



Process control across industries

Non-contact speed and length
measurement by laser

Competence field

Production-integrated speed and length measurement with laser precision

Knowing the exact length and speed of sheet materials is key for your cost and process optimization as well as process reliability.

Polytec's Laser Surface Velocimeters (LSV) are optical speed and length sensors that surpass the performance of traditional contact based measurement methods like encoder wheels and offer a number of advantages.

Process control with laser precision

Installed in thousands of locations around the world, LSVs support metallurgical plants, rolling mill products and steel, aluminum and metals production with precision laser measurements.

Furthermore, Polytec sensors optimize material usage and process control in the production of textiles and films, paper and packaging, cables and wires as well as wood products and construction materials.





Why optical measurement?

All Polytec LSV laser surface velocimeters including the latest generation ProSpeed™ LSV support continuous materials and piece goods production processes with precise length and speed measurements.

It doesn't matter whether you're producing film, paper, cable, textile, wood and construction material, pipes or profiles with a shiny or a matte surface – a Polytec LSV adapts to any task and measures the goods' surface velocity, allowing the cutting of lengths with zero contact and from a safe distance.

Polytec's laser sensors overcome the drawbacks of traditional contact-based measuring methods, avoiding slippage, wear and the resulting process uncertainty.



Highlights of using non-contact measurement in production

- Optimize your process with laser accuracy
- No slippage, wear or influence on the goods' surface
- Cut your material cost by reducing waste
- Non-contact measurement on all surfaces including shiny, matte, coated and textured
- Reliable measurement even on very small structures (e.g. wires, cables, fibers)
- Wear-free sensor technology without moving parts
- No recalibration needed

Achieve far more

ProSpeed™, our latest generation sensor, combines the benefits of the optical measuring principle with Polytec's experience of more than 50 years in optical measuring techniques.

Installing ProSpeed optical sensors significantly reduce your maintenance cost and focuses on increasing your manufacturing productivity.



Highlights of ProSpeed™ optical sensors

- High optical sensitivity enables measurement on all kinds of material surfaces (even dark, reflective or colored)
- Flexible interface concept for easy process integration (Ethernet, serial interface, web interface, encoder output, various fieldbus protocols)
- Robust sensor technology (IP66 and IP67); certified mechanical shock and vibration resistance
- High flexibility with stand-off distances from 0.2 to 3 m
- Visible laser for easy alignment
- Superior laser safety due to functional redundant laser switch-off
- Easy integration of the compact sensor head
- MID compliance

Precisely for your production process

In many production environments, process reliability and use of material are essential to achieve the overall cost-efficiency. Even the smallest deviation can cause added material costs which can quickly add up. That is why high-precision, non-contact measuring processes are critically important.

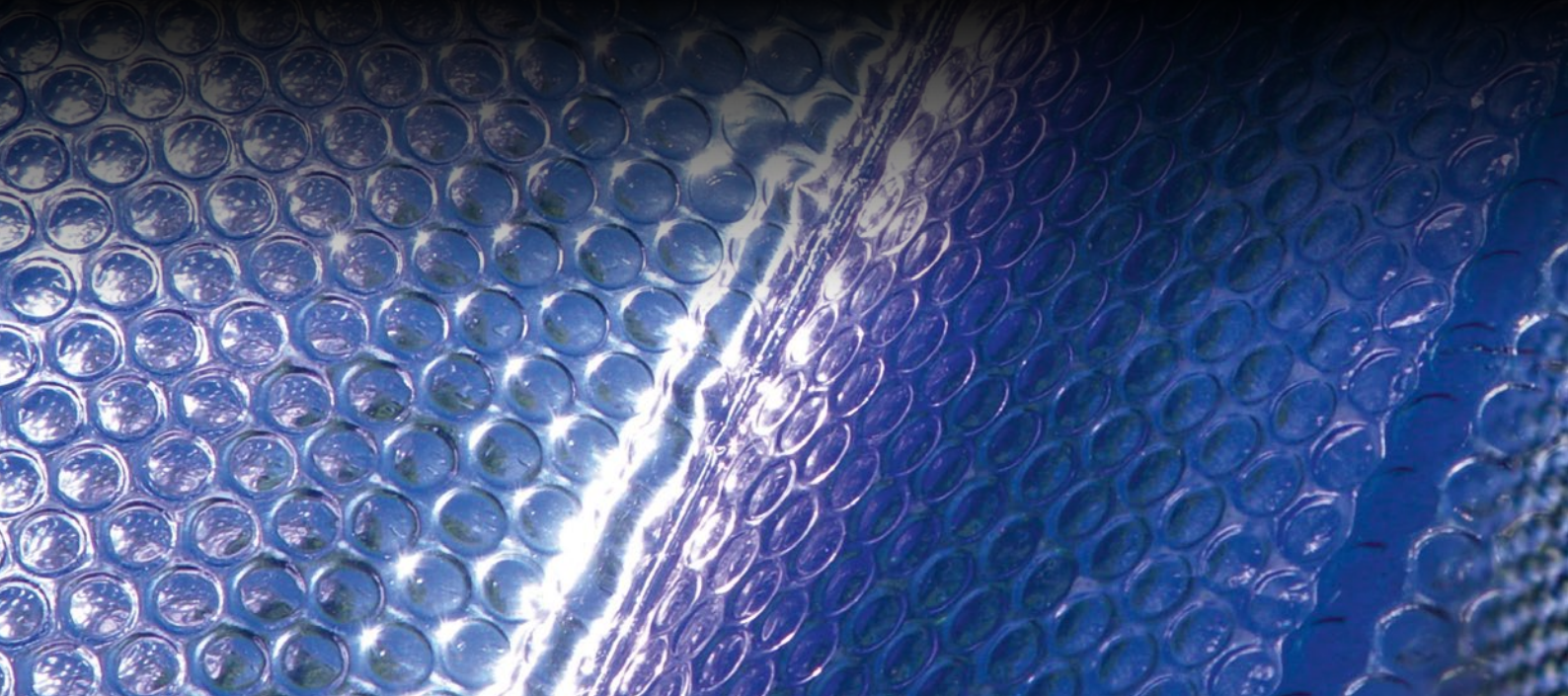
All Polytec laser surface velocimeters are specifically designed for precise measurement of length and speed in industrial environments. LSVs provide reliable measurement data that can easily integrate into your process control systems.

Using an LSV increases measurement precision and thereby increases the quantity and quality of your output. From length and speed measurement to position tracking and cut-to-length control – **Polytec systems offer the perfect configuration for every application.**



MID certified for calibrated machines

Polytec stands for transparency and data integrity: Our compact sensors are certified according to 2014/32/EU (MID or Measuring Instruments Directive) for use in legally calibrated machines.



Plastics, converting & textiles

ProSpeed™ optical sensors measure length and speed with laser precision in a variety of applications in the plastics, converting and textiles industry including printing processes, laminating and coating systems, extrusion processes and many more.

Velocity difference measurement

- Synchronization of roll and sheet in winding and unwinding processes

Speed measurement

- Dwell time determination in coating and surface treatment systems
- Control of cutting devices in cut-to-length processes
- Coil synchronization when winding sheet materials
- Control of extrusion processes
- Control of printing processes

Length measurement/cut-to-length control

- Winding sheet materials and fibers
- Cut-to-length during fabrication
- Defect tracking
- Length measurement in calibrated machinery (e.g. for subcontracting)

Tension control

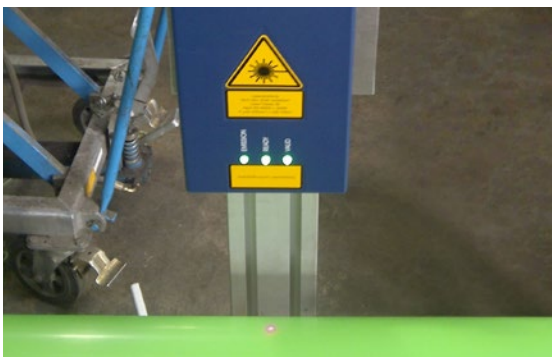
- In joining sheet materials such as while changing rolls of film and packaging materials
- When processing sensitive material such as thin films



Velocity difference measurement



Length measurement



Speed measurement



Tension control



Paper & Packaging

ProSpeed™ optical sensors are also used in paper and packaging applications from precision position tracking in printing processes to cut-to-length control of packaging materials.

Velocity difference measurement

- Synchronization of roll and sheet in winding and unwinding processes
- Speed synchronization in flying splice processes

Speed measurement

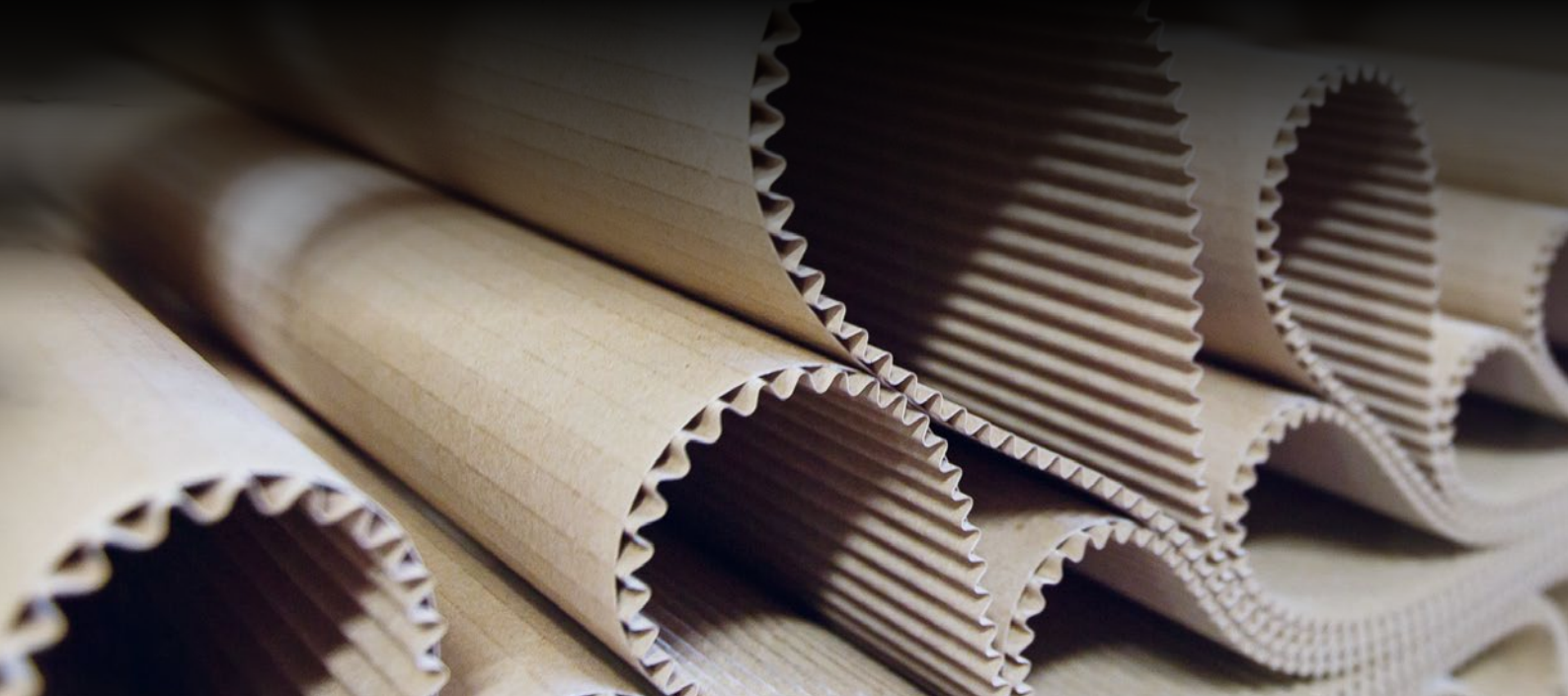
- Dwell time determination in coating and surface treatment systems
- Control of cutting devices in cut-to-length processes
- Coil synchronization when winding sheet materials
- Control of printing processes

Length measurement/cut-to-length control

- Winding sheet materials
- Measurement of cut lengths
- Position sensing in printing processes
- Cut-to-length control of cardboards
- Cut length of corrugated boards
- Position tracking during print inspection

Tension control

- In joining sheet materials such as while changing rolls of paper
- When processing sensitive material such as thin paper



Speed synchronization



Cut-to-length control



Velocity difference measurement



Tension control



Cable & wire

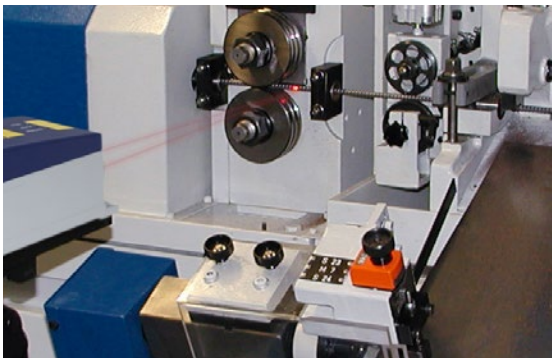
ProSpeed™ optical length and speed sensors support the manufacturing of cable and wire in wire drawing stations, in insulating and sheathing lines, in marking and printing processes and in many more.

Speed measurement

- Dwell time determination in coating systems, e.g. for fiber optic cables
- Control of cutting devices in cut-to-length processes
- Coil synchronization when winding cables and wires

Length measurement/cut-to-length control

- Cut-to-length and winding of cables and wire
- Position sensing in printing and marking processes
- Winding coils
- Wire drawing
- Insulating and sheathing wires
- Defect tracking
- Control cutting lengths in cut-to-length processes on cable, wire, sheathing and insulation materials
- Monitoring of remaining length for further use



Speed measurement



Cut-to-length control



Length measurement



Wood & construction materials

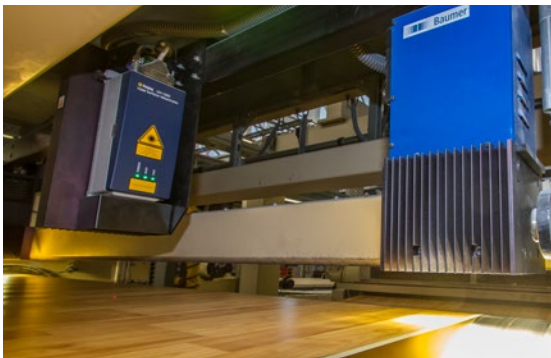
ProSpeed™ optical sensors provide measurement and control solutions for the production of wood products and construction materials such as quality inspections and sorting of lumber, length cutting of insulation materials, length verification of plasterboards and many more applications.

Speed measurement

- Dwell time determination in coating systems, e.g. for wood and wood products
- Control of cutting devices in cut-to-length processes, e.g. for wood and wood products, plasterboard, glass wool, mineral wool

Length measurement/cut-to-length control

- Winding of sheet material such as insulant or roofing material
- Monitoring cut lengths on fiber cement, plasterboard, wood and wood products, glass wool, mineral wool and roofing material
- Cut length control for timber and wood production, plasterboard, glass wool and mineral wool
- Defect tracking on wood materials
- Position tracking during print inspection of laminate and other wood products
- Position tracking for applying installation markings



Position tracking



Defect tracking on wooden slats



Length measurement



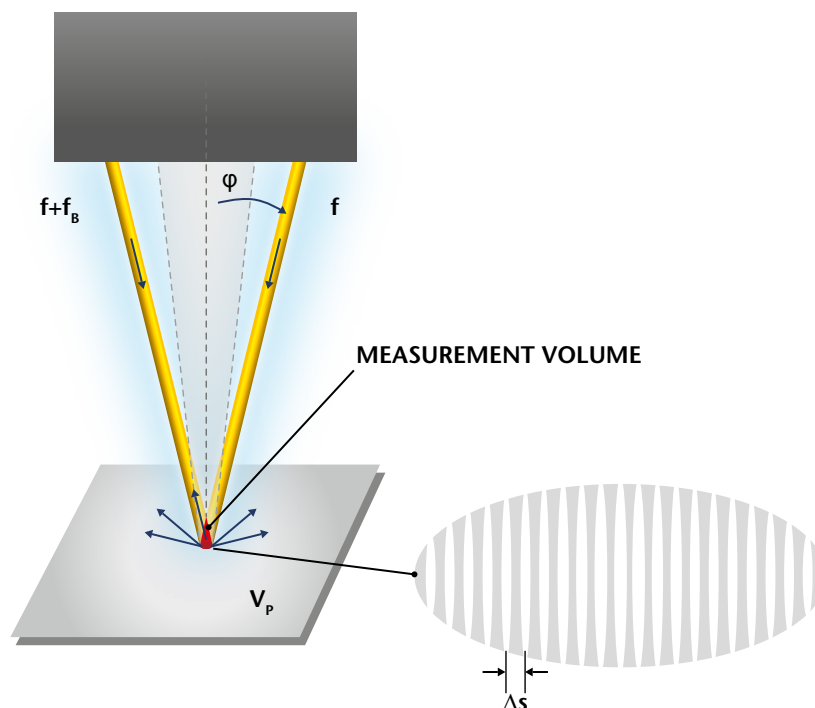
Position tracking

How it works: the laser Doppler principle

Polytec's Laser Surface Velocimeters (LSV) use the laser Doppler effect to evaluate the laser light scattered back from a moving object. Two laser beams super-imposed on the surface generate an interference pattern of bright and dark fringes. As the surface moves through the fringe pattern, the intensity of the light scattered back is modulated in frequency. This modulation frequency

measured by the photo receiver of the sensor system is directly proportional to the surface velocity.

Polytec's LSVs reliably detect the surface velocity including the direction of motion and measure even the slightest movement down to standstill conditions.



Our PolyXperts support you

Polytec has been bringing light into the darkness for 50 years. With more than 400 employees worldwide, we develop, produce and distribute optical measurement technology solutions for research and industry. Our innovative and quality products have an excellent reputation internationally among the expert community. We find solutions tailored to our customers' requirements on a day-to-day basis.



Optical measurement systems improve and ensure your profitability even after many years of use. Our customer service will help you to maintain the equipment to be ready for use with its latest technical revision at any time.

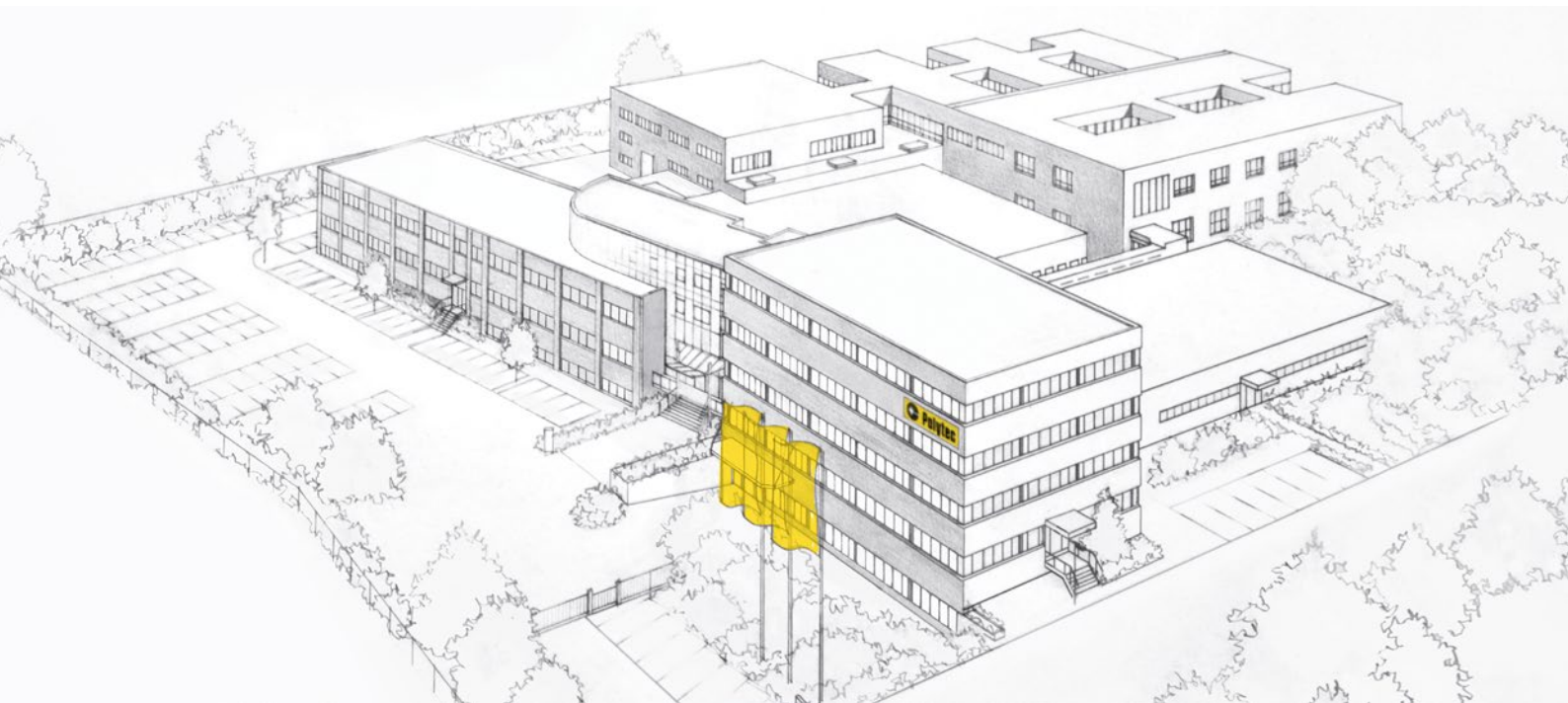


You benefit from our PolyXperts

You will find Support Centers in Germany, France, USA, Singapore and Japan.

Polytec LSV sensors are characterized by their robust design, reliability and low maintenance requirements.

In case you have any trouble, we provide sensor exchange all over the world and immediate repair. As an ISO 9001 certified partner, we will provide all necessary service for you.



Shaping the future since 1967

High tech for research and industry.
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