I-PFO

Intelligent process machining "on-the-fly"

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Cycle-time reduction through flexible production

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TRUMPF

Machine tools/Power tools
Laser technology/Electronics

Cycle-time reduction through flexible production

The I-PFO is an intuitive and flexible system, which has its main use in the welding of 3D parts in which the "on-the-fly" mode is utilized. Compared to conventional laser welding, the cycle times can be reduced significantly. With this the production of the part is designed very effectively and cost-efficiently. Based on the programmable focusing optics (PFO), the I-PFO can be integrated into various industrial robotic system types in just a few steps. Moreover, multiple I-PFOs can be operated with one TRUMPF laser. This way guarantees the best possible use of the laser source, and your production is therefore very flexible.

TRUMPF scanner technology for efficient production processes

I-PFO stands for **intelligent programmable focusing optics.** It knows its own position in the robot's work area and the array and gradient of the processing points, e.g. the welding seams, on the workpiece. The robot coordinates are transmitted in real time. It independently starts processing the component when the control reports no geometric or process restrictions.

Movement calculations in real time

Because the motion calculations of the I-PFO are made in real time, the speed changes in the robotic path are corrected through the I-PFO mirrors while the program is running. The welding geometries are, then, welded at specified positions and specified welding speeds automatically without any operator intervention.

Intuitive programming

The I-PFO comes with intuitive programming tools to enable quick and inexpensive programming of a variety of components and welding jobs. With it, the welding process can be programmed for both an existing welding system using teaching as well as virtually in the creation of a new welding system.
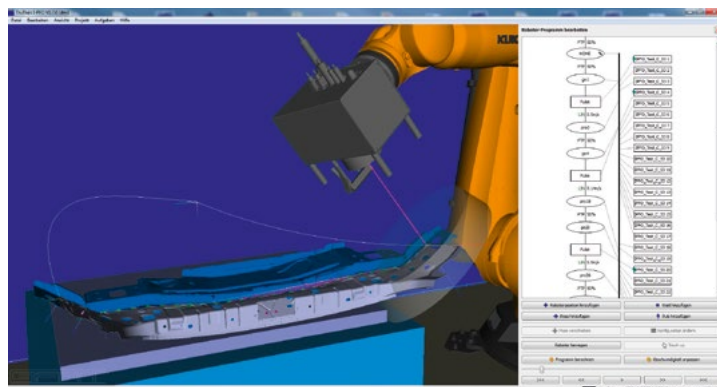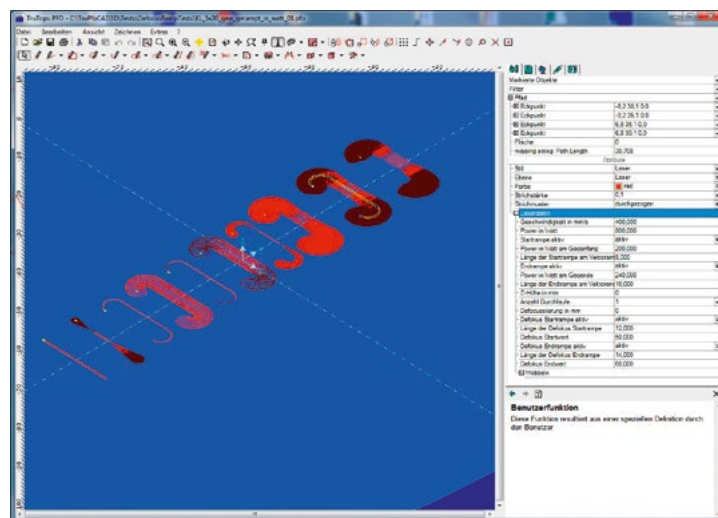
Integration of sensors

Because of its flexible design, various different sensors can be integrated in the I-PFO. Examples of this include process monitoring systems based on cameras and/or photodiodes, and camera systems for edge-detection and seam tracking.

TruTops I-PFO: 3D offline software for the programming of the paths of robots and of scanner programs (I-PFO jobs).

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