

KAPA 5G

NON-CONTACT THICKNESS MEASURING DEVICE

This non-contact thickness measuring device is for films up to 2 mm (new: KAPA II: max. 6 mm) thickness, a maximum width of 4 m and with an accuracy of $\leq 0,1\mu\text{m}$. It is equipped with dual sensor, capacitive 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
- Connection cable control cabinet - measuring frame, 10m length

Visualisation

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



Technical Data:	KAPA	KAPA II
Measuring system	capacitive/eddy current	
Max. measuring thickness	2000 μm	6000 μm
Measuring gap	4,5 mm	9,5 mm
Diameter of the sensor	30 mm	45 mm
Measuring spot diameter	12 mm	18 mm
Sensor resolution	0,05 μm	0,5 μm
Accuracy	$\leq 0,1\ \mu\text{m}$	$\leq 1\ \mu\text{m}$
Measurement speed	10 – 300 mm/s adjustable	
Calibration	necessary for each material	
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:	KAPA 4G
Supply voltage:	115/230 VAC \pm 10 %
Supply frequency:	50/60 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

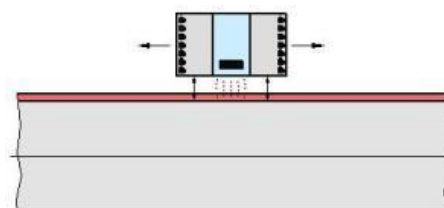
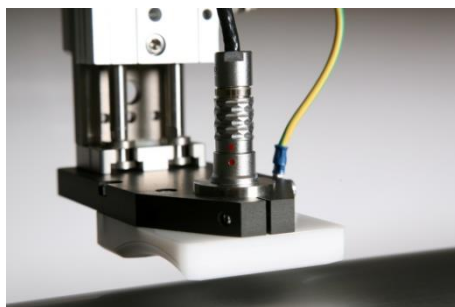
Ambience:	
Max. ambient temperature:	40°C
Max. air humidity:	95%, without condensation
Max. sheet temperature:	90°C
Documentation:	Every EU Language



Measuring principle:

Non-contact indirect thickness measurement.

Capacity between sensor and roller depends on dielectric of measured sheet and distance between sensor to roller. To eliminate influence of distance between sensor to roller this distance is measured permanently with an eddy current sensor (located together with capacitive sensor in same casing). According to this measured distance the result of capacitive sensor is corrected.



Calibration:

In calibration mode the sensor is placed on a fixed position (traversing stopped) during production. Now measurement happens along a line of the sheet in extrusion direction. A piece of sheet needs to be cut out along this line and measured manually. This manually measurement need to be keyed in software as calibration value. Calibration is only required once per material or formulation and can be stored in the recipe.



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Features/Screen frames:

Description of most important screen shots

Line chart:

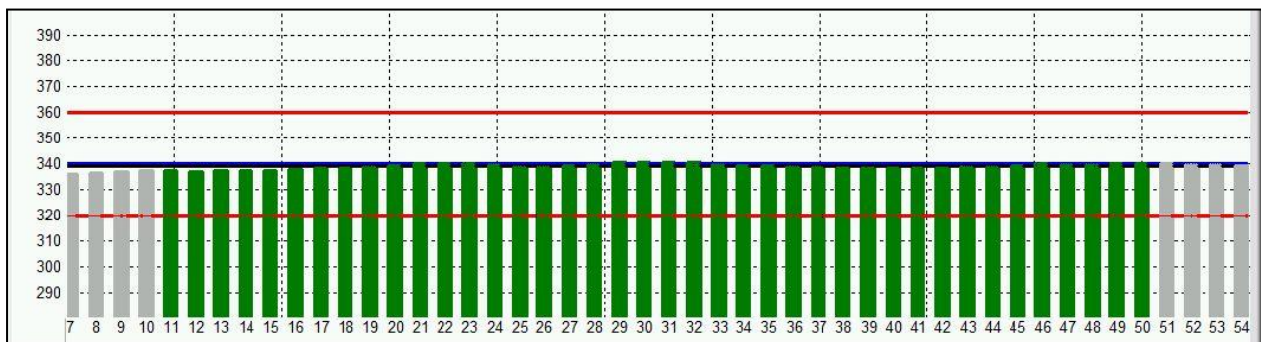
- Current thickness profile displayed over measuring width
- Average profile of last 3 scans
- Reference curve: freeze actual profile for comparing with future profiles – reference curve can be stored and reloaded.
- Net width

Bolt diagram:

- Current 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:

- Current 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

Inspect mode:

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

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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Buttons:

- 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
- 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.

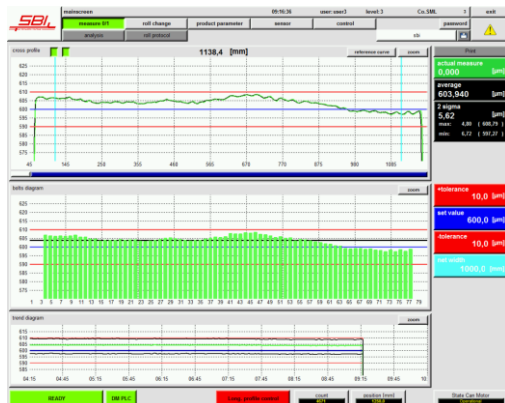
Analysis:

This frame displays production data and trends

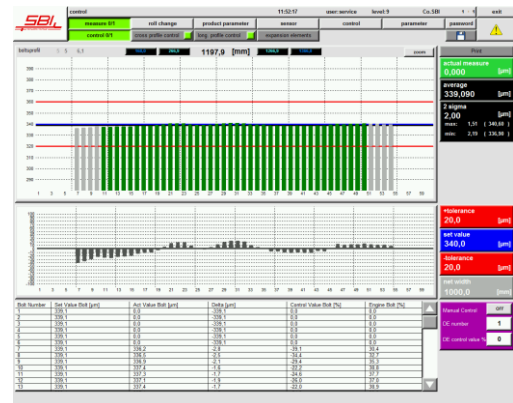
- Production data: time of start, time since start or roll changing, running meter since roll changing, weight, speed, etc.
- Trend: Displays trend graphics of last 24 hours, older trends are stored and can be loaded for viewing and printing. Trend graphics shows thickness average, set value and tolerances.

Thickness Control

Optional frames for control of thickness with automatically adjusted extrusion dies.



Main screen: thickness- and bolts diagram



Thickness control (option)

Subject to technical changes and mistakes!

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