Highest precision with laser solutions from Jenoptik.
Lasers for Micromachining

Micro and precision machining of different materials with lasers has become an enabling technology for many industrial applications. The advantages of lasers over conventional machining technologies include improved processing speeds, finer machining capabilities, reduced downtime and lower cost of ownership. For laser-based processes like micro drilling, cutting, structuring, scribing and marking, Jenoptik offers short pulse and ultrashort pulse laser sources with high beam quality in different wavelength ranges, since high beam quality allows the production of smallest structures. Their high pulse energies enable high process speeds. For micro or plastic welding and laser surface treatment, the Jenoptik fiber-coupled diode lasers are perfectly adapted tools.

Our customers benefit from

- State-of-the-art laser research & development
- Commitment to customer-specific product development
- Flexible laser production
- High quality lasers with high parameter stability and economic lifetime
- Valuable support by our laser application lab
- Worldwide sales and service

JenLas® femto series (10 – 16 W)

Thin disk based femtosecond IR & green laser systems, offering robust design for 24/7 operation, superior beam parameters and pointing stability, quickly tunable pulse repetition rates and fast beam modulators for pulse picking and energy attenuation. They are used for repeatable and flexible micromachining of highest quality with nearly all materials (hard, brittle, transparent and composites included). Benefits of femtosecond pulses with multimegawatt peak powers are non-thermal ablation with virtually no heat-affected zone (HAZ), unmatched sharp and clean machining edges, prevention of micro-cracks, burr or recast, and selective thin film ablation. Expensive post-processing steps can be reduced or eliminated.

JenLas® pico series (16 W)

Rod based picosecond IR laser systems for efficient micromachining like black, autoclavable markings on stainless steel or titanium alloy medical devices (UDI compliant), high-contrast marking on ceramics and polymers, precision cutting, engraving and drilling of ceramics, glass, metals and polymers, or selective thin film ablation. Though picosecond pulses are an order of magnitude longer than femtosecond pulses, they also reduce the heat-affected zone (HAZ) to a minimum, thus allowing to reduce or eliminate post-processing. The systems offer low cost of ownership, a programmable MHz burst mode, an SHG option for green generation, and are fully air-cooled.
JenLas® disk IR series (40 – 65 W)

Thin disk based nanosecond IR laser systems for precision material processing at high process speeds, e.g. for hard & brittle materials, CFRP and others. Their truly unique feature of independently tunable pulse widths and repetition rates brings unprecedented flexibility and perfect adaptation to different industrial applications. In addition, they feature very high pulse energies of up to several mJ and peak powers of up to 250 kW, which is beneficial for reduced heat-affected zones (HAZ) as well as for parallel processing.

JenLas® fiber ns series (25 – 100 W)

Nanosecond pulsed IR fiber lasers that outperform conventional lasers in general marking applications and achieve excellent results in micromachining. Besides the advantage of fiber beam delivery, these systems feature flexible control over peak power, providing state-of-the-art repetition rates while maintaining beam quality. Integrated fiber isolator ensures robustness against back reflection from highly reflective surfaces. Various beam expanders and pneumatic shutter module support integration into laser machines. Highest standards of reliability, performance and repeatability are met.

Fiber-coupled diode lasers (30 – 400 W)

High brilliance fiber-coupled diode laser modules for material processing like welding (plastics, thin metal sheets) or surface treatment (hardening, brazing). The modules are available in a wide range of IR wavelengths and power levels, and with various fiber core diameters and connectors. Options include pilot lasers, power monitors and temperature controls for system and quality checks, as well as various cooling versions (industrial water, TEC or air). Further benefits result from the good beam quality and small collimated beam divergence, as well as their high efficiency, reliability and service life.
Besides offering laser systems which can be customized to fit specific application setups, we are always committed to advise our customers on questions about laser applications and integration into their manufacturing systems. Images: JENOPTIK Optical Systems GmbH, fotolia.com, 3D-Micromac AG