



L A S E R T E C H N O L O G I E

Press Release

Performance-Plus = 30 percent

Laser-Sensor “Autofocus“ boosts productivity through 3D ability

Laser is the powerful processing light responsible for performance at both the X- and Y-axis. At the Z-axis however, the laser is ‘blind’. The use of applied laser technology in mold making, sheet metal or plastics processing can thus, or better, be described in principle. Better in any case, as the blind spot of the laser Z-axis is now a thing of the past – thanks to OR Laser Technologie. Laser processing stations can now operate in vertical direction with optimal precision in focal length definition – notwithstanding the “roller coaster ride” – without interruption or manual adjustment.

OR Lasertechnologie GmbH, headquartered at D-64807 Dieburg in Germany, initially developed the focusing system ‘Laser Autofocus’ for the purpose of manual deposition welding in mold making. Background: tools – i.e. molds and precision parts – for example for the automotive and plastics processing industries or for medical technology, are shaped by complicated 3D geometries. Conventional 2D processing of materials suitable for laser application at the X/Y-axes is problem-free and economical. However the Z-axis has to be re-adjusted by the operator – this takes time. After all, the laser – at a focal length of 100 mm - reaches its constant Rayleigh length of 0.4 mm, within which the process remains at optimum effectiveness. With ‘Laser Autofocus’ in contrast, the pre-determined laser focus – and thus the effective focal length – is continuously maintained. Non-contact gauging takes place within the beam of the processing laser, i.e. coaxial to the operating axis. The subsequent direct measurement within the focal point of the laser not only assists in controlling the distance between the part to be processed and the focusing system, but also to adjust or possibly correct these values. All process-specific parameters are adjustable via the user-friendly operator panel of the self-contained control system, and they are fully reproducible after storage. Maximum adjustment speed is <math>< 15\text{ mm per second}</math>, with a stage position accuracy of

Continual research and enhancements has enabled OR Lasertechnologie GmbH to universally optimize the system. Automation tasks now only require 2D programming. Today the 'Laser Autofocus' can be employed for almost all laser applications and technologies (impulse or continual line lasers and CO₂ lasers etc.) in areas such as manual deposition welding, even with differing tolerances of the parts to be processed, automated welding seam tracing, high precision drilling of turbine blades, drilling-depth indication, not forgetting 3D inscription. 'Laser Autofocus' can be applied or adapted to suit all laser sources of all manufacturers.

Even the most powerful laser sources afflicted with the phenomenon of plasma cloud build-up have not challenged the limitations of the 'Laser Autofocus': continual measurement and focal length control at the dynamic Z-axis take place during the process 'in front of the cloud' simultaneously with downstream gauging for quality control and surveillance.

With a dedicated Europe-wide distribution and service network, together with qualified alliance partners overseas, OR Lasertechnologie is able to offer its focus system 'Laser Autofocus' across the globe without any limitations.

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Photos: OR Lasertechnologie GmbH

Image 1: *practical application of Autofocus*

Image 2: *principle drawing of Autofocus*

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