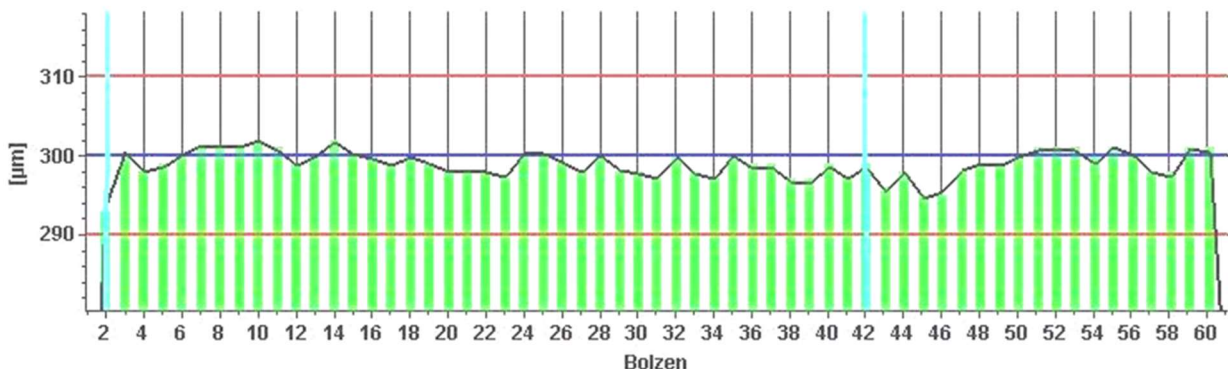
- Actual thickness profile displayed over measuring width
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

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



Inspect mode

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

Buttons (links to open other frames)

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

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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 batch changing, running meter since batch 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.



Figure 1: Thickness- and bolts diagram



Figure 2: Control diagram

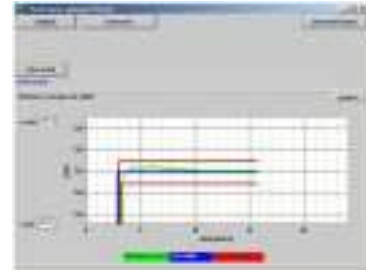


Figure 1: Trend (history diagram)