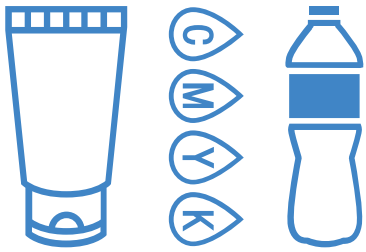


Erhardt+Leimer

We know the converting, graphics, and plastics industry

Product overview

Innovative automation and inspection solutions

Erhardt+Leimer offers top-quality, durable automation and inspection solutions for the converting, graphics and plastics industry. As we work so closely with our customers we understand their requirements and problems in depth and can help them achieve the best possible results.

One of the major challenges for our customers is to ensure that the required quality is achieved in the production process. This is only possible with monitoring, measurement, and evaluation of all the factors that influence the quality of the production processes. In particular, continuous web guiding and web tension control as well as web monitoring play a very significant role. To ensure no defective products reach downstream production processes or – even worse – customers, comprehensive inspection systems can catch material and print defects early and reliably. With these efficient monitoring functions, we can help our customers to achieve not only a considerable increase in quality, but also impressive time and cost savings and reduced spoilage.

With our flexible, robust and networkable systems, we can cover standard applications and also meet the individual requirements of our customers. Communication with our component or systems can be realized basically via UDP or via integrated Ethernet-based certified industrial protocols EthernetIP and Profinet.The safety and functionality of our products has been validated through compliance with various standards and certifications such as CE, UL, and STO.

Web guiding system ELGUIDER

EtherNet technology

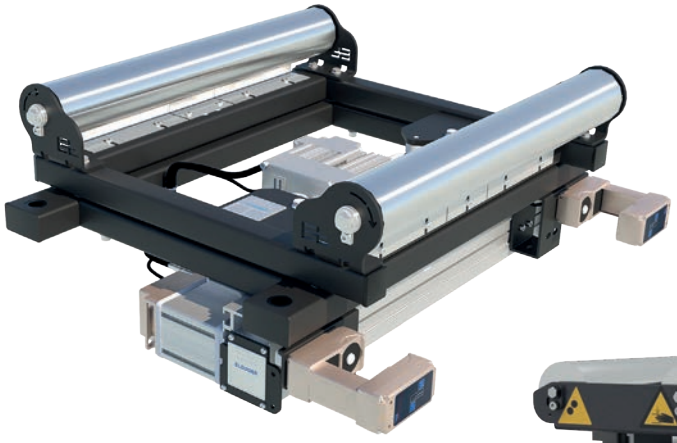
Today, the manufacturers and users of machines for processing web-type materials are confronted with ever increasing demands: Production processes should be even faster, while at the same time performed with greater precision, the quality of the finished product further improved while personnel, waste and, above all, downtimes, should be reduced to a minimum. A decisive contribution to the fulfillment of these prerequisites is made by web guiding systems. Typically, web-type materials are fed from a roll to the machine, finished and then rewound. During these stages, various position errors may occur, examples of which are illustrated on this page. E+L web guiding systems are designed to eliminate these sources of errors and to ensure permanent, precise web alignment and winding. Depending on the type of material, application and task, Erhardt+Leimer offers a wide variety of systems with the latest networking technology: for decisively more quality and productivity that pays off!

Function

On an ELGUIDER pivoting frame system, the web changes direction four times, each time by 90°. The system is based on a pivoting frame with two path rollers. The imaginary pivot point is located on the infeed side. Lateral web corrections can only be achieved by pivoting around this pivot point. The prerequisite here is always sufficient tension for traction between the web and the guide roller.

Application

The greater the web tension, the module of elasticity and the required correction, the longer the infeed, exit and transfer paths should be designed. Experience has shown that these paths should be the equivalent of 60 to 100% of the web width. The sensor should be positioned behind the exit roller, as near to it as possible.



Web guiding system ELGUIDER

Sensors

Depending on the individual application the ELGUIDER system can be used with different types of sensors to accommodate different materials and degrees of transparency. These sensors can acquire web edges, the web center and web width as well as color lines. The sensor portfolio includes:

- Infrared edge sensor
- Infrared wide band sensor
- Blue light wide band sensor
- Ultrasonic edge sensor
- Color line sensor

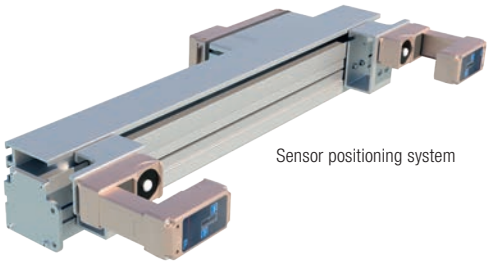
Wide band sensor

Color line sensor

Edge sensor

Sensor positioning

The support beam is used for the motorized linear positioning of sensors. The carriages can be positioned using brushless drive technology with one or two motors or sensors. Depending on the setting, mounted sensors can dynamically follow the edge of the material, thereby keeping the production process under constant control.



Sensor positioning system

Winding station system ELWINDER

ELNET technology

Function

In production processes with moving webs, there is typically an unwinder at the machine infeed and a rewinder at the exit. During unwinding, the winding station is moved via a lineardrive to feed the web in the desired position. On the other hand, during rewinding, the winding station follows the constantly changing web position via a linear drive to achieve an evenly wound reel.

Application, rewinding

During rewinding, the sensor is fastened to the winding station to set the target position of the winding station for the controller. Here, the position detection system should be located as close to the final machine guide roller as possible.

Application, unwinding

During unwinding, the sensor is mounted on the machine to define the target web position. Here, the position detection system should be located as close to the final winding station guide roller as possible.

Edge sensor

Command station

Data network center

Actuating drive

Web tension measuring and control system ELTENS

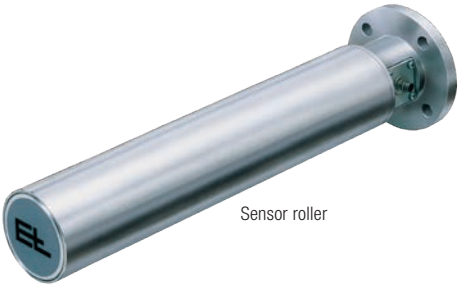
For keeping the material always the right web tension by synchronizing drives, dancing rollers, or breaks

- Block (PD 50xx) or flange load cell (PD 21xx, 23xx or 25xx) execution to be used with shaft rollers prepared from customer side
- Flange (PD 40xx) or integrated roller (PD 30xx) execution
- Shaft execution (PD 27xx) prepared for rollers to be supplied by customers
- Linearity of 1:25
- Overload of up to 20 times of the nominal tension before it gets mechanically damaged
- With different kind of amplifiers and controllers with or without display for analog or digital outputs
- The latest PA 62xx amplifier is supplied with our unique wiring control which helps to avoid wrong measurement caused by cable cuts or poor wiring connection
- With and without display to show the individual tension per material side allows a better understanding of the material´s reaction in the machine
- Controllers and amplifiers with web-based management (WBM)

Block load cell

Digital measuring amplifier

Flange load cell

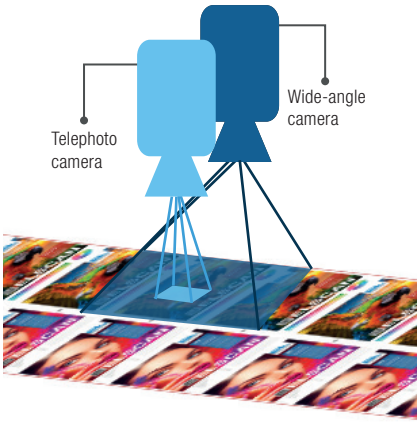


Sensor roller

Web monitoring system ELSCAN

Sophisticated image processing, combined with two high-resolution cameras – this is what the ELSCAN web monitoring systems offer. They allow the display of printed images on moving webs with the greatest detail and color fidelity. The cameras can be moved manually or by a motor to adopt positions with the highest precision and display the corresponding images on the monitor.

Most ELSCAN variants feature the "dualView" technology with its two cameras. Depending on the zoom level, either the telephoto camera or the wide-angle camera is activated. During zooming, the system switches unnoticeably between the cameras. As a result, print images can be displayed at many times their original resolution. This unique "dualView" concept allows nearly lag-free zooming up to the highest resolution.



ELSCAN OMS3 – Basic

OMS3 was the first SMART camera in ELSCAN web monitoring systems. SMART because the system was specifically tailored to the needs of the label market. SMART because the computer is fully integrated, simplifying commissioning and reducing components. And SMART because the system also offers a cost-effective alternative to other web monitoring systems. Originally designed for the narrow-web label market, OMS3 is now extended by Generation 2, making it ideal for the wide-web printing market, too. OMS3 provides basic features that simplify work at the printing press and significantly reduce setup times.

- 4K camera resolution for razor-sharp images
- Crossbeam with manual and motorized camera positioning
- Special flash concept suitable for almost all materials
- Swiveling camera
- Easy system integration
- Remote maintenance access for service calls
- Comprehensive basic software package with position gallery, auto-scan functions, image stabilization, and commissioning wizard


ELSCAN OMS3

ELSCAN OMS5 – Premium for all operating widths

Along with all the basic functions for web monitoring, OMS5 provides an expanded range of functions in the hardware and software area.

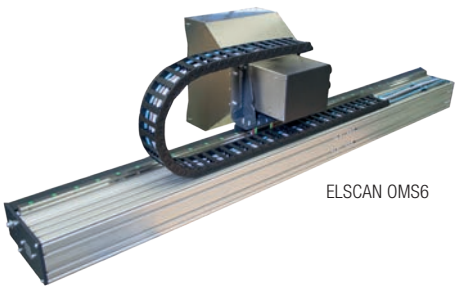
- Proven "dualView" technology with 2 x 18-megapixel cameras
- Lag-free digital zooming using mouse wheel, command station or touch screen
- Excellent image quality due to highest camera resolution in its class
- New lighting concept with additional flash for varnish
- Gold and silver foil visible in true color
- All-inclusive software package with additional functions such as inline color monitoring, 100 % repeat overview and expanded position gallery
- Remote maintenance access for service
- Setup wizard


ELSCAN OMS5

ELSCAN OMS6 – High End with large field of view

ELSCAN OMS6 is the high-end system in the ELSCAN family. With its expanded field of view of 234 x 124 mm and detailed resolution in 4k quality, it impresses in every aspect. Due to its high-speed crossbeam, the camera is moved precisely to any position in the machine with an acceleration of up to 10 m/s^2; it is therefore the perfect solution for operating widths of up to 3,250 mm.

- "dualView" camera system with two 12-megapixel cameras (4k resolution each)
- Selection of LED flash systems for different web surfaces (white light, varnish flash, UV flash, background/backlight flash)
- Changeover between front and rear inspection for web inversion
- Remote maintenance access for service


ELSCAN OMS6

200% inspection system SMARTSCAN

SMARTSCAN is the first 200% inspection system developed specially for narrow-web printing and finishing machines. The 200% inspection reliably detects print defects, damage to the material and missing labels. In addition, splice points or inserted flags are detected in a targeted manner and are displayed to the user as such. Rewinders can be activated using output signals, in order to locate defects for repair. However, signal lamps or other events can also be triggered, for example, to warn the user as quickly as possible.

The web monitoring integrated in SMARTSCAN as standard displays a static image of the moving web to the machine operator. The special illumination concept also displays strongly reflective areas, such as glossy foil, in a homogeneous manner.

With its unique operating concept, SMARTSCAN opens up new avenues in the industry. The system is set up and ready to start with just one button-press. This means that external training courses are no longer necessary and the commissioning time is reduced to a minimum.

Its compact design means that SMARTSCAN can be integrated quickly into all production machines without major work. The interface for the user is a touch monitor, which displays all the functions clearly.

Main functions

- Camera system with 200% inspection function
- For printing and finishing machines in label applications and narrow-web applications
- Continuous double inspection of the entire width and length of the web
- Web monitoring with zoom function
- Detection of print defects, missing labels, unremoved matrices, splice points, flags, color defects, damage etc.
- Counting function for labels and defects
- Log function for the inspection runs
- Signal output for customer-side defect location or to activate signal lamps

SMARTSCAN system

SMARTSCAN UV for fluorescent substances

SMARTSCAN UV combines white light with UV lighting, in order to make fluorescent colors and paints visible. This allows the inspection of security applications and design elements, which are not visible to the naked eye. The wavelength for the UV lighting is between 365 nm and 370 nm.

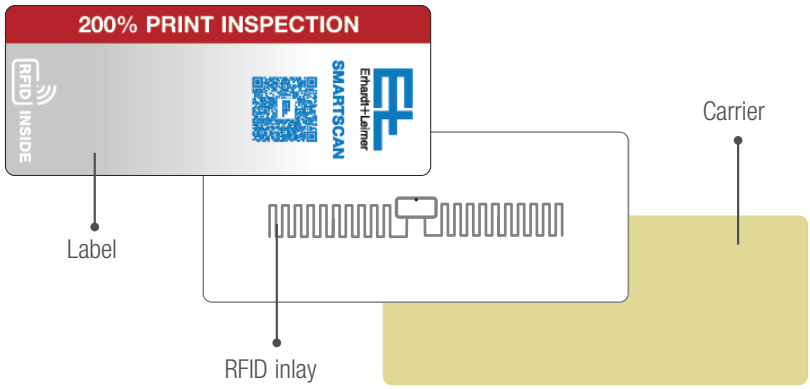
Here too, 200% inspection technology is used, through which further defects are detected, which could not be seen simply with UV light. The advantage gained from this creates considerable added value compared with applications that can only inspect in 100% mode.

In addition to the UV inspection, Erhardt+Leimer also offers the ELSCAN web inspection systems with UV lighting for a highresolution display of UV colors, UV paints and UV adhesive applications, in order to align the register perfectly.

SMARTSCAN RFID

Only the SMARTSCAN 200% inspection with a parallel acquisition method makes it possible to inspect not only the surface but also the RFID inlay using transmitted-light illumination for defects such as antenna breaks, incorrect positioning of the inlay within the label, or damage to the inlay itself.

For printed RFID labels, SMARTSCAN RFID is the ideal system for reliably detecting defects in the print as well as on the material surface. Typical defects include color variations, impurities, or print image defects. If the RFID inlay is covered by the printed image, SMARTSCAN RFID offers a special solution that still allows the inlay position to be detected and the inlay to be inspected.



Surface inspection system ELSIS

Surface inspection systems are now part of the "standard equipment" for production machinery and machines for further processing. The material and the type of processing or the industry are barely significant. Irrespective of whether paper or film/foil, production or processing, for the food, pharmaceutical, battery or hygiene industry, quality requirements have increased everywhere. Often driven by the expectations and requirements of clients and their customers. This drive has made inspection systems a must in every processing machine. Nowadays, camera systems are the only way to ensure 100% inspection to detect and address defects at an early stage and thus minimize material waste.

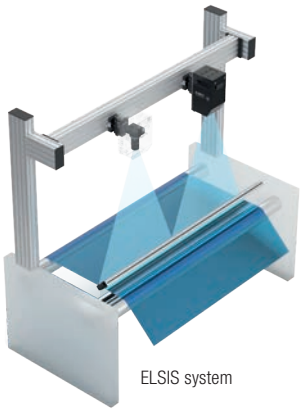
ELSIS inspection systems master this task. Highly sensitive line scan cameras detect any deviation and alert the operator without delay if there is a defect. The automated control of signaling devices such as lamps, horns, marking units and even complete machine control systems can be implemented using the flexible ELSIS I/O control system.

Examples of typical defects

- Soiling
- Damage
- Inclusions
- Insects
- Holes
- Bubbles
- Specks
- Chatter marks
- Creases lengthways and crossways
- Doctor blade and streak defects
- Missing coatings

Applicable to the inspection of

- Film
- Pharmaceutical packaging and aluminum
- Coating systems
- Battery manufacture and metal processing
- Non-woven fabric
- Paper



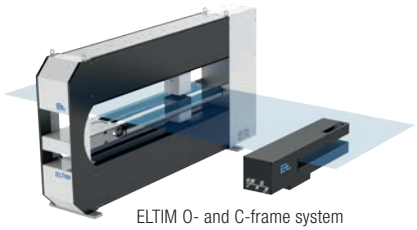
ELSIS system

Inline basis weight and thickness measuring systems ELTIM and EL-THICKNESS

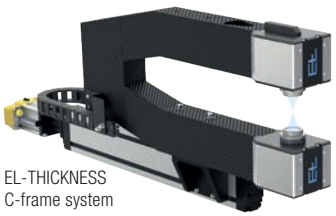
ELTIM

ELTIM is an ultrasound-based, radiation-free sensor for the contactless determination of the basis weight of materials produced as flat webs. 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.

It offers the 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 temperatures, atmospheric humidity, or air pressure. ELTIM is available in a O-frame or C-frame version with the latter being usable inline and offline eg. for development, quality assurance or sample inspection purposes.



ELTIM O- and C-frame system



EL-THICKNESS
C-frame system

EL-THICKNESS
O-frame system

EL-THICKNESS

EL-THICKNESS is a system for contactless determination and continuous monitoring of material thicknesses on continuous webs. The modular system is available in different mechanical versions and offers the perfect solution for every application.

Thanks to the modular layout of the systems, it is possible to use different sensor technologies without changing the basic mechanical setup. These include laser triangulation sensors, chromatic-confocal sensors, interferometric sensors, or combination sensors featuring laser and eddy current technology.

With one or more sensors it is possible to measure against measurement rollers or calender rollers (for reference measurements) or to position opposing pairs of sensors (for differential measurements) in a defined position or to move them across the material with the aid of a granite or CFRP C-frame or a granite O-frame.

Electrical actuators and BLDC motors EL.MOTION

ETNET technology

Brushless drive technology

Our brushless drive technology is a tried-and-tested and highly successful product that has been developed by Erhardt+Leimer based on the company's own know-how and many years of practical experience. It is now used in a wide range of systems at our customers. Through careful selection of components, highest quality standards, and international certifications we can ensure that this series of drives is perfect for automation solutions requiring fast reactions, precise control, and the utmost reliability. Due to their design, all drives are highly dynamic and incredibly stable, making them ideal for a wide range of applications. They are particularly well-suited, for example, for positioning tasks in industrial robotics, machine tools, and machine automation in general.

Direct drive solutions

Erhardt+Leimer offers linear and rotary direct drive solutions that are suitable for a wide range of different tasks thanks to their backlash-free design, and they stand out with exceptional stall torque and high acceleration capability. By removing all mechanical power transmission components, we enable our customers to make considerable time and cost savings during machine servicing and ensure easy integration in the machine layout. The drives consist of a housing made of extruded aluminum and a rotor with an iron core that offers a high power density.

Thanks to the resulting complete elimination of the type of backlash associated with conventional drive systems and the mechanical elasticity of the drive, the EL.MOTION motors are perfect for applications that demand extremely quiet and smooth running coupled with very precise positioning accuracy.

Rotary drive units

The rotary drive units AD 11, AD 12, and AD 14 are synchronous machines with a high power density. With very compact component dimensions, these motors achieve a torque output in the range from 1 to 4 Nm at speeds between 230 and 1000 rpm, offering a gearbox-free solution for many applications. High axial loads can also be handled without problems thanks to the additional support provided by a two-row slanting ball bearing. As a result, the drive units can be connected directly – without a coupling – to a machine, which makes them very easy to integrate in existing production lines.

EL.MOTION rotary drive units

Linear drive units

The linear drive units AG 72, AG 90, AG 91, AG 93, AG 96 and AG 98 are synchronous motors with high positional accuracy and control dynamics. The nominal actuating forces of the relevant motors are in the range from 250 to 10000 N at a speed rate of up to 60 mm/s. The linear drive units are particularly well suited to longterm applications and are used e.g. on moving webs for web control at unwinding and rewinding stations.

EL.MOTION linear drive units

"Safe Torque Off" (STO) function

Our EL.MOTION drives are also available with STO as an option. The STO (Safe Torque Off) safety function, in accordance with EN 61800-5-2, is a safety function integrated into the drive. It shuts off the motor torque by interrupting the control signals. The safety function STO can be used wherever the actuating drive comes to a standstill by itself in a sufficiently short time due to the load torque or due to friction. The safety function STO corresponds to EN ISO 13849-1 with Category 3, Performance Level d.

EL.MOTION technology

- High power density
- High axial load bearing capacity
- Integrated electronics
- Operating range up to 60 °C
- High network compatibility
- Multiturn
- Low voltage 24 V
- Servo controller
- Fieldbus integration
- Web-based service for all relevant settings

EL.NET and web-based management

With EL.NET we provide the tools you need to master Industry 4.0 processes. EL.NET will optimize your entire production process on the basis of a digital, network-capable, IoT-capable, and web-based system architecture. The system can be adapted without any problems to your current production processes and your future production setup.

With our state-of-the-art EL.NET system, digital E+L components connect together consistently in a network and in this way make possible straightforward, quick integration into the customer's network. All devices automatically and selectively exchange data relevant for optimal control within a production plant. The data acquired at all levels of the production process also makes up a decisive part of the automation. It creates high levels of transparency and makes it possible to monitor and to optimize processes in real time – and to therefore minimize downtimes and production waste.

Every EL.NET device is equipped with a built-in web server that provides access to data and functions. This enables user-friendly, step-by-step commissioning, optimization, and maintenance, as well as web-based system operation. The systems can be managed via Ethernet using a standard web browser, regardless of the platform.

The operator has access only to system operation and, upon authorization, to system optimization. All other access that could compromise the system's integrity is restricted behind a secure, role-based login in a separate process. As a result, EL.NET meets all known current and future security requirements.

Your advantages with EL.NET

- Real-time monitoring and optimizing of production processes
- Multi-device architecture allowing data exchange and evaluation within the whole network
- Seamless integration into the machine architecture thanks to integrated and certified communication protocols
- Pre-setted systems or intuitiv guided system comissioning
- On board sevice tools thanks to the integrated web based management
- Automatic configuration recovery (if activated) for trouble-free replacement of EL.NET components
- State of the Art security due to role-based access and integrated logon protocol

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