New TRUMPF disk laser celebrates world premiere in Shanghai

TRUMPF showcases latest generation of TruDisk lasers – the most advanced high-power solid state laser on the market – smart systems for Industry 4.0 and optimum features for condition monitoring – new laser diodes boost efficiency

Ditzingen/Shanghai, March 14, 2017 – The laser and laser system manufacturer TRUMPF recently showcased the latest generation of its TruDisk disk laser at the Laser – World of Photonics trade fair in Shanghai. As the most advanced high-power solid state laser on the market, this new generation of disk lasers boasts built-in intelligence, offering optimum hardware features for a digitalized future and Industry 4.0. The ability to carry out condition and trend analyses – also known as condition monitoring and predictive maintenance – is a basic prerequisite for successfully implementing lasers in digitalized and connected manufacturing environments.

“The new TruDisk is not just the smartest, most advanced generation of disk lasers we’ve ever developed, it’s also the most compact and energy efficient,” says Klaus Löfler, managing director and head of sales at TRUMPF Lasertechnik GmbH. “Combined with our Condition Based Services for condition and trend analyses, the new TruDisk lasers are the perfect production tool for superior Industry 4.0 production lines.” Condition Based Services are a modular component of TruConnect, the TRUMPF technology for connected manufacturing and Industry 4.0. They increase the availability and productivity of connected laser systems while identifying potential cost savings.

All-new control system, diodes, and cooling technology
The critical hub of the smart TruDisk beam source is the built-in control system known as CPX. This is the laser’s brain, where all the condition data and process parameters are collected. During processing, a broad array of sensors measure multiple parameters, including the actual laser output at microsecond intervals, all internal and external signal characteristics, the utilization rate of the beam source, and the condition of additional components. The new generation of
TruDisk lasers also incorporates a clever new feature that significantly enhances the quality of the data obtained from the readings. Known as Precision Time Protocol, this feature synchronizes all the sensors and provides them with an identical time stamp. But perhaps the most impressive development of all is how TRUMPF is planning to use Condition Based Services in the future. With the customer’s prior approval, the services will be used to analyze data parameters, carry out algorithm-based trend analyses, and take targeted measures to determine the risk of potential laser failure in advance and prevent unscheduled downtime.

The second major improvement inside the new-generation TruDisk lasers can be found in the new laser diodes, which TRUMPF develops and produces at its U.S. plant in Princeton, New Jersey. The new laser diodes are both compact and energy efficient. That keeps running costs down while also reducing the laser’s footprint, which – at just 0.85 square meters – is currently the benchmark for multi-kilowatt high-power lasers. There is even room in this small space for the laser’s smart cooling system, which enables the use of cooling water at feed temperatures of up to 26 degrees Celsius. This eliminates the need for an external cooling unit in the majority of cases.

**Now even better**

To boost the energy efficiency of the new TruDisk lasers, TRUMPF has not only increased how efficiently the lasers work, it has also equipped them with a new pulse function. This makes it possible to ramp the current of the pump diodes down to zero amps even during very short laser-off times between two processing steps. The new generation of lasers comes with a smart energy management system that switches the laser between different power-saving modes for each operation, reducing energy consumption to a minimum. The disk laser’s optics have also been redesigned to ensure optimum use of the diode pump light.

The TRUMPF TruDisk laser has proven its worth thousands of times over in practical applications. Real-time power regulation ensures the power applied to the workpiece remains stable from one operation to the next and throughout the
system’s entire service life. What’s more, TruDisk technology is built to withstand laser radiation reflected from the workpiece, making it an extremely robust disk laser that is ideally suited to tough industrial environments. It also offers a modular design, making it easy to upgrade the machines with individual components and functions at a later point in time. This is a disk laser designed to tackle a remarkable range of applications. From auto making, aerospace engineering, medical devices, and electronics right through to the supply sector and heavy industry, the high beam quality of a TruDisk laser makes it a reliable tool for joining, coating, additive manufacturing, hardening, and cutting with high quality and reproducibility.

The new generation of TruDisk lasers is available for laser outputs of between three and five kilowatts with fiber core diameters between 100 and 600 micrometers. Further models are due to be released this year.

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Robust optics

The technology used in a TRUMPF TruDisk disk laser is designed to withstand laser radiation reflected from the workpiece, making it an outstandingly robust choice.

New generation of disk lasers

New-generation TruDisk disk lasers are extremely compact, with a footprint of less than one square meter.
Press Release

Resonating cavity

The mirrors in the optical cavity guide the pump beam emitted by the diodes through the disk crystal multiple times.

Condition Based Services

TRUMPF Condition Based Services help ensure reliable production processes with maximum availability.

About TRUMPF

The high-technology company TRUMPF offers production solutions in the machine tool, laser and electronics sectors. We are driving digital connectivity in manufacturing industry through consulting, platform and software offers. TRUMPF is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers.

In 2015/16 the company – which has more than 11,000 employees – achieved sales of 2.81 billion euros. With over 70 subsidiaries, the TRUMPF Group is represented in nearly all the countries of Europe, North and South America, and Asia. It has production facilities in Germany, France, Great Britain, Italy, Austria, Switzerland, Poland, the Czech Republic, the USA, Mexico, China and Japan.

For more information about TRUMPF go to www.trumpf.com

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