

## EXTRUSION INDUSTRY APPLICATION REPORT

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 extrusion measurement and control solutions for over 30 years.



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

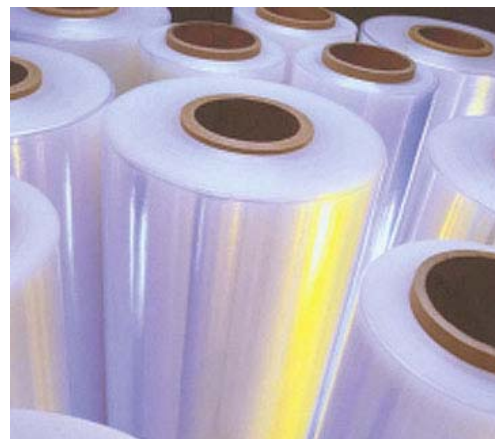
- Roll Casting
- Sheet Extrusion
- Extrusion Coating
- Coextrusion
- Pultrusion
- Foam Extrusion
- Tandem Extrusion Laminating

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

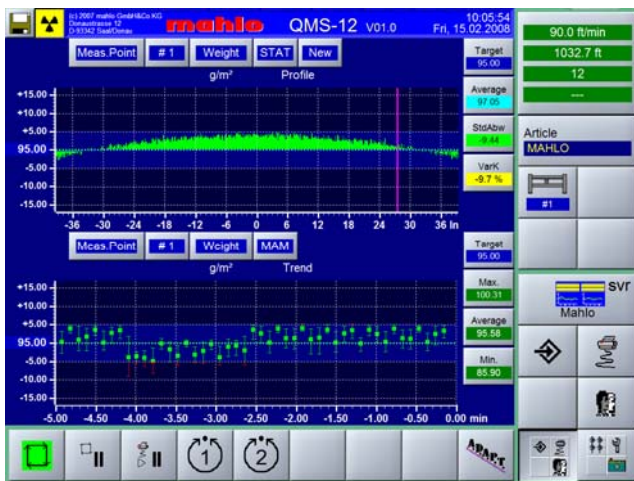




For the entire gamut of web based extruded products, whether they be cast film or extrusion coated papers or films, Mahlo makes a QCS - quality control system tailored for your specific measurement and control needs. Fixed, single-sided and dual-sided scanning platforms are available with multiple synchronized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



Utilizing intelligent sensor and scanner techniques, the Mahlo QMS systems measure on-line continuously and with extreme precision and speed. The computer interface is Windows Embedded based and is fully open and conforms to all 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.

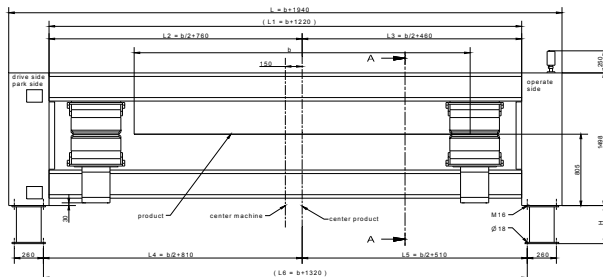
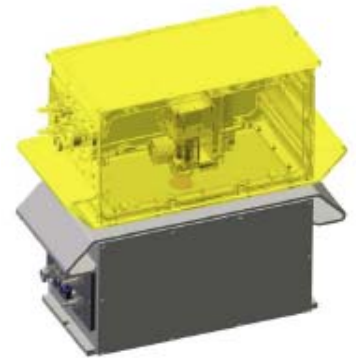
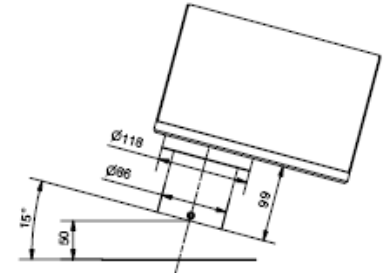
One of the many strengths of the Mahlo system is the family of rugged steel O-Frames. We know that these scanners must traverse back and forth around the clock, 365 days per year for many years. Building tough industrial machinery is a forte of German manufacturing, and Mahlo grew up making large-scale 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.



## Mahlo QMS Quality Control System Offerings

### Measurements

<b>Basis Weight</b>	
	<i>Model FMI Beta Transmission Sensor</i>
0 – 200gsm	Promethium-147
5 – 1,200gsm	Krypton-85
50 – 5,500gsm	Strontium-90
5 – 700gsm	<i>Model FMX-T Low Energy X-Ray Transmission Sensor</i>
75 – 20,000gsm	<i>Model FMX X-Ray Backscatter Sensor</i>
<b>Thickness</b>	
<0.001 - 4.00in	<i>Model DML Single-Sided Laser Caliper Sensor</i>
<25 $\mu$ - 100mm	<i>Model DML Dual-Sided Laser Caliper Sensor</i>
<b>Moisture</b>	
0.01 - 95%	<i>Model IMF Infrared Absorption Sensor</i>
0.01 - 1000 g/m <sup>2</sup>	
	<i>Model HMF Microwave Resonance Sensor</i>
<b>Selective Coatings and Polymers</b>	
	<i>Model IMF Infrared Absorption Sensor</i>



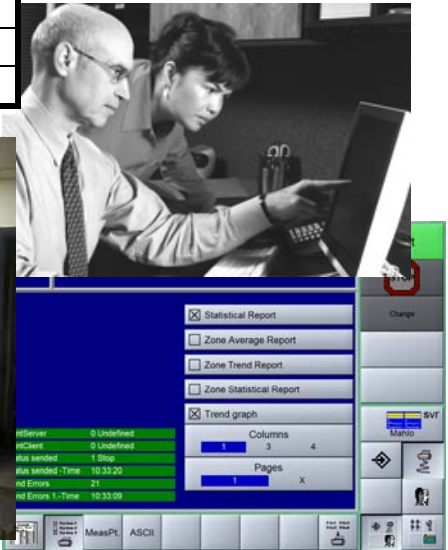
### Traversing Platforms

<b>O-Frame Scanners</b>	
Up to 3 meters	<i>WebPro - S</i>
Up to 4.5 meters	<i>WebPro - M</i>
Up to 8 meters	<i>WebPro - L</i>
<b>Single-Beam Scanners</b>	
Up to 3 meters	<i>Uniscan - S</i>
Up to 6 meters	<i>Uniscan - M</i>
<b>C-Frame Scanners</b>	
Up to 2 meters	<i>WebPro - C</i>



## 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 Location Applications**

## About Mahlo

Since 1945, Mahlo has built its reputation based on the design and manufacture of rugged, innovative, cost effective on-line monitoring and control technologies. It is our focus to provide our customers with tailored solutions that offer a quick return on investment and are supported by our experienced and responsive technical support team.

Mahlo is headquartered in Saal, Germany, in the heart of Bavaria. We are privately owned by the Mahlo family and take great pride in continuing the tradition of quality-built products based upon German engineering and craftsmanship. Mahlo employs over 300 people worldwide with over 100 sales and service centers in 115 countries.



Mahlo America, located in Spartanburg South Carolina, celebrated its 45<sup>th</sup> anniversary in 2013. Our facility, along with a network of sales and service offices through out North America, provide unparalleled customer support and a true commitment to helping our customers improve their manufacturing processes and reduce production costs.

In addition, our U.S. office maintains a comprehensive spare parts inventory and houses a fully operational pilot line with QC laboratory for product testing, sample evaluation, and technical training. The line is capable of processing up to 80" wide webs and is equipped with a full suite of traversing scanners and measurement sensors for detailed evaluation of our on-line web gauging technologies.

Please call us today at (864) 576-6288, or visit us at [www.mahloamerica.com](http://www.mahloamerica.com).