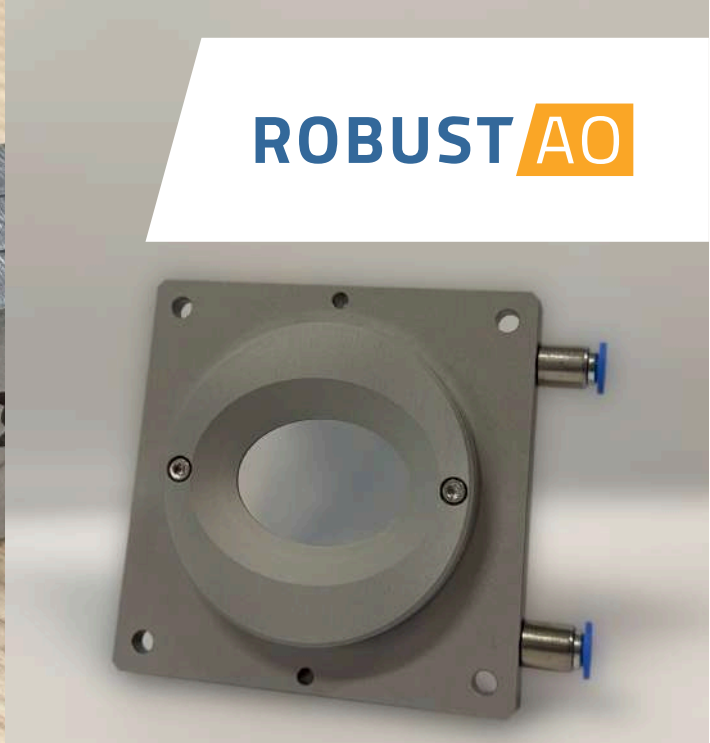




ROBUST **AO**



Need **FAST FOCUS** for your high power laser?

ZWOBBEL®-IR-HP

- » **Dynamic Beam Shaping** for **20kW** high-power lasers
- » **550g light and compact** (100 mm x 100 mm x 60mm)
- » Up to **60% faster cutting** at the best cut quality

Dynamic Beam Shaping Technology

Dynamic beam shaping is transforming laser manufacturing by setting new standards for efficiency and quality. Our **Zwobbel®** Technology features **axial wobble** capabilities, enabling beam oscillation in **beam propagation** at frequencies up to **3500 Hz**.

Seamless Integration – Maximum Performance

Our Zwobbel® Technology is a ready-to-use solution. The system is controlled via an analog signal input (0-10V) or digital signal (SL2-100, XY2-100) for precise focus adjustment.

Fluidic cooling supports continuous high-performance operation at up to 20 kW cw, while integrated temperature and position sensors provide real-time monitoring for reliable performance.

Application

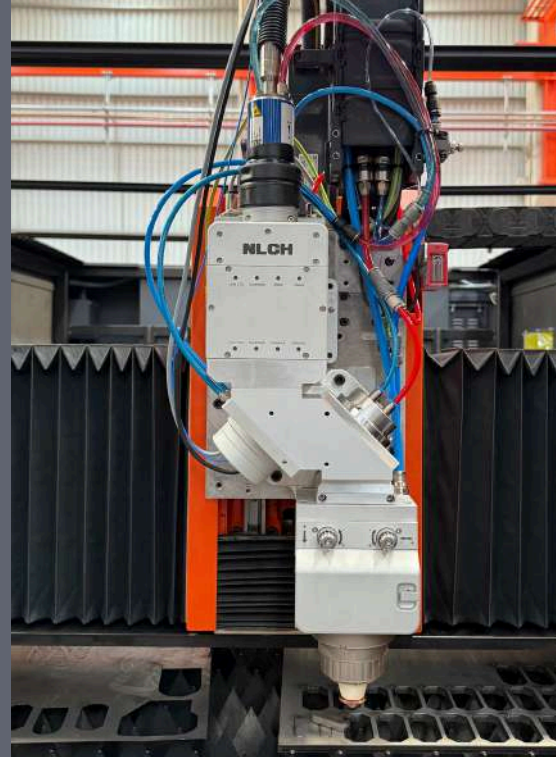
In **laser cutting**, Zwobbel® delivers **dross-free results** with **lower edge roughness** and increases cutting speeds by up to 60% - all without increasing laser power. This translates to **higher productivity** and **maximum profitability** for your laser cutting machines.

Beyond cutting, Zwobbel® unlocks new opportunities in **laser welding**, and **additive manufacturing**, driving the next generation of industrial innovation. Furthermore, **micro processing** benefits in ablation, drilling, functionalization, cutting and joining

Your Benefits

- Up to **10 fold less dross** in laser cutting
- **Reduced roughness** of cut edges
- Up to **60% faster** laser cutting
- **20 kW** laser power capability
- High focusing speeds below **2 milliseconds**
- Oscillation frequencies up to **3500 Hz**
- Stable performance even at maximum power
- Functions as a 90° deflection mirror
- Flexible focus adjustment
- Available for wavelengths between 1020 nm and 1080 nm, 340 nm - 358 nm, 2 µm and CO₂-lasers

Boost your manufacturing efficiency with Zwobbel® Technology!



1.4301, $P_L=20$ kW, $t=10$ mm



1.4301, $P_L=15$ kW, $t=20$ mm

Facts & Specifications

Zwobbel will be delivered as a set of

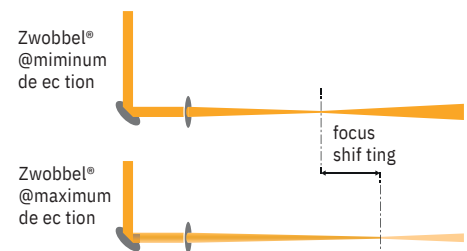
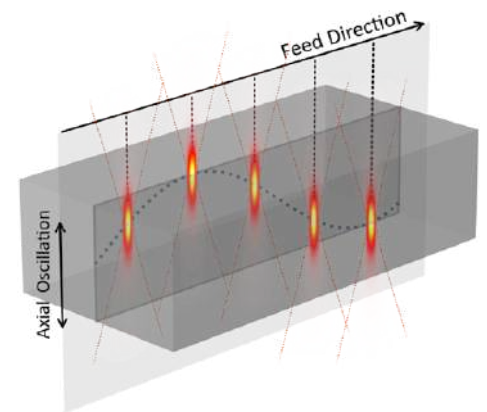
- »Zwobbel (opto-mechanic)
- »ZwobbelCon (controller)
- »ZwobbelDrive (actuator supply)

Technical specification Zwobbel-IR-HP

- »90° deflection mirror
- »Aperture: min. 10 mm and up to 24 mm
- »Wavelength 1020 nm – 1080 nm (pw and cw), and 632 nm
- »Analog and digital interface
- »15 mm focus stroke in 2 ms *
- »Oscillating focus freely selectable between 0 Hz and 3500 Hz
- »High power up to 20 kW cw

Other products

- »Zwobbel®-UV for 340 nm - 358 nm
- »Zwobbel® -CO2 for CO₂-applications at 10640 nm
- »Zwobbel®-TWO for 2 μm-applications



Contact us now!

ROBUST AO GmbH
Hans-Knöll-straße 6 · 07745 Jena
+49 3641 554 180 ·
info@robustao.de

**Dross-free cutting
at the highest
cutting speeds!**

* In combination with $f = 200$ mm - focusing lens