

PLANOWAVE 6000

Thickness and density measurement of
plastic sheets – non-contact, innovative, precise



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Thickness and density measurement of plastic sheets

During the extrusion of plastic sheets, nothing should be left to chance. Norms and standards precisely define the minimum and maximum permissible thicknesses and the density of a specific sheet dimension. The compliance with the standards as well as growing demands in the industry require the use of innovative measuring and control systems already during the extrusion.

Millimeter wave technology: precise, efficient, perfect

The PLANOWAVE 6000 is a non-contact measuring system that measures online, directly after the start-up of the line, the thickness as well as the density of sheets and thus, ensures the compliance with specifications. It is suitable for the measurement of any type of plastics, for example, PVC foam, transparent plastics made from PMMA and PC as well as common technical plastics such as PE.

Functional principle

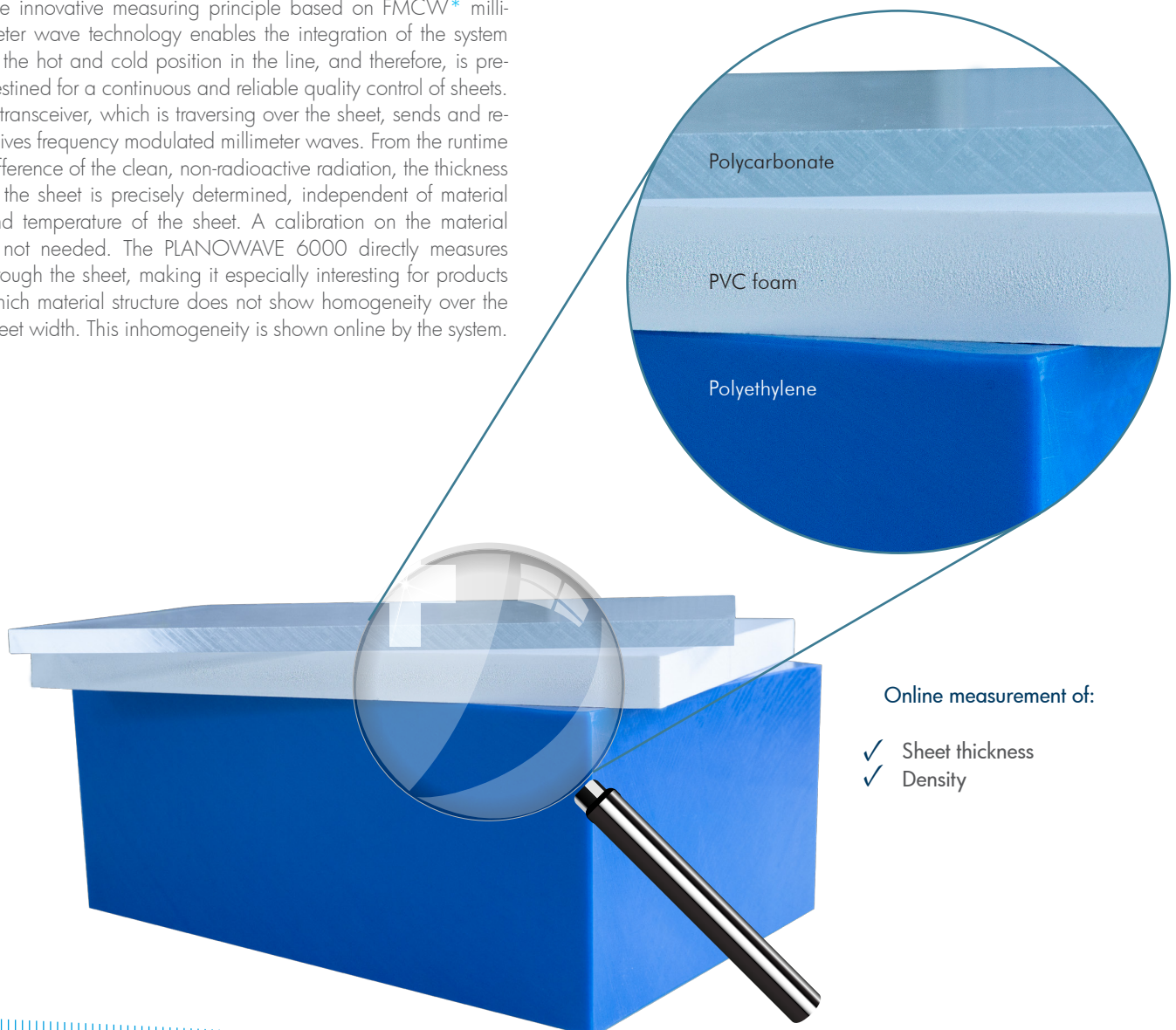
The innovative measuring principle based on FMCW* millimeter wave technology enables the integration of the system at the hot and cold position in the line, and therefore, is predestined for a continuous and reliable quality control of sheets. A transceiver, which is traversing over the sheet, sends and receives frequency modulated millimeter waves. From the runtime difference of the clean, non-radioactive radiation, the thickness of the sheet is precisely determined, independent of material and temperature of the sheet. A calibration on the material is not needed. The PLANOWAVE 6000 directly measures through the sheet, making it especially interesting for products which material structure does not show homogeneity over the sheet width. This inhomogeneity is shown online by the system.

Visualization of the measuring values

The measuring values are shown in real-time and in correlation with the segment width of the dies at the monitor of the processor system ECOCONTROL 6000 and can be used for an automatic thickness control. A graphical visualization with extensive trend and statistics functions** are also available. This way, the operator receives a broad overview about the process.

* Frequency Modulated Continuous Wave

** A correlation with the adjusting screws of the sheet extrusion line is also possible.



Features of the PLANOWAVE 6000 at one glance:

1 Thickness measurement and density distribution

Measurement and graphical visualization of the complete sheet thickness, the profile as well as the density distribution over the entire sheet width with FMCW millimeter wave technology



2 Automatic recalibration

System requires no external maintenance at product changes thanks to its automatic recalibration

3 Cooling

Integrated cooling permits the installation of the system also at the beginning of the production line where environmental and product temperatures are very high



5 High operating distance

Safe measurement by installation of the receiver in approximately 200 mm distance of the measurement object

4 Measurement independent of material and color

Reliable measurement of materials of different colors, even completely transparent or black sheets, due to innovative FMCW millimeter wave technology

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Certified according to
DIN EN ISO 9001

Technical Data PLANOWAVE 6000

Measuring Principle

Non-contact on the basis of FMCW* millimeter wave technology

Application

Sheet extrusion, measurement of the thickness and density of sheets

Material

Composites: PET FOAM, SAN FOAM, PVC FOAM, GFK etc.
Technical plastics: PE, PP, ABS, PET, PA, PS etc.
High-performance plastics: PEEK, PVDF etc.
Transparent plastics: PMMA, PC etc.

Measuring Range

Solid boards from 1.6 mm (depending on material)
Foam boards from 2.2 mm (depending on material)

* Frequency Modulated Continuous Wave

Sheet Width

The width of the PLANOWAVE 6000 is individually adjusted to the width of the line: from 1,000 up to 3,500 mm as standard, larger line widths on request

Interfaces

USB
Optional: industrial fieldbus (e.g. Profinet IO, EtherNet/IP, Profibus-DP, CANopen, DeviceNet), LAN, OPC DA/UA, analog output

Power Supply

100 - 240 V AC \pm 10 %, 50/60 Hz

Measuring Frequency

80 to 300 GHz, max. 10mW

Measuring Rate

370 Hz

Typical features

- Non-contact measurement of the sheet thickness and density with innovative millimeter wave technology
- Measurements independent from material and temperature
- Free from radioactive radiation
- Precise measuring values immediately after starting the line, correlated with the adjusting screws of the extrusion line
- Reliable without any calibration

Your benefits

- Repeatable processes
- Assurance of sheet quality
- Easy operation without presetting the product parameters
- Reduction of material consumption
- Minimization of scrap rate
- Time and cost savings
- Increase of productivity
- A short-term Return On Investment (ROI)

Technical data is subject to change

SIKORA AG (Headquarters)

Bruchweide 2

28307 Bremen

Germany

Ph.: +49 421 48900 0

email: sales@sikora.net

www.sikora.net

BRAZIL

sales@sikora-brazil.com

CHINA

sales@sikora-china.com

FRANCE

sales@sikora-france.com

INDIA

sales@sikora-india.com

ITALY

sales@sikora-italia.com

JAPAN

sales@sikora-japan.com

KOREA

sales@sikora-korea.com

MALAYSIA

sales@sikora-sea.com

MEXICO

sales@sikora-mexico.com

POLAND

sales@sikora-poland.com

TURKEY

sales@sikora-turkey.com

UNITED ARAB EMIRATES

sales@sikora-uae.com

USA

sales@sikora-usa.com