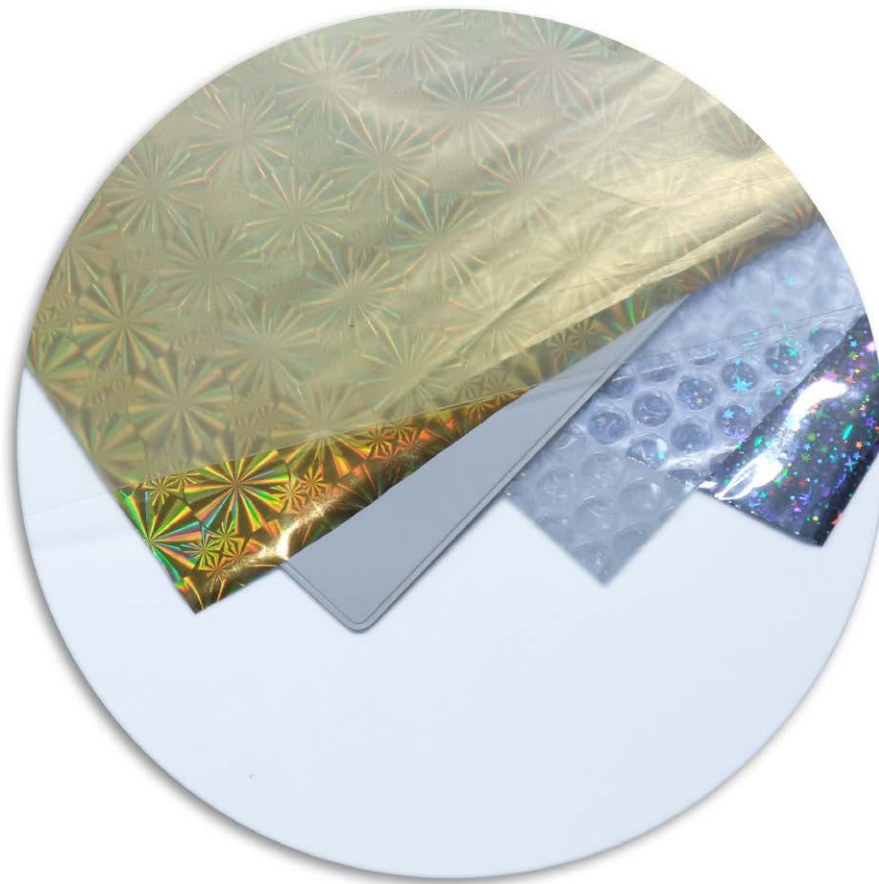


Application Report Extrusion

Film & Sheet Extrusion



Quality made
in Germany



TEXTILE



NONWOVEN



COATING &
CONVERTING



PAPER



EXTRUSION

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1 FILM AND SHEET EXTRUSION

Extrusionsindustrie



The Extrusion market is very diverse and requires a Quality Control System that is both flexible and configurable. In addition, these industries have become increasingly more competitive resulting in tighter product specifications and more challenging profit margins.

Mahlo has responded to these market pressures by providing coating and converting measurement and control solutions for over 25 years.



Mahlo's experience and understanding of the extrusion industry has allowed us to tailor web gauging systems for the following processes:

- Roll Casting
- Sheet Extrusion
- Extrusion Coating
- Coextrusion
- Pultrusion
- Foam Extrusion



Manufacturers using Mahlo systems supply to the following extrusion industries:

- Cast Film
- Food Service
- Stretch Film
- Medical Packaging
- Foam
- Biaxially Oriented Film
- In-Line Thermoforming
- Flooring

Among the extruded products manufactured using Mahlo systems are:

- Food Packaging
- Palette Wrap
- Automotive Trim & Films
- Decorative Products
- Coextruded films
- Foam and sponge
- Graphic arts products
- Insulation
- Carpet Backing
- Appliance Liners

Durable and easy to maintain

1.1 Durable and easy to maintain

Built to last



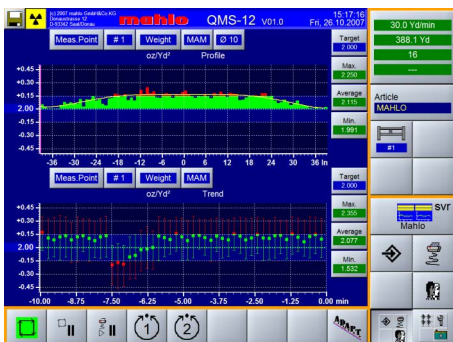
For the entire gamut of web based extruded products, whether they be cast film or extrusion coated papers or films, Mahlo makes a QCS - quality control system tailored for your specific measurement and control needs. Fixed, single-sided and dual-sided scanning platforms are available with multiple synchronized scanners are available.

The systems, measuring tandem coatings, basis weight, moisture and film or coating thickness plus a myriad of combined calculations are standard for simple narrow webs to wide cast film, sheet or extrusion coating & laminating substrates.

Automated control integration is possible with our coat weight control capabilities for roll gap, roll skewing, die pump, linespeed and APC (automatic die profile control) to name a few.



With intelligent sensor and scanner technologies, quality management systems (QMS) from Mahlo measure continuously with extreme precision and sensitivity. The Windows-based data interface is open and complies with the industry standards for communication. Usability and configurability set standards. The menus and functions are designed intuitively and ensure quick success.



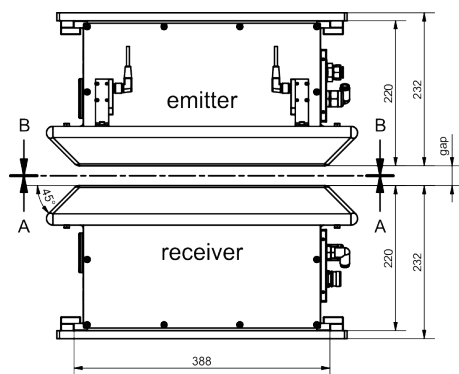
One of the outstanding features is the range of robust, traversing scanners. We know exactly that these scanners traverse reliably 24 hours a day, 365 days a year - for many for many years. The construction of robust industrial machines in German quality workmanship is one of Mahlo's strengths. The company grew out of the manufacture of large systems for the textile and carpet industry and continues this development today.

Whether scanners for single-sided infrared, laser or X-ray sensor applications, whether compact measuring frames for cramped conditions or large WebPro-L measuring frames for applications with broad wide webs and more than five sensors - all Mahlo systems are designed for long, trouble-free and uninterrupted operation. At the same time, they consist of commercially components and are therefore very easy to maintain.



1.2 Sensors & Measurements

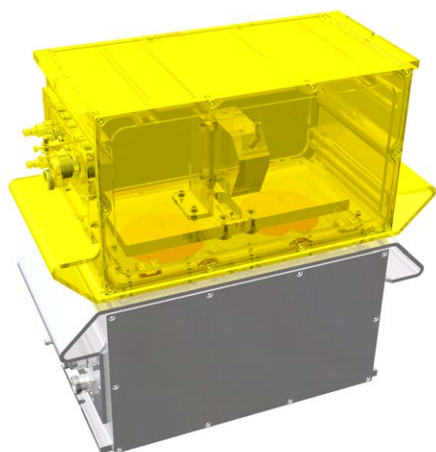
Measurements



Basis weight	
	Beta Transmission Sensor, Model DFI
1 – 200 g/m ²	■ Promethium-147
20 – 1 300 g/m ²	■ Krypton-85
150 – 6 000 g/m ²	■ Strontium-90
50 – 20 000 g/m ²	X-Ray Backscatter Sensor, Model FMX
5 – 1 000 g/m ²	X-Ray Low Voltage Sensor, Model FMX-T

Thickness / Caliper	
<0,2 - 80 mm	Single-Sided and Dual-Sided Laser Caliper Sensor, Model DML
0,3 – 100 µm	White Light Interference Sensor, Modell WLI

Scanners



Moisture	
0,1 – 90 %	Infrared Absorption Sensor, Model IMF or Model NIR - depending on application -
2 – 1 500 g/m ²	Microwave Sensors, Model HMF and AMF
Selective Coatings, e.g. adhesive, lacquer, silicone...	
approx. 0,1 – 200 g/m ²	Infrared Absorption Sensor, Model IMF or Model NIR - depending on application -

1.3 Scanners

Traversing Platforms



O-Frame Scanners	
Up to 2 meters	WebPro XS
Up to 3 meters	WebPro S
Up to 4.5 meters	WebPro M
Up to 8 meters	WebPro L
Single-Beam Scanners	
Up to 3 meters	UniScan S
Up to 6 meters	UniScan L
C-Frame Scanners	
Up to 2 meters	WebPro C

1.4 Operator stations & Options

Operator stations



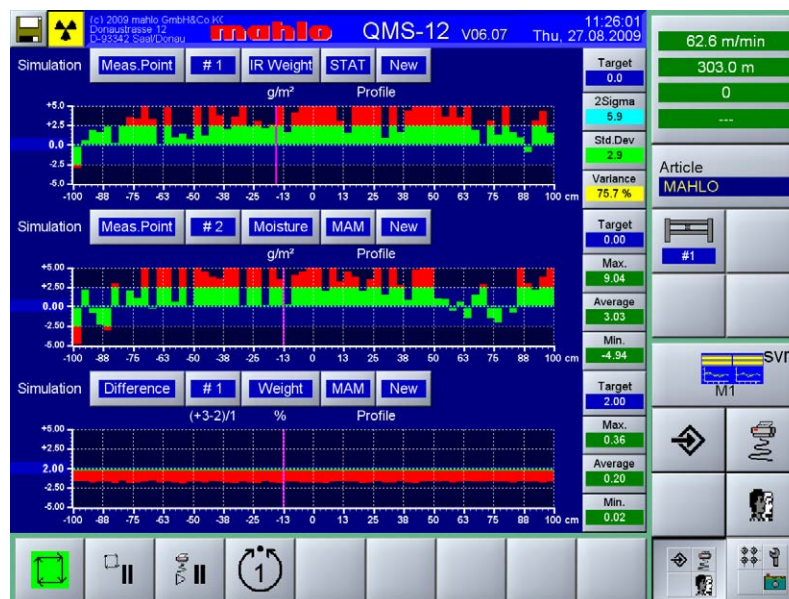
Stand-Alone	Standard Operator Station
IP Desktop	QMS Visualization IP Desktop
Line Control Station	Integrated into Line Operator Station

Options

Auto-Die-Control

SPC/QC Packages

Hazardous Ambient Applications



Operator stations & Options



2 MAHLO AT A GLANCE



Mahlo GmbH + Co. KG is one of the leading manufacturers worldwide of monitoring, control, and automation systems, not only for the textile and related finishing industries, but also for the paper, film and coating divisions. The long-established Bavarian company was founded in 1945 by Dr. Heinz Mahlo and has remained a family business that has maintained its position on the world market to this day. Through a worldwide network of service centers and a high quality standard combined with strong customer relationships, the special requirements of Mahlo's clientele are fully satisfied.



Due to the exorbitantly rising costs of raw materials, energy and water, and the high costs of environmental protection, it is more important than ever to keep an eye on these issues. The products from Mahlo set new standards in terms of quality assurance and process optimization. The goal is to work with the customer to determine the most competitive and cost-effective production solutions. The ultimate purpose of this strategy is to maximize profitability (ROI) by reducing the need for energy, raw materials and personnel while optimizing quality, equipment utilization and work processes.

Mahlo products and solutions

The portfolio of products and plant-related solutions is comprehensive. For more detailed information, please direct your inquiries to Mahlo. Please call us today at +49-9441-601-0 or visit us at www.mahlo.com.

Mahlo - Close to you worldwide

Best possible technical support and know-how transfer are written in capital letters at Mahlo. Thanks to an international network of and service centers, competent support is available to our customers worldwide. We are here for you 365 days a year. Simply contact us!

- Over 40 service centers worldwide
- Immediate service and spare parts delivery within 24 hours
- Remote diagnostic system
- Service-Hotline: +49-180-5062456

3

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Monitoring and control systems, automation

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Mahlo GmbH + Co. KG - Germany

Donaustr. 12
93342 Saal / Donau
Telephone: +49-9441-601-0
Fax: +49-9441-601-102
Email: info@mahlo.com

Mahlo Italia S.R.L. - Italy

Via Fiume 62
21020 Daverio
Telephone: +39-0332-94-95-58
Fax: +39-0332-94-85-86
Email: mahlo.italia@mahlo.com

Mahlo America Inc. - USA

575 Simuel Road
Spartanburg S.C. 29304
Telephone: +1-864-576-6288
Fax: -
Email: mahlo.america@mahlo.com

Mahlo Ouest S.R.L. - Belgium

Quantum Center
Hütte 79 - Bte 10
4700 Eupen
Telephone: +32-87-59-69-00
Fax: +32-87-59-69-09
Email: mahlo.ouest@mahlo.com

Mahlo España S.L. - Spain

Calle Luxemburgo nº 4
08303 Mataró (Barcelona)
Telephone: +34-938-640-549
Email: mahlo.espana@mahlo.com

Mahlo Shanghai Rep. Office - China

Bldg 2, 569 Hua Xu Road
Xu Jing Town
Shanghai 201702
Telephone: +86-1390-1804736
Email: frank.fei@mahlo.com