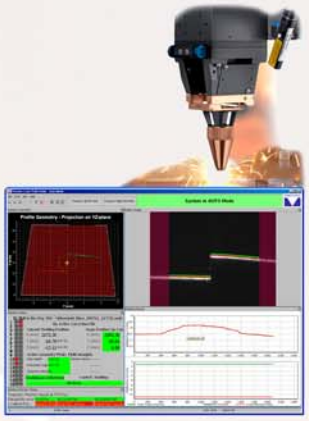
Seam Tracking System LPF

Optical position recognition and seam tracking



The LPF seam tracking system identifies the position of the components to be joined and determines the exact positioning of the welding head. It also carries out the sensory calculation of the joining position in combination with linear drives. The sensor system can be mounted forward of the laser welding process (off-axial) or directly integrated into the welding optics by means of a beam splitter (coaxial). It operates using the triangulation principle.

>> EFFICIENT

- self-sufficient, real-time measuring system
- short distance to weld spot
- highly accurate positioning of the welding tool in lateral and vertical directions
- compensation of robot tracking errors
- compensation of component tolerances

>> FLEXIBLE

- for all types of welding seam geometries
- can be combined with various manufacturers' linear drives
- independent of the system control thanks to the use of compact linear drives
- easy integration into existing systems

>> USER-FRIENDLY & SAFE

- compact design
- documentation of tracking data
- simple parameterization through video analysis and simulation function
- PLC connection via standard interfaces
- integrated protection from fumes and spatter

Joining Technology | Quality Control

coaxial LPF sensor system

for solid-state and diode lasers

>> The coaxial sensor system consists of a coaxial camera and a line generator and is characterized by its minimal interference contour. This minimal interference contour also helps make the system especially suitable for smaller tracking radii and greater standoff distances.

It can also be used in shuttle operation - here two line generators are used.

1 coaxial camera

2 line generator with CrossJet

off-axial LPF sensor system

for fiber-coupled lasers

for solid-state, diode and CO_2 lasers

>> A small, compact camera with integrated line generator is used for off-axial solutions.

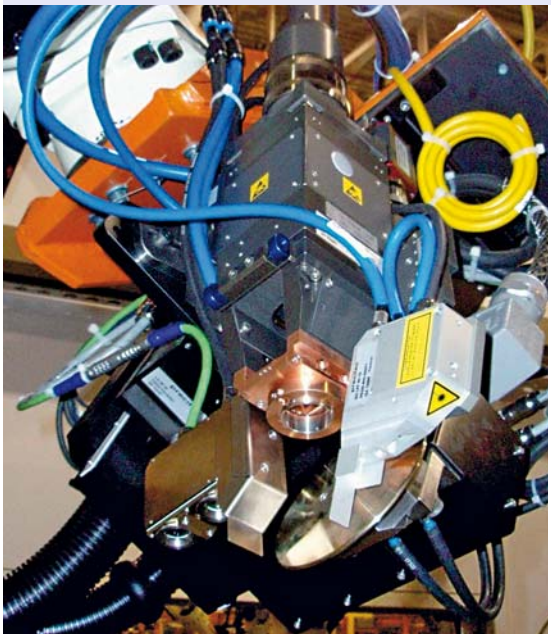
With this arrangement, a greyscale image analysis can be carried out (in addition to the profile analysis). Greyscale image analyses are extremely advantageous for butt joints with zero gaps and the same sheet thicknesses.

for CO_2 lasers

1 LPF camera with integrated line generator

2 SGM camera for optical seam inspection

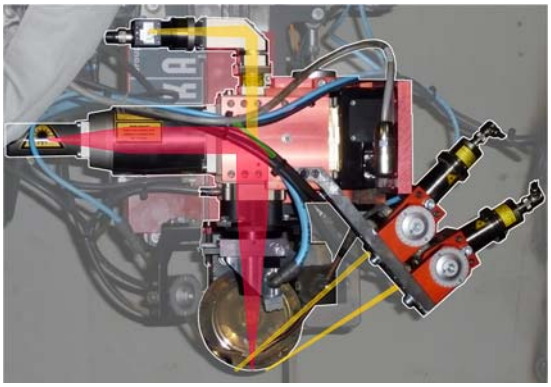
Examples of application



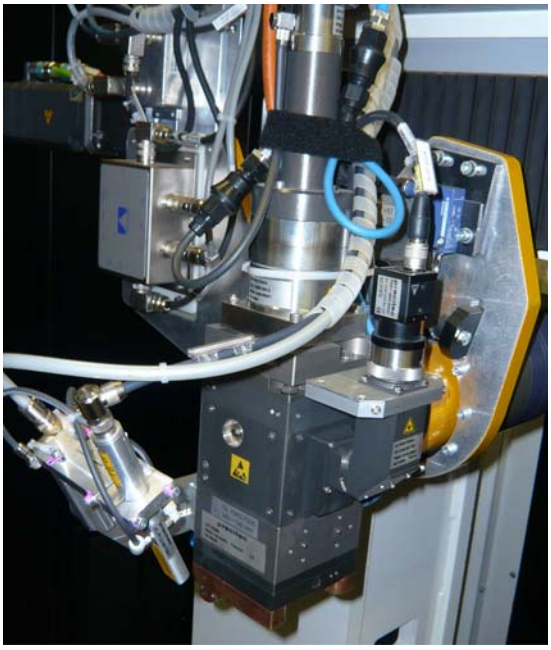
Seam geometry monitoring - roof seams

>> Here the LPF Seam Tracking System is used for the laser beam welding of roof seams and the welding of the A pillar edges in trucks.

The camera displayed in the left of the picture can also be used together with the LPF. It is designed as a post-process tool and enables seam geometry monitoring.



>> With the coaxial seam tracking system, the welding head is capable of correcting trajectory deviations, positioning errors and trimmed edge tolerances of the roof flange on the Opel Insignia, ensuring a precise and homogeneous welding seam.



>> The LPF Seam Tracking System is already being used successfully by many international leading companies, like, for example, Faurecia, Ford, GM, Noble International, Oyabe, Opel and Skoda. Vehicle bodywork, power train and ship-building welding tasks are completed accurately and quickly.

1 LPF camera - identifies the vertical and lateral seam position

2 linear drive for controlling the focal position

3 linear drive for controlling the lateral position

Highly accurate positioning of the welding tool is achieved by the LD50 W external linear drive or by means of a beam deflector integrated into the welding head.

The system can also be combined with various manufacturers‘ linear drives.

4 YH50 Laser Hybrid Welding Head

LPF Seam Tracling System for GMA laser hybrid welding

Technical Specifications of Seam Tracking System LPF

camera types (coaxial, off-axial)	60 Hz - 1.5 kHz (depending on the version)
standoff distance	45 - 200 mm (depending on the version)
types od machine	robot, multiple linear drive, portal and orbital systems
laser types	solid-state, diode and CO_2 lasers
materials	steel, aluminium, copper, titan, magnesium
joint geometries	T-joints, corner joints, double-flanged joints, V/Y-joints, edge welds and butt joints with zero gaps

The given data was generated for a typical application and may be different given other circumstances. Furthermore misprints, changes and/or innovations may lead to differences in the listed measurements, technical data and features. Therefore **all information is non-binding and technical data, measurements as well as features are not guaranteed by information in this product information.**

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