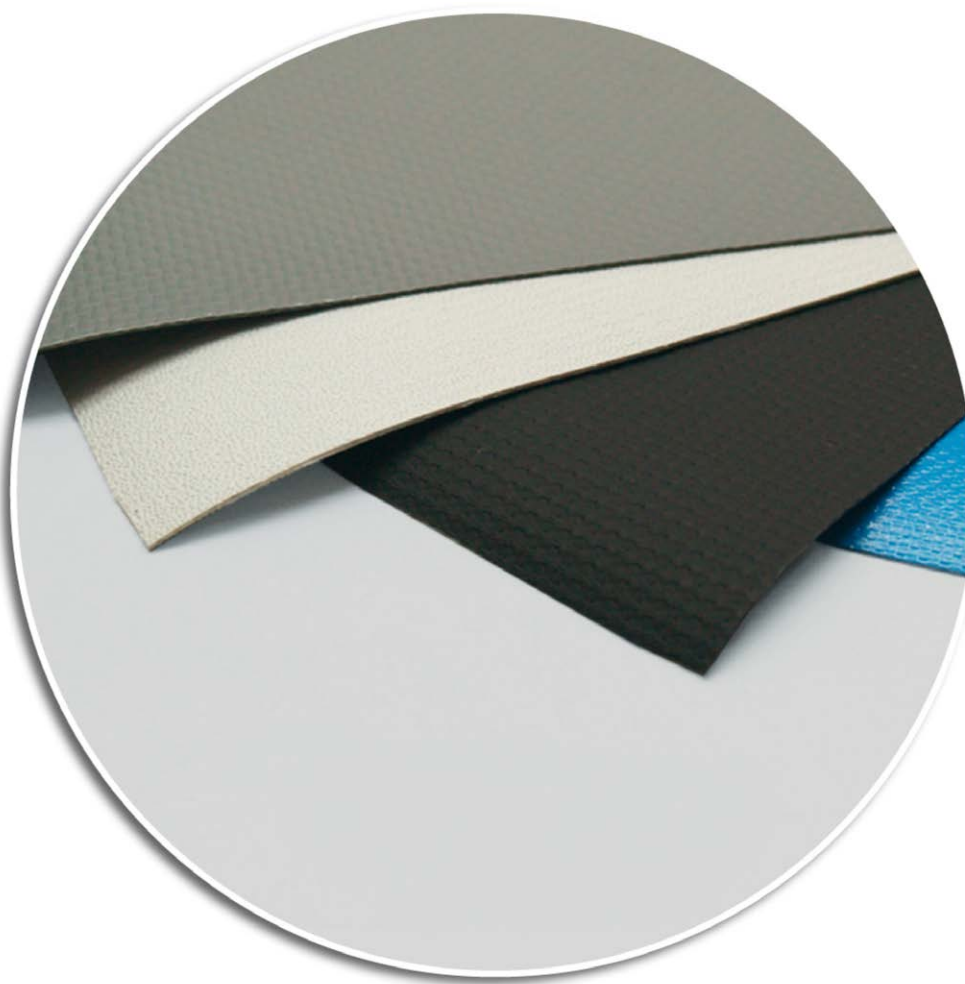


# Application Report Coating

Coating & Converting of continuous webs



Application Report  
Coating



Quality made  
in Germany



TEXTILE



NONWOVEN



COATING &  
CONVERTING



PAPER



EXTRUSION

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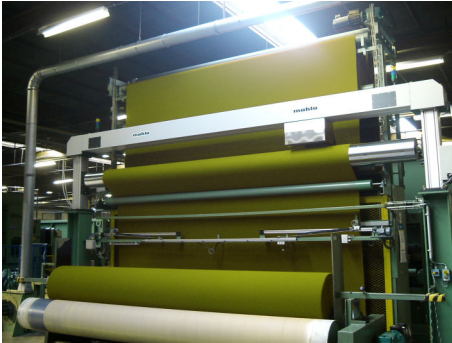
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## 1 COATING & CONVERTING OF CONTINUOUS WEBS

### Coating / Converting



The Coating and Converting 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 coating and converting industry has allowed us to tailor web gauging systems for the following processes:

- Roll Coating
- Direct Die Coating
- Laminating
- Curtain Coating
- Rod Coating
- Saturating
- Knife-over-Roll / Belt Coating
- Air Knife Coating
- Kiss Coating

Manufacturers using Mahlo systems supply to the following coating / converting Industries:

- Paper, Film, & Nonwovens Industries
- Padding
- Adhesive Tape
- Aerospace / Automotive
- Composite structures
- Floor Products
- Graphic Arts
- Health / Personal Care / Hygiene
- Pressure sensitive labels



Among the coated and converted products manufactured using Mahlo systems are:

- Disposable Food Service
- Food Packaging
- Abrasives (eg. sandpaper)
- Automotive Trim & Films: Headliners, Insulation and Padding
- Decorative Products
- Gift Wrap
- Flexible Packaging Laminates
- Gaskets
- Graphic arts products

Durable and easy to maintain

- High Pressure Laminates
- Medical patches
- Pressure sensitive labels
- Pressure sensitive tapes
- Protective Films
- Wallcoverings

## 1.1 Durable and easy to maintain

### Built to last



For the entire gamut of converted products, Mahlo makes a quality control system tailored to your specific application, for your specific measurement and control needs. Fixed, single-sided and dual-sided scanning platforms are available with multiple synchronized scanners measuring tandem coatings, basis weight, moisture and thickness plus a myriad of combined calculations and are standard for simple narrow webs to wide coating & laminating lines. Automated control integration is possible with our coat weight control capabilities for roll gap, roll skewing, applicator roll speed/ratio, die pump, linespeed and APC (automatic die profile control) to name a few. Sealing / purging for hazardous locations (Class 1, Div. 1) is available.

Utilizing intelligent sensor and scanner techniques, the Mahlo QMS systems measure on-line continuously and with extreme precision and response. The computer interface is Windows XP based, is fully open and conforms to industrial communications standards. Ease of use and configurability were built in from the ground up and the menus and functions are very easy to understand with a short learning curve.

One of the many strengths of the Mahlo system is the family of rugged steel O-Frames. We know that these scanners must traverse back and forth around the clock, 365 days per year for many years. Building tough industrial machinery is a forte of German manufacturing, and Mahlo grew up making large-scale machinery for the textile and carpet industry, and continues to this day. Over-engineered for long, trouble-free life, yet easy to maintain with commercial components, all Mahlo scanners whether single-sided for Infrared, Laser or X-Ray sensor applications, Compact O-Frames for tight spaces or the WebPro-L O-Frame scanner for those wide web applications and a payload of up to five sensors, are built to last.



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.



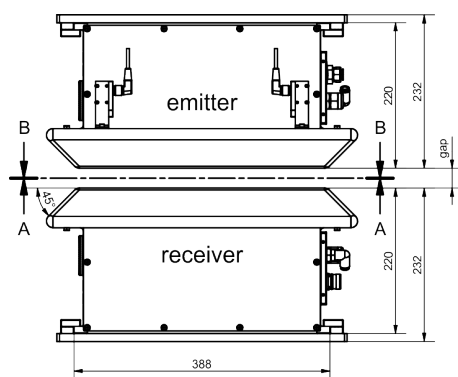
One of the outstanding features is the range of robust, traversing scanners. We know exactly that these scanners traverse reliably 24 hours a day, 365 days a year - for many for many years. The construction of robust industrial machines in German quality workmanship is one of Mahlo's strengths. The company 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

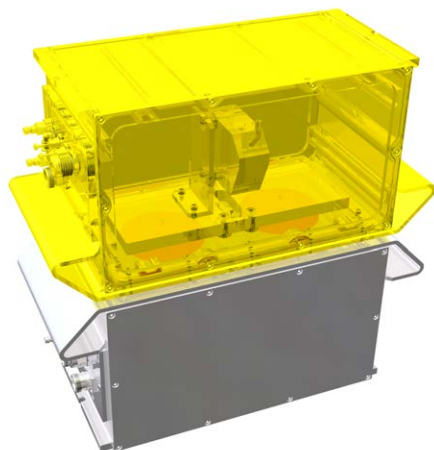


Basis weight	
	Beta Transmission Sensor, Model DFI
1 – 200 g/m <sup>2</sup>	■ Promethium-147
20 – 1 300 g/m <sup>2</sup>	■ Krypton-85
150 – 6 000 g/m <sup>2</sup>	■ Strontium-90
50 – 20 000 g/m <sup>2</sup>	X-Ray Backscatter Sensor, Model FMX
5 – 1 000 g/m <sup>2</sup>	X-Ray Low Voltage Sensor, Model 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 <sup>2</sup>	Microwave Sensors, Model HMF and AMF
Selective Coatings, e.g. adhesive, lacquer, silicone...	
approx. 0,1 – 200 g/m <sup>2</sup>	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



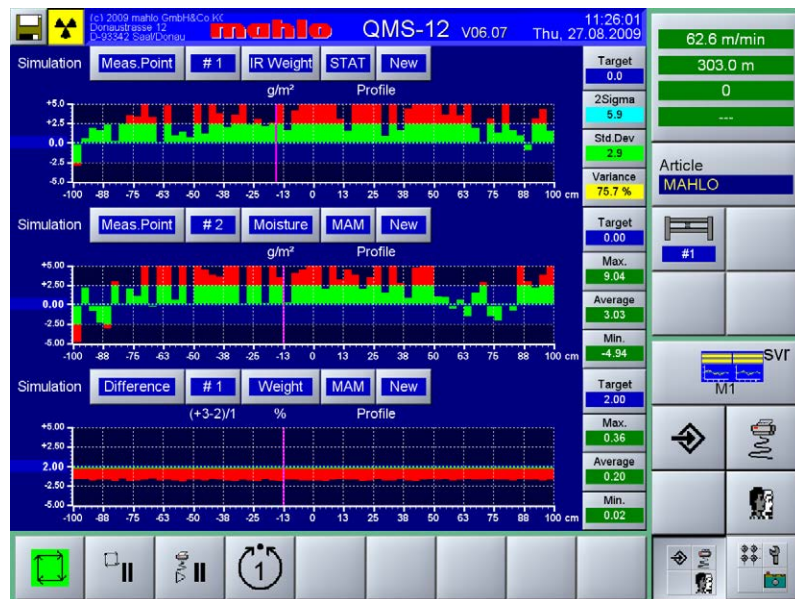
Stand-Alone	Standard Operator Station
IP Desktop	QMS Visualization IP Desktop
Line Control Station	Integrated into Line Operator Station

#### 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](http://www.mahlo.com).

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

### 3 NOTES

[illegible]

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## Monitoring and control systems, automation

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- ✓ Direct service and spare parts delivery within 24 hours
- ✓ Remote diagnostic system
- ✓ Service Hotline: +49-180-5062456
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