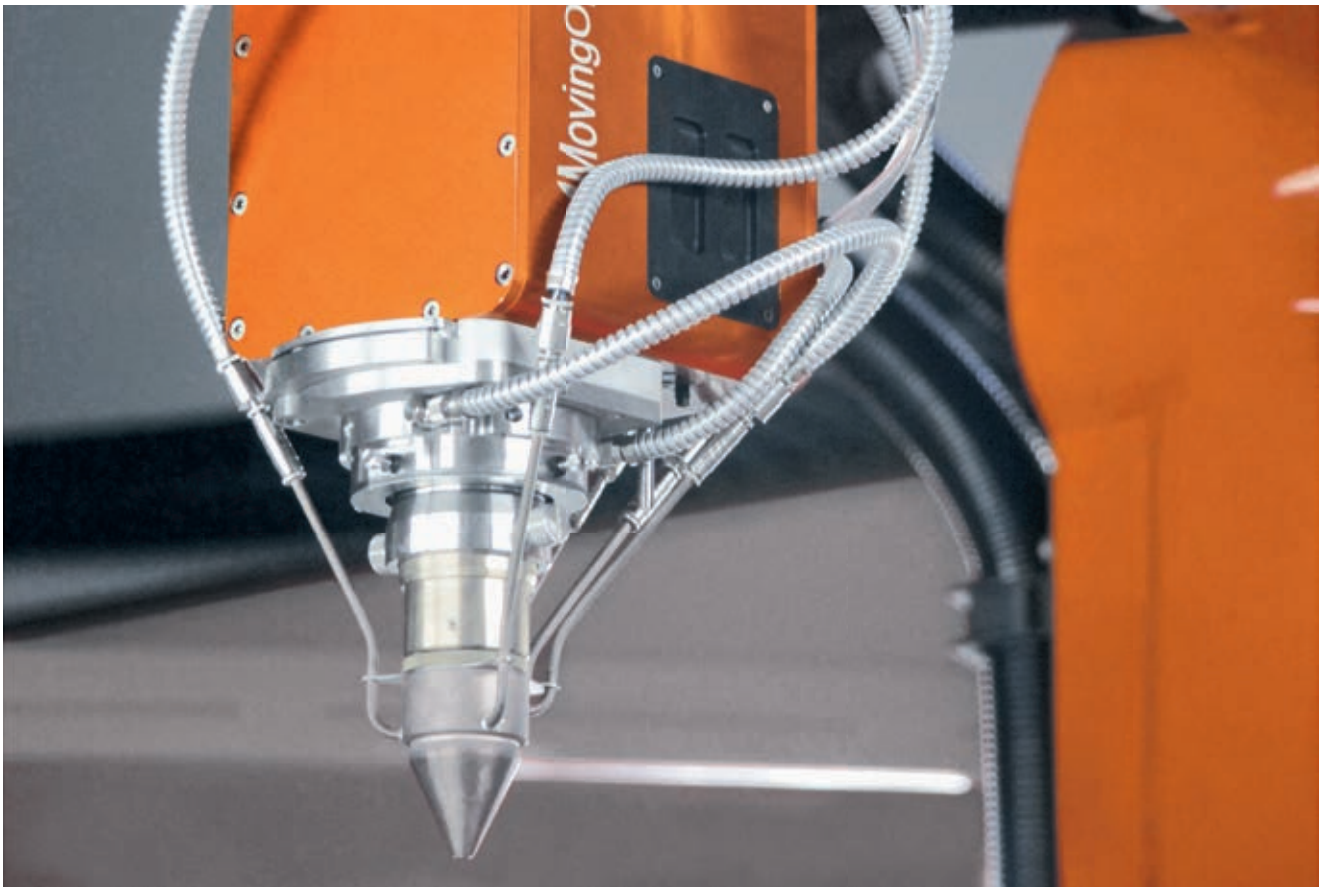
KUKA

Technology_**Motorized powder zoom-optics**
Laser cladding with in-process variation of track widths



Based on a common patent a powder optics was developed together with Fraunhofer ILT that allows variable track widths with constant Tool-Center-Point (TCP).

The motorized zoom-optics with a coaxial powder feed nozzle is equipped with a compact housing. The highlight of this optics is a well-designed motorized moving lens packet which can vary the beam diameter on the workpiece during a process, without modification of the working distance and any complex adjustments. Additionally, using a direct linear drive allows high speed moving of the lens packet and rapid changes of the track width during processing.

This optics can be delivered with a stand-alone motor control, which enables an easy connection to any handling system.

Advantages

- Compact and robust
- Developed for toughest process conditions in industrial use
- Zoom system with motorized moving lens packet
- High dynamic during processing and for fast adaptation of the track width
- Design available as coaxial nozzle and 3-jet nozzle
- Compatible with different handling systems (robots, gantry kinematics etc.)
- Direct and optimum connection to the robot control is possible

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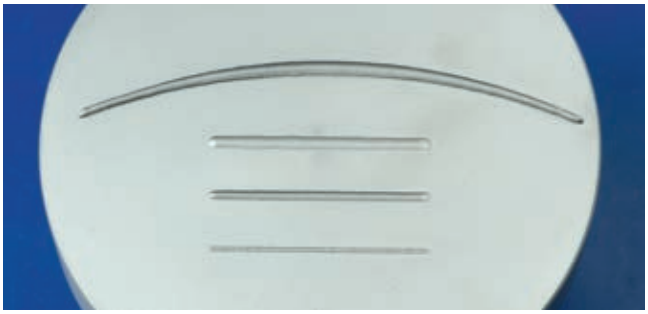
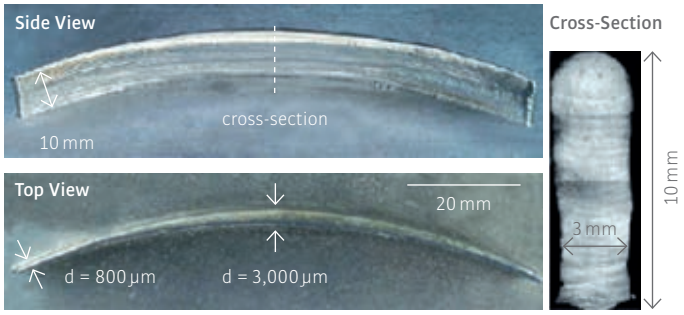
Technical data

Weight: ~10 kg
Dimension: ~400 mm × 250 mm × 180 mm
Focal length: 185 mm
Input aperture: maximum 30 mm
Laser power: maximum 4 kW
Wavelength of laser beam: 900 nm – 1,080 nm
Variably adjustable spot diameter of 0.5 mm – 4.5 mm (The real variation range depends on the used laser and fiber diameter)

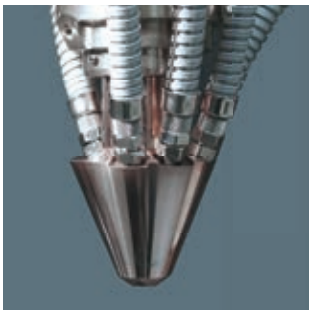


Simulated tip with variable track widths
(Fraunhofer Institute of Laser Technology ILT)



No hot cracks, no defects, minimum of pores

Coaxial nozzle
Continuous-feed powder injection
Cladding with the highest precision (the powder focus ≧0.4 mm)



3-jet nozzle
Three-jet powder injection
Cladding of broad tracks

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