

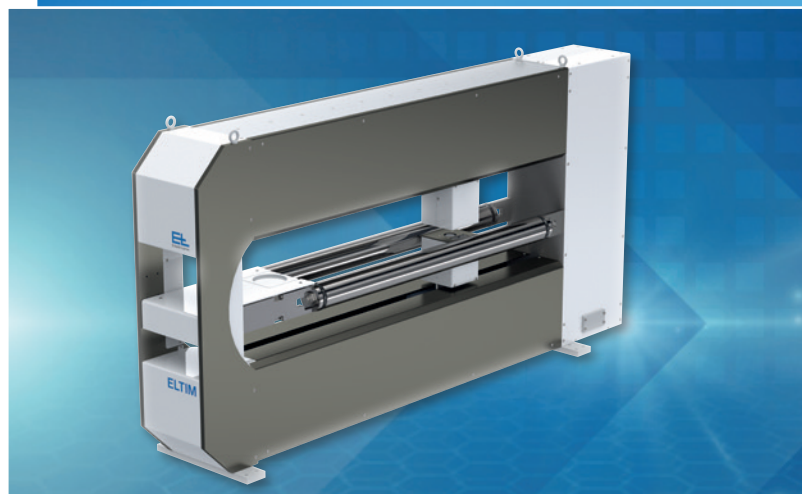
ELTIM

Inline basis weight measurement

Continuous detection and recording of the basis weight with thickness calculation

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FOCUSING ON CUSTOMER SATISFACTION

INTELLIGENT TECHNOLOGY · SMART PRODUCTS

INTERNATIONAL LOCATIONS · WORLDWIDE AVAILABILITY

CUTTING-EDGE TECHNOLOGY – AT HOME ALL OVER THE WORLD

Erhardt+Leimer

Global solutions for production of the future

Intelligent technologies and products in the highest quality designed to optimize the production processes of our customers all around the world. This is our claim as the internationally expanding Erhardt+Leimer group of companies.

With our global presence – from development to production and on to service – we are always close to the customer. We develop customer-specific solutions and provide our customers with excellent products either in digital or intelligent versions depending on their preference. Not only this, but we also set new standards for the production of tomorrow. In the process, it is not just our products that are increasingly becoming smart – our entire company is currently undergoing a digital transformation. One visible indication of this is the E+L online shop, which enables our customers to order products and spare parts quickly and easily from our website.

With more than 1,600 employees at sites across Europe, Asia, and America, we deliver cutting-edge technology on-time to any location in the world.

In everything we do, we aim to use all company resources responsibly to protect the environment and demonstrate our commitment to increased sustainability.



Higher quality through basis weight measurement

Advantages of basis weight measurement

In all production processes, it is always vital to ensure the quality of materials at the end of the process, and to immediately identify any optimization potential in manufacturing. The ELTIM system allows precise determination of material distribution and of the amount of material consumed from the web on the basis of weight. This enables customers to optimize energy consumption and save costs by reducing material usage.

Unlike other basis weight measuring systems, ELTIM does not use X-rays or radioactive isotopes for measurement. The system works with ultrasonic sensors and can be integrated into existing production lines with considerably less time and cost. In addition, the ultrasound-based, radiation-free sensor reduces occupational health & safety requirements and eliminates the danger of environmental damage due to unresolved radioactive waste disposal issues.

Flexible

High-precision

User-friendly

Can be used in the following applications

■ Film extrusion

■ Calenders

■ Conversion:

■ Lamination

■ Coating

■ Adhesive tapes

■ Paper conversion

■ Lithium batteries

■ Photovoltaic cells

■ Painting

■ Printed electronics

These materials can be measured

■ Plastic films (PE, PP, EVA, PVC, PVB, etc.)

■ Metal foils (aluminum, copper, etc.)

■ Paper

■ All coatings

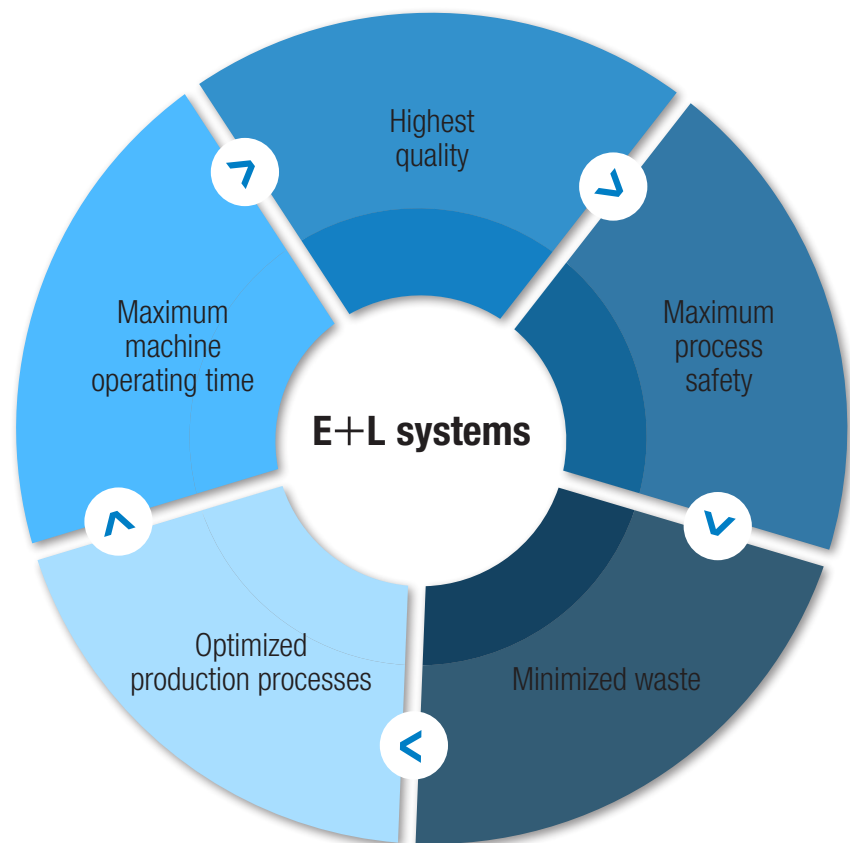
■ All laminates

■ Bitumen roofing membranes, abrasive material (ELTHICKNESS)

■ Coated non-woven fabrics

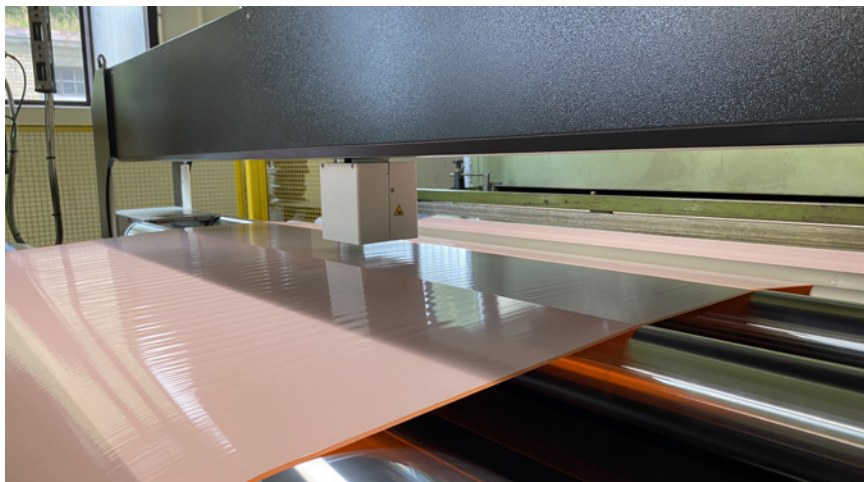
■ Composite non-woven fabrics (e.g. non-woven membrane fabric)

■ Other materials on request



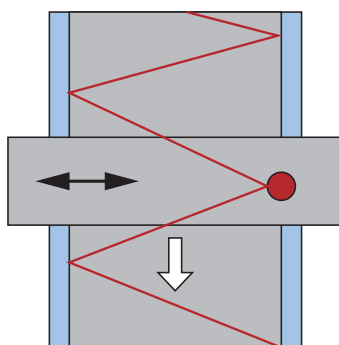
ELTIM – basis weight measurement

ELTIM is an ultrasound-based, radiation-free sensor for contactless determination of the basis weight of materials such as plastic films/ foils and coatings. It offers highest accuracy especially for thin materials with high frequencies and a small detection area. In addition, special sensors record data such as ambient and material temperature, atmospheric humidity, and air pressure.

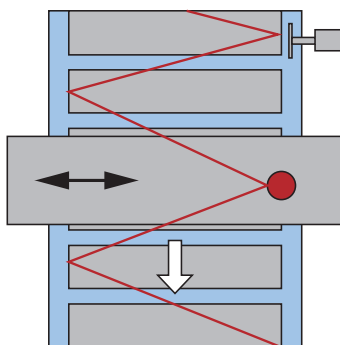


Example from film coating (adhesive tapes)

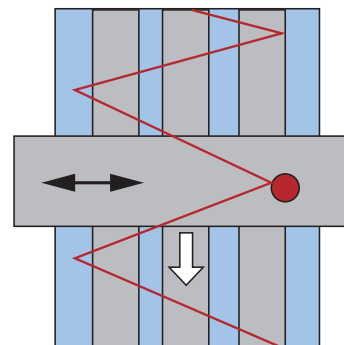
**Traversing system for
area coating or
uncoated material**



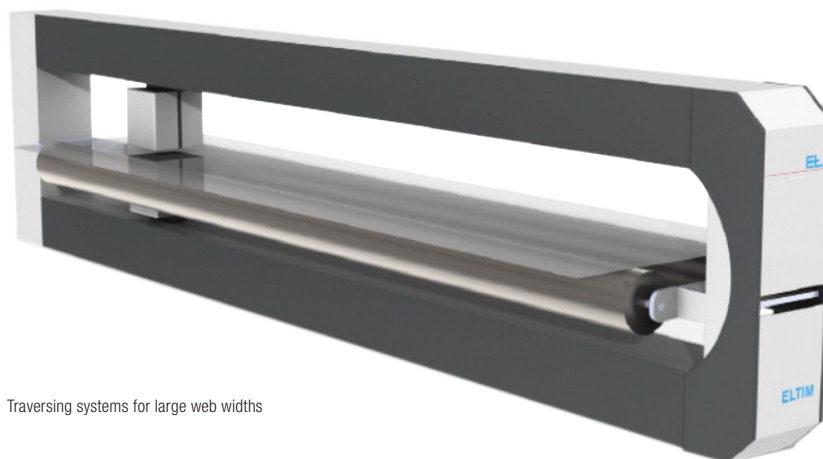
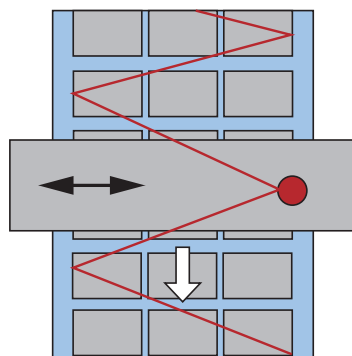
**Traversing system for
intermittent coating
Transverse to direction of web travel**



**Traversing system for
intermittent coating
in direction of web travel**



**Traversing system for
intermittent coating in and transverse
to direction of web travel**

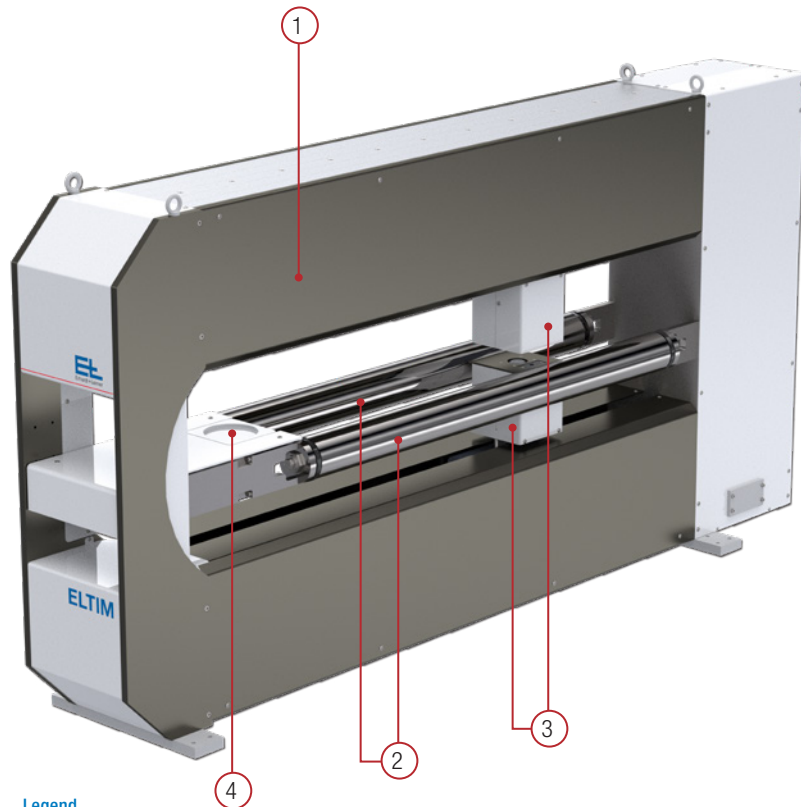


Traversing systems for large web widths

System details ELTIM

Advantages

- No danger from radiometric radiation or X-rays
- Compact system, easy to integrate in existing machines
- Small detection area for highest accuracy
- Sensors for detection of ambient conditions that potentially impact on processes
- Precise time log synchronization
- Insensitive to fluctuations in the web height
- Insusceptible even to color fluctuations
- Maintenance-free transmitter and scanner
- Exceptionally user-friendly graphical user interface
- Machine interfaces for every customer control
- Doctor blade control or applicator roller control depending on customer preference
- Extensive analysis software such as 3D surface profile display
- Continuous air and material recalibration for the highest measuring equipment reproducibility (e.g. for DIN ISO 9001)



Legend

- 1 Scan frame
- 2 Guide rollers (optional)
- 3 Scanning heads
- 4 Calibration table for reference material

General functions

Measurement of the basis weight (current, average, min. & max., basis weight profile over the entire width)

Comparison of nominal and measured values

Tolerances	Tolerances for values Warning / rejection limits
Data output	To PLC, to ELQ, to I/O
User levels/ password	Operator level: Limited access rights Engineer level: Full access rights
WBM Interface	Web-based administration Configuration and value display accessible via web browser

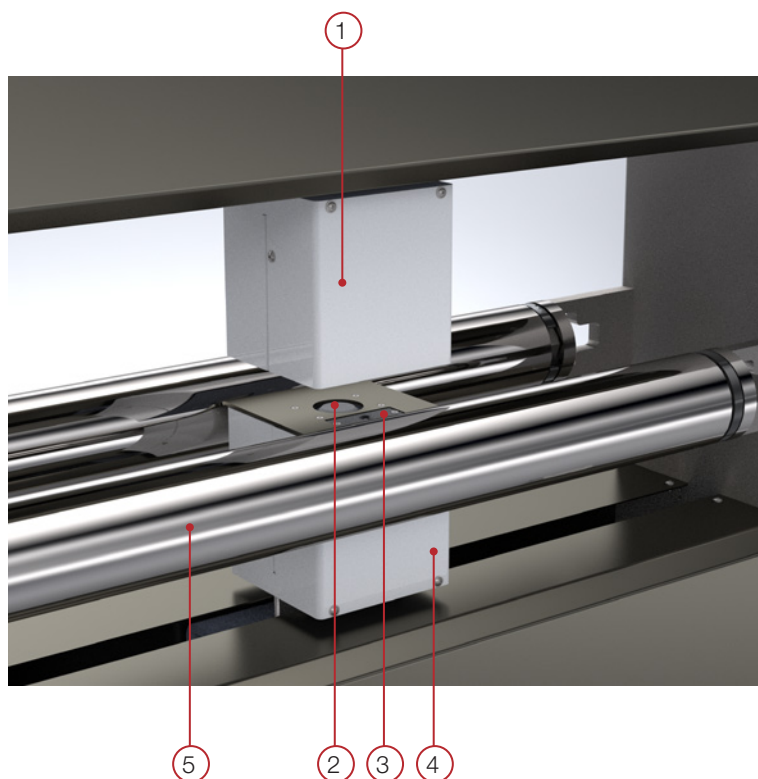
Technical Data

Measuring range (basis weight measurement)	Up to 800 g/m ²
Measuring accuracy	< ± 0.5% of the basis weight of the calibration piece
Resolution	0.001 g/m ²
Sensor type	US ultrasonic sensor
Measuring point size	Ø 25 mm
Cycle time of the measuring system	120 Hz
Passage height	40 mm (from measuring head to measuring head)
Height fluctuation of the web	± 5 mm in the middle; no fluttering
Actuating speed of sensor	300 mm/s
Relative humidity	15 to 95 % (non-condensing)
Ambient temperature	+10 to +50 °C
Ambient temperature at the sensor	+10 to +70 °C
Storage temperature	-20 to +80 °C
Protection rating	IP 54, UL 50e: Type 12
Power supply	24 V (optionally 100 to 250 V AC, 3.5 A, 50/60 Hz)
Current consumption	Max. 10 A
Nominal width	500 to 2500 mm (larger widths on request)
Dimensions	L (NB + 932 mm) x H 960 mm x D 270 mm

Sensors

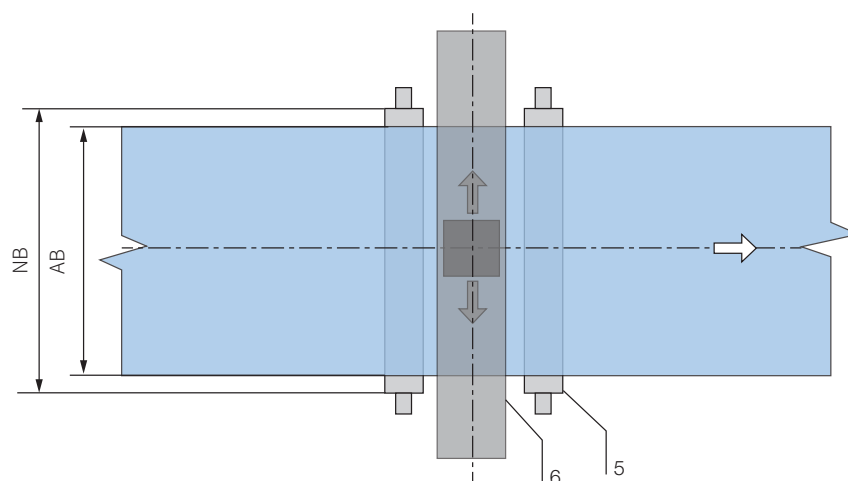
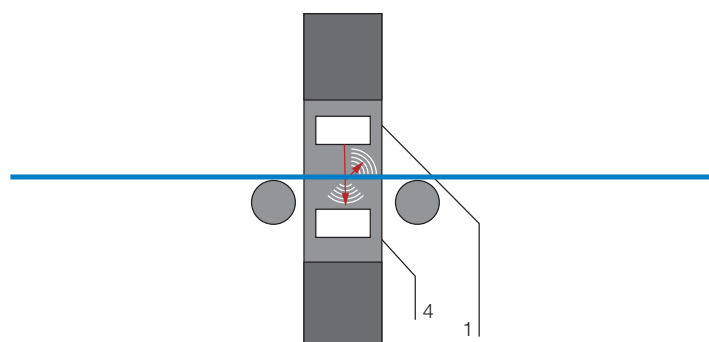
Principle of the ultrasonic measuring process

In this process, the transmission absorption of an ultrasonic pulse penetrating a web is determined without contact using an ultrasonic transmitter and an ultrasonic receiver. The basis weight is calculated from the absorption and a calibration factor.



Legend

- 1 Transmitter
- 2 Ultrasonic transducer
- 3 Environmental sensor system
- 4 Receiver
- 5 Guide rollers
- S6 Area of the basis weight measurement
- AB Operating width
- NB Nominal width



ELQ control and data management software

Maximize the value of your knowledge

Our central ELQ software is designed for operation and optimization of your E+L systems and handles data management for all production data, including data recorded from third-party systems via standard interfaces, for comprehensive quality evaluation, analysis, and reporting.

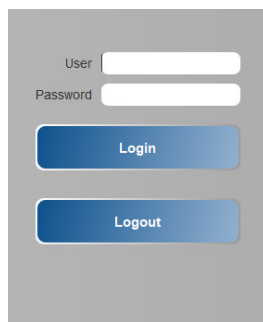
The modular layout means that it is possible to connect a wide range of different systems and

sensors, whether thickness measurement systems with confocal, interferometric, or laser triangulation sensors, basis weight measurement systems, closed-loop control systems based on the new EL.NET technology, or web tension measurement systems. All the data is displayed in a dashboard on the user-friendly panel PC with touchscreen. The hard drive is sufficient to store up to one year of archive data.

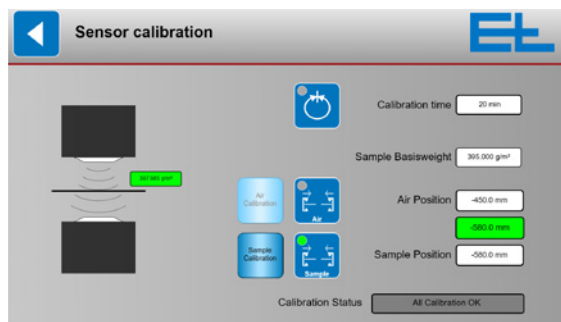
- Statistical evaluation (maximum and minimum values, standard deviation, CP, Cpk, etc.)
- Proof of measuring aid capability through automated MSA test
- Automatic order/roll protocols
- Central recipe management
- Operating and optimizing
- Various customer interfaces (Ethernet IP/UDP, Profinet, SQL, OPC-UA, and many more)



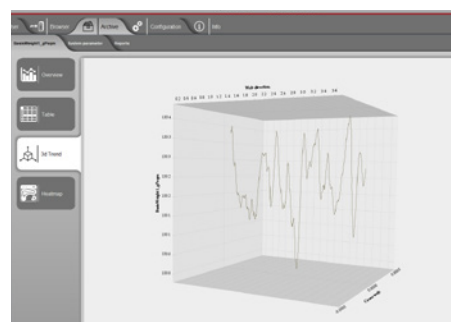
Further views



User login



Calibration

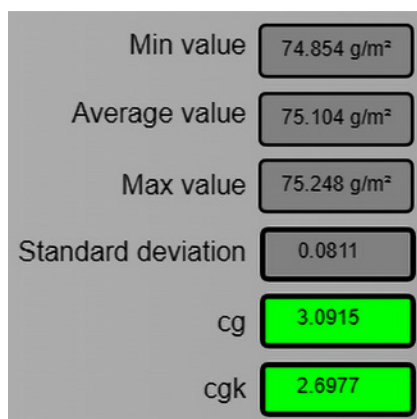


3D view

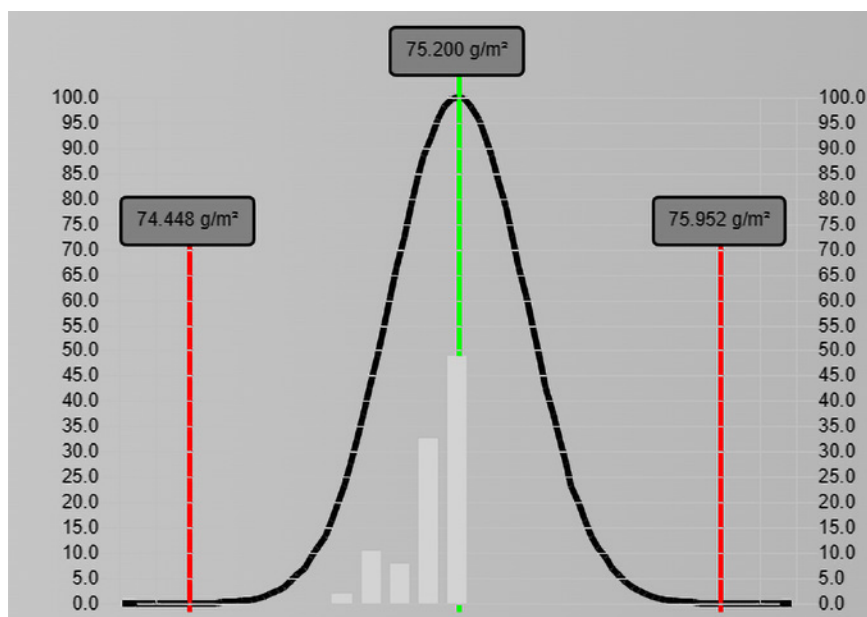
MSA measuring system analysis

An automated MSA investigation means that the testing of the measuring aid capability is very straightforward and easy to perform.

Cg and Cgk values are calculated based on the standard deviation of the measurement values and systematic measurement deviation.



MSA statistical values



Distribution of the measurement values

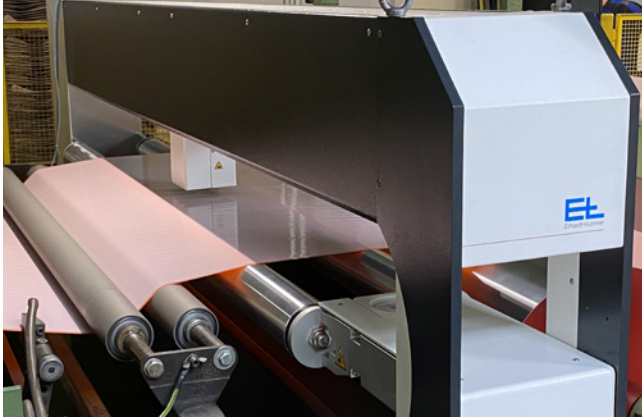
ATEX – EU explosion protection directive



ATEX

Special versions of ELTIM systems can also be used for explosion hazard areas. Ex zones and version on request.

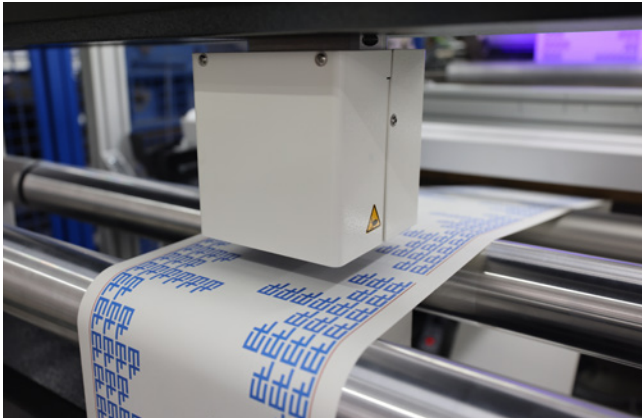
Application examples



Example from film coating (adhesive tapes)



Example from plastic film production (extrusion)



Example from plastic film production (printed plastic film)



Example from battery production

Sample examination with customer material

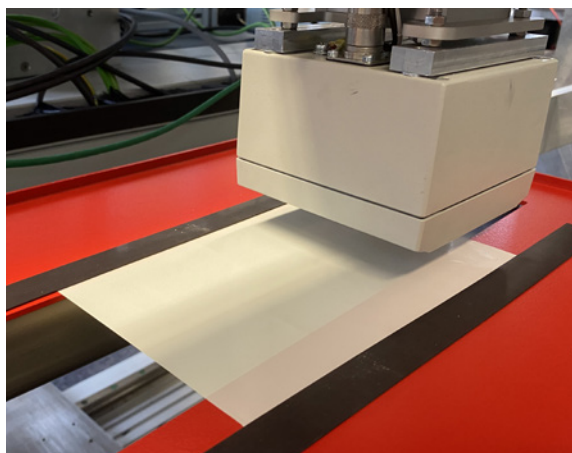
Individual material examination

Erhardt+Leimer offers a free, no-obligation sample examination during which a feasibility study is created. This report guarantees the efficiency of the basis weight measurement in the existing production process.

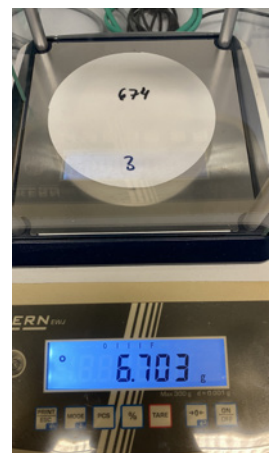
A constant quality control of the material through ELTIM actively and sustainably contributes to resource optimization.

Requirements for sample examination

- Fully filled-in questionnaire (see page 12/13)
- Sample goods with the material to be examined
- **Two samples per material**
- **Format: DIN A4**



Measurement of a fabric web



Reference measurement using a precision scale

ELTHICKNESS

Erhardt+Leimer thickness measurement offers:

- Precise determination of web thickness using confocal, laser triangulation, or interferometer sensors
- Lower number of rejects, unrivaled quality control
- Minimized thermal expansion and improved vibration resistance thanks to the use of a granite frame
- Highest accuracy through interval-dependent in-situ calibration
- Performance data for thickness control
- Real-time measurement



SCAN HERE AND SPEAK
WITH OUR EXPERTS

Questionnaire, basis weight measurement

General data			
Customer			
Street			
Zip code		City/town	
Country		Website	
Contact person			
Phone (direct)		E-mail	
Project			

Technical Data				
Type of machine	<input type="checkbox"/> Extruder	<input type="checkbox"/> Calender	<input type="checkbox"/> Coating system	<input type="checkbox"/> _____
Position of ELTIM on the machine	<input type="checkbox"/> Before 1st coating	<input type="checkbox"/> After 1st coating	<input type="checkbox"/> After 1st dryer	
	<input type="checkbox"/> After 2nd coating	<input type="checkbox"/> After 2nd dryer	<input type="checkbox"/> After 3rd coating	<input type="checkbox"/> After 3rd dryer
	<input type="checkbox"/> Before stretching	<input type="checkbox"/> After stretching	<input type="checkbox"/> Before calendering	<input type="checkbox"/> After calendering
Selection of the calibration side/operating side		<input type="checkbox"/> L	<input type="checkbox"/> R	

Direction of web travel
→

ELTIM

L

R

1st coating

☐

ELTIM

1st dryer

☐

ELTIM

2nd coating

☐

ELTIM

2nd dryer

☐

ELTIM

3rd coating

☐

ELTIM

3rd dryer

☐

Full-area

☐

Cross stripes

☐

Samples

a

b

c

d

☐

Vertical tracks

e

f

☐

Are the top and bottom coating identical?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Same spot measurement required	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Position _____
Number of patterns transverse to the web	Dimension a in mm	min. _____	max. _____
	Dimension b in mm	min. _____	max. _____
	Dimension c in mm	min. _____	max. _____
	Dimension d in mm	min. _____	max. _____
Number of vertical tracks	Dimension e in mm	min. _____	max. _____
	Dimension f in mm	min. _____	max. _____

Questionnaire, basis weight measurement

Technical Data														
Material type	<input type="checkbox"/> Plastic film		<input type="checkbox"/> Metal foil		<input type="checkbox"/> Paper		<input type="checkbox"/> Nonwoven							
	<input type="checkbox"/> Other _____													
Web width	min. _____ mm				max. _____ mm									
Material weight	min. _____ g/m ²				max. _____ g/m ²									
Material thickness	min. _____ µm				max. _____ µm									
Tolerance	Required accuracy _____ % of the calibration value													
Coating layers	State the minimum/maximum basis weight of each coating layer													
	4th surface coating		min. _____ g/m ²		max. _____ g/m ²									
	3rd surface coating		min. _____ g/m ²		max. _____ g/m ²									
	2nd surface coating		min. _____ g/m ²		max. _____ g/m ²									
	1st surface coating		min. _____ g/m ²		max. _____ g/m ²									
	Substrate		min. _____ g/m ²		max. _____ g/m ²									
	Lower coating		min. _____ g/m ²		max. _____ g/m ²									
Web speed	max. _____ m/Min.		<input type="checkbox"/> Continuous		<input type="checkbox"/> Intermittent									
Web movement (height)	± _____ mm													
Material variation	<input type="checkbox"/> Transparent		<input type="checkbox"/> White		<input type="checkbox"/> Black		<input type="checkbox"/> Other _____							
Fabric web temperature	max. _____ °C													
Ambient temperature	<input type="checkbox"/> 0 - 50 °C		<input type="checkbox"/> 50 - 60 °C		<input type="checkbox"/> 60 - 70 °C		<input type="checkbox"/> > 70 °C							
Relative humidity	_____ %		<input type="checkbox"/> Ambient values (temperature, atmospheric humidity, air pressure) fluctuate											
Machine interface desired			<input type="checkbox"/> Digital I/O		<input type="checkbox"/> Other (e.g. PLC) _____									
Is a closed control loop required?	<input type="checkbox"/> Yes		<input type="checkbox"/> No		Description _____									
Cable length	System → Monitor		<input type="checkbox"/> Without		<input type="checkbox"/> 3 m		<input type="checkbox"/> 5 m		<input type="checkbox"/> 10 m		<input type="checkbox"/> 15 m		<input type="checkbox"/> 25 m	
Explosion protected	Choose which ELTIM system is to be explosion protected in Zone 1 or Zone 2													
ELTIM system number	1	2	3	4	5	6	7							
No Ex protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Ex protection Zone 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Ex protection Zone 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
Comments														

Date	Issuer
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