KEMPF

LOKE ENGINEERING

Measuring and control systems

for speed, length and profile measurements

- Accuracy even under the most difficult conditions
- Detecting - Positioning - Measuring
- Laser and image processing based measurement systems

KEMPF – the specialists for non-contact measurement

The company Kempf GmbH & Co. KG offers laser measurement technology at its best, based on decades of experience. Kempf stands for further development of the proven systems and measuring methods of the family-owned company LOKE Engineering, founded in 1988. The company philosophy is clearly defined: Top performance for demanding applications.

Today, KEMPF is market leader for laser measurements for positioning, geometric detection, length, speed and level determination even under the most difficult atmospheric and temperature-related working conditions. KEMPF always offers ideal solutions – among others also for diffusely reflecting solid and liquid hot surfaces such as steel and glass at surface temperatures up to 1700°C.

Constantly proven, always innovative

KEMPF offers a comprehensive range of solutions – also for complex projects – as well as complete services from needs analysis to application support up to the commissioning of the complete system.

KEMPF is the ideal partner for customer-specific tasks and tailor-made solutions – for your quality assurance and production optimisation due to highly developed measuring systems and decades of experience.

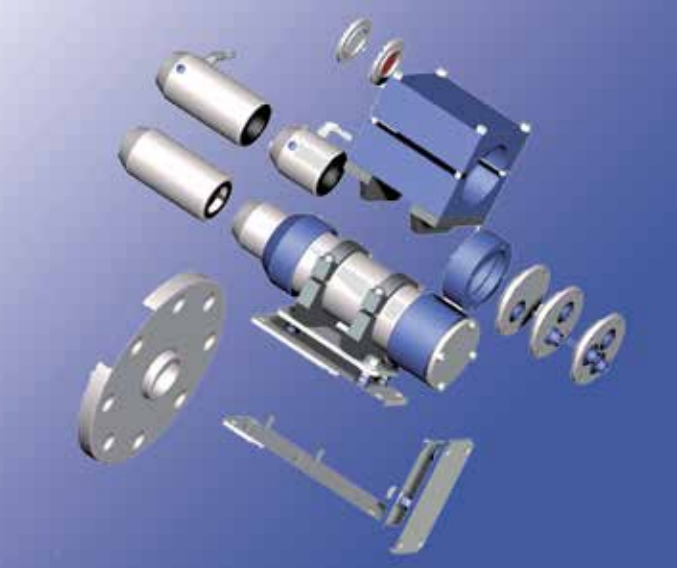


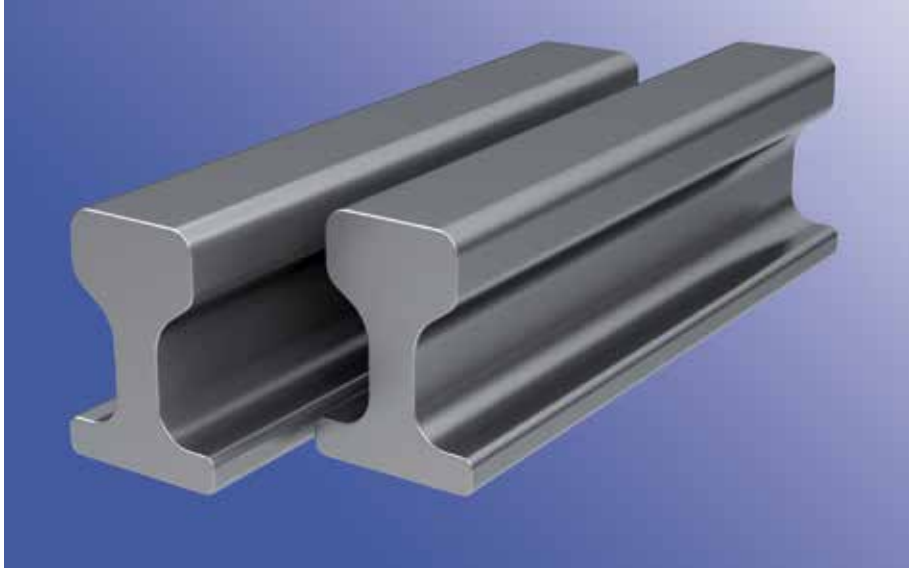
As accurate as possible: Laser-based profile & speed measurement

KEMPF realises automation and logistics processes in heavy industry – preferably in steel mills – and in the non-ferrous metal processing industry. The company's special know-how is particularly evident in measuring by means of laser technologies under extreme surface and environmental conditions.

Exemplary are developments of special solutions for millimetre-accurate 1D and 2D measurement on hot surfaces at temperatures up to 1700 °C, or also for the recording/scanning of different semi-finished product geometries during the production process or of material profiles in the operating phase.

- Laser measuring systems even for the most difficult measuring conditions
- Customised solutions for measuring and inspection systems
- Applicable for a wide range of manufacturing processes
- Measurement on all diffusely reflecting, even extremely hot surfaces
- Highest measuring accuracies in the range of < 0.05%





For speed, length or profile: The nuts and bolts of accurate measurement

Emitting laser light, receiving and amplifying reflections, evaluating signals – our specialists for profile and speed measurements naturally also work according to this principle. Depending on the requirements of the respective application, two different measurement methods are used.

1. Laser-Doppler-Interferometry

Measuring procedure

1. Generation of a laser Doppler stripe by two laser beams on the product surface
2. Collection of the reflected Doppler signal by the receiving optics
3. Signal processing into accurate, reliable and repeatable data

Application examples

- All continuous production processes
- Plastic sheet production
- Paper and film production
- Steel production
- Tube and cable production
- Textile production

Our specialists:
Everything under control - even in sports

For particularly problematic conditions of industrial applications such as very hot material surfaces or highly stressed atmospheric environments, time-of-flight measurement – in special cases using a separate measuring head – is the ideal method.

Our sports science laser system, a unique and proven development, also works according to this measuring principle. All Olympic training centres in Germany as well as well-known training centres in Europe, North America, Southeast Asia and Australia rely on the Kempf laser system for high-precision analysis of straight-line kinematic movements in sports.

2. Time-of-Flight method (ToF)

Measuring procedure

1. Emission of laser pulses in millisecond intervals
2. Determination of the time difference between output and input pulse
3. Calculating the distance from the time difference

Application examples

- Position monitoring over long ranges
- Profile measurement at high speeds
- Level measurements, tilt heights
- Extremely hot surfaces, polluted environment
- Problematic reflection conditions
- Dynamic kinematic motion sequences

LMC-L Series

Speed and length measurement:

Our LOKE LMC-L Systems

- Measuring rate 25 kHz / 50 kHz
- Accuracy < 0.05 %
- Repeatability < 0.02 %
- Material detection < 1 ms
- Update time 0.04 ms / 0.02 ms
- Measurement on hot surfaces up to 1300 °C
- Working distances from 150 mm to 2000 mm
- Measuring field depths 25 – 200 mm
- Data interfaces:

  RS 232 / RS 422 / Ethernet / Profibus /

  SSI / Pulse output / Analogue 4 ... 20 mA /

  Devicenet / W-LAN / others on request

The measuring systems are suitable for ambient temperatures up to max. 45 °C (with optional water cooling up to 100 °C) as standard.

LMC-J 310 Sport laser

Model variants

Series	Method	Special feature	Special function
LMC-L	Laser Doppler		Velocity measurement
LMC-LB	Laser Doppler	B = Bragg cell	Velocity measurement Direction detection; V = 0 m/min
LMC-Lm/LBm	Laser Doppler	m = "mini"	Reduced dimensions; for shorter measuring distances and critical installation conditions
Special models			
LMC-RH	Time-of-flight	up to 1700 °C	Heat applications; difficult atmospheric conditions
LMC-RP	Time-of-flight		Profile measurement at high speeds or under problematic reflective behaviour of the surfaces
LMC-J-310 Sport	Time-of-flight		Measurement of speed, step frequency, step length, acceleration

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