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### Focus Sectors

- Process technology
- Assembly
- Industrial Automation
- Accurate handling of big components

### Key words

- Actuator
- Process reliability
- Manufacturing tolerance
- Relative positioning

### Development Status

- Prototype available

### Patent Procedure Status

- DE Patent filed
- PCT Patent filed

### Chances for Cooperation

- Licensing
- Patent Sale
- R&D Cooperation

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## Innovative High-Precision Positioning of Covered Actuators

### Innovation and Customer Benefit

The invention addresses the high accuracy handling of big components in production processes. Big components are usually handled by cooperating handling/robot-systems that do not have a direct line of sight, since they are separated by the big component. Thus, it is essential to link the handling systems via a reference system to ensure that both systems work together properly. Today this is solved via several reference systems which do not deliver the needed accuracy due to the inherent error propagation. The present invention delivers a handling accuracy of less than 1/10 mm for components of 10m or even larger. It also reduces the investment costs of the handling systems dramatically.

The main advantages of the system are:

- Increased accuracy by relative positioning
- Increased process safety
- Decreased investment costs

### Possible Applications

The deployment of automatic handling systems in production processes with big components is increasing rapidly. The aerospace, shipbuilding and the wind power industry drive the automation and the need of high accuracy cooperating handling systems.

### Technical Description

The relative positioning without direct line of sight is based on three IR-laser spots. The first actuator on the front side of the component sends the laser pulses while a second actuator on the rear side detects them as heat radiation (see Fig.1). The positions of the pulse-midpoints are then determined with image processing for gaining the complete information of the local reference coordinate system. With this set-up only one reference station (e.g. laser tracker) is needed.

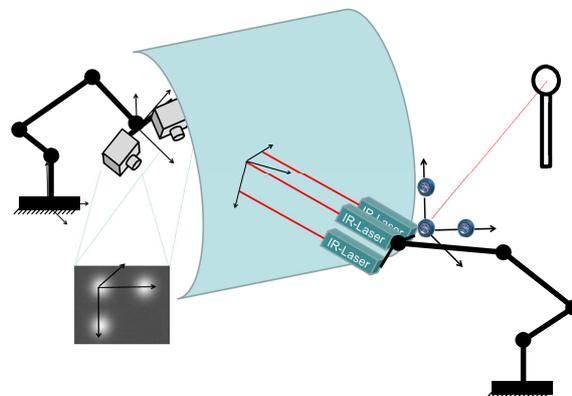


Fig. 1: Two cooperating handling systems with relative positioning