



JENvelt – JENOPTIK vision-enhanced laser tool
Smart optical system for laser material processing

We are a globally operating photonics group which is present in more than 80 countries; the Light & Optics division, for example with production and assembly sites in the USA and China. Additionally, the division is represented abroad by shareholdings in India, Israel, Japan, South Korea and Singapore.

It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.

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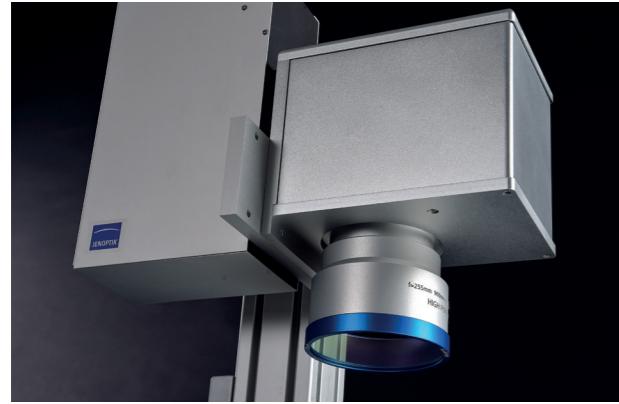
With the new vision-enhanced laser tool, Jenoptik provides an optical system for integration into laser production systems for material processing. As a compact "plug-and-play" system, it is easy to integrate and takes into account the process-related requirements of laser production.

The system combines a 2D galvo scanner, F-Theta lens and camera with integrated image processing and intelligent software. System integrators benefit from shorter development times and a smart software solution that ensures the user fast deployment.

Features & Benefits

- Smart plug-and-play system solution
- All in one software
- Object recognition
- Automatic positioning of the laser relative to the recognized features
- High precision
- Increased first part yield
- Increased productivity
- Reduced production costs
- Faster time-to-market
- Flexibility from a single source

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JENvelt makes cumbersome clamping fixtures obsolete or, if the process requires them to be used, makes them easier to implement. The process is particularly beneficial when processing workpieces that are manufactured with comparatively high tolerances, such as injection-molded plastic parts.

Increased production yield from the first component onwards improves the production result as well as productivity. Calibration at the push of a button ensures machinery can be converted flexibly and quickly, e.g. in the case of varying production orders. Consistently high levels of precision and reproducible results make production more efficient.

The software solution

The centerpiece of the system is the “all-in-one” software, which combines scanner and laser control and image recognition with artificial intelligence. The software maps production projects, and monitors the ongoing process while ensuring that the data obtained is evaluated and fed back into the control system:

When a production order is set up, optical markers are defined to ensure the laser spot is accurately positioned, enabling the device to “check” and “compare” the position of the workpiece in relation to the laser spot and then to reposition it if necessary. This is done with a positioning and repeat accuracy of up to 10 micrometer. The laser spot is positioned precisely at the pre-defined location regardless of the component’s geometric and position tolerances.

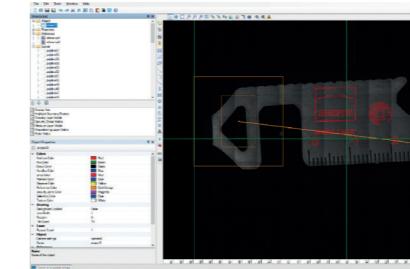
At a glance

- Combines galvo control, laser control and vision features in one software
- Combines „classical“ laser control software with vision channel
- All in one software solution
- Modular software design for flexible system setup
- Pattern recognition features and object recognition
- Coaxial vision channel enables high accuracy through high resolution
- High accuracy of up to 10 µm
- Large field of view
- Referencing of scanning pattern relatively to objects recognized
- Enables jig-less processing
- Drift free setup
- Calibrated & ready to use

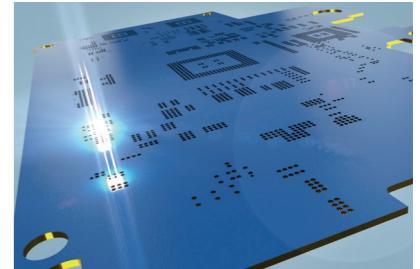
The package



Scanner Module + Camera / Further Sensors



+ Software



+ Process know-how

Other Jenoptik products for integration into your laser machine



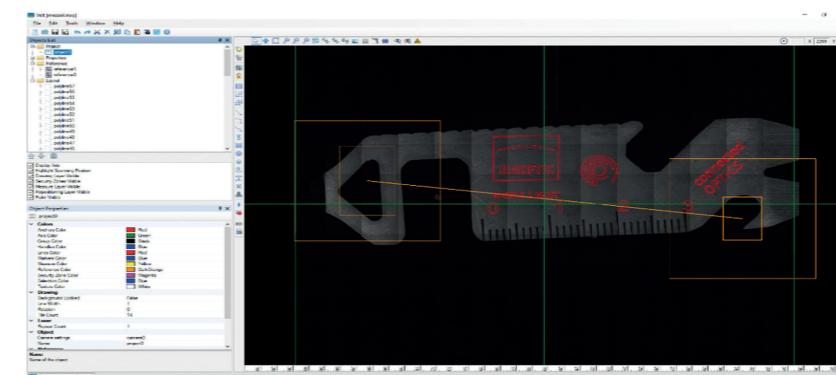
Motorized Beam Expander 1x-8x simplifies production steps in laser material processing.



Silverline™ F-Theta lenses and variable Beam Expanders are ideal for high-power and short-pulse applications.



JENar™ F-Theta lenses can be used for the high-precision micro structuring, marking and labeling of a wide range of materials.



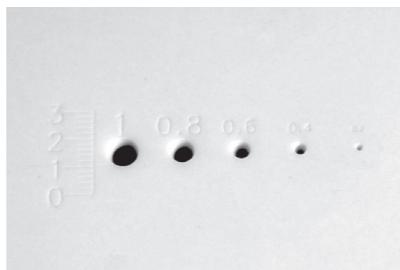
Application Examples



Laser plastic welding



Laser scribing



Laser drilling

Inspired by you. Invented for you. Putting you in the lead.