

## Press release

### **Laser World of Photonics 2023: Laserline presents first blue diode laser with 4 kW output power**

#### **Further key topics include hard coating of brake discs and wind turbine bushings as well as laser drying of battery electrodes**

*Laserline has succeeded in further increasing the output power of its blue diode laser series: At this year's Laser World of Photonics, the company will present a blue 4 kW laser for the first time. Amongst other applications, lasers of this wavelength enable more effective and energy-efficient processing of copper components in e-mobility manufacturing. Laserline will also provide information on diode laser-based coating applications for brake discs and wind turbine components, as well as an innovative laser drying process for the series production of lithium-ion batteries.*

**Mülheim-Kärlich, May 31, 2023** – Copper welding in the electronics field, hard coating of brake discs and wind turbine components as well as drying for battery production – these application areas are the focus of Laserline's trade show appearance at Laser World of Photonics 2023 (June 27 to 30 in Munich, Hall B3, Booth 305). Among the highlights will be the presentation of the first blue diode laser with 4 kW cw output power. It has been primarily designed for the (additive) manufacturing of copper components and represents the highest power class of industrial lasers currently available in the blue wavelength spectrum. Like all blue Laserline diode lasers, the 4 kW laser operates at 445 nm, is absorbed by copper alloys five times better than at infrared wavelengths and results in an almost perfect melt pool without pores. The increase in power enables significantly more energy-efficient and faster processes in both welding and additive manufacturing. The introduction of the new performance class is accompanied by advanced manufacturing optimizations that make it possible to both increase production numbers of laser systems and permanently lower the market price, making the use of blue lasers even more attractive. In addition to the 4 kW system, a new 200 W pulsed blue diode laser for semiconductor applications will also be on display as a prototype at the booth, demonstrating that the range of applications is continuously expanding too.

#### **Leading-edge cladding applications with upgradeable infrared lasers**

The second focus topic of Laserline's trade show appearance is laser-based cladding solutions, in particular for rotationally symmetrical components such as brake discs for road and rail vehicles or plain bearing bolts (bushings) for planetary gearboxes of wind turbines (WKA). Both these technologies contribute significantly to environmental and climate protection: For example, diode laser-based anti-corrosion and anti-wear coatings reduce the hazardous particulate matter produced by brake discs and brake pads by up to 90 percent. And for wind turbine bearings, diode lasers enable bearing surface coatings that are gentle on resources and workpieces and that exhibit a long lifetime, thus contributing to a reduction of the raw materials required and significantly increasing the service life of equipment that is

elementary to the energy turnaround. Laserline's LDF series infrared lasers – as used in both application areas and exhibited at the booth – are characterized by their flexible and 'in-the-field'-capable scalability. Once successfully established, roughly doubling the speed of a coating process can, for example, be easily achieved by upgrading the output power from 12 to 24 kW.

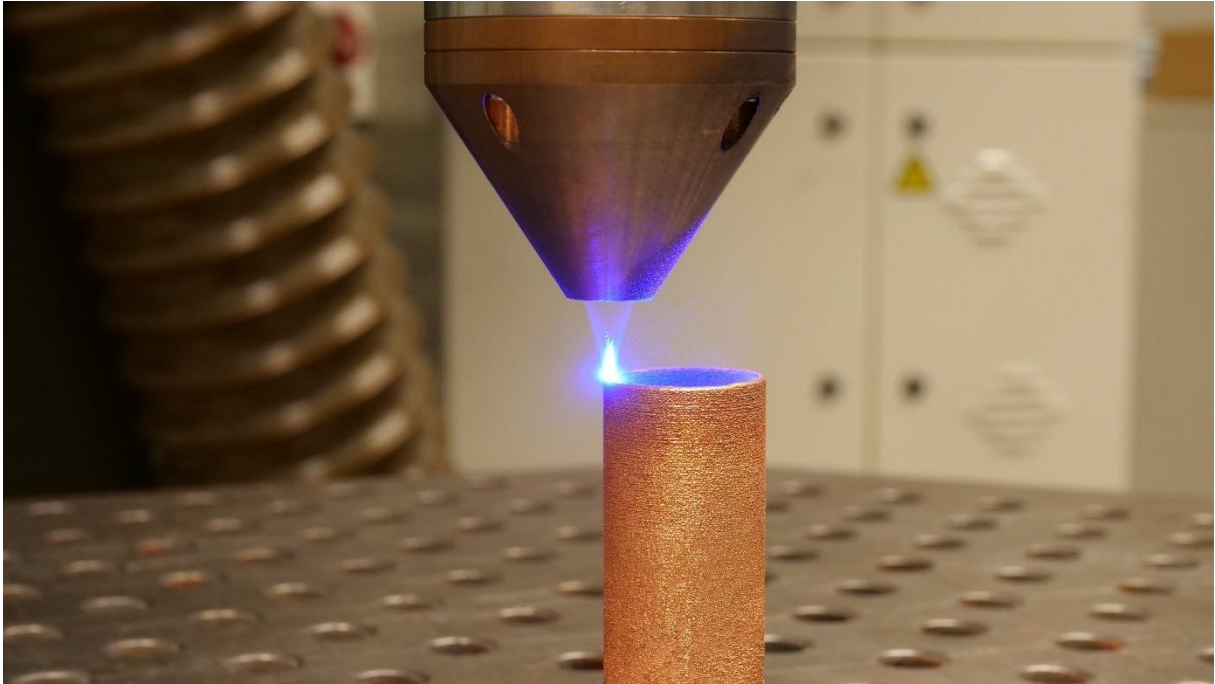
Another product innovation that will be exhibited for the first time at Laser World of Photonics is a 10 kW diode laser of the LDM series in 19" format. Integrators in particular can implement this design very easily and advantageously into existing machine concepts for welding and cladding applications. With the new 19" laser, Laserline has also succeeded in achieving a previously unattained packing density of 9.6 dm<sup>3</sup>/kW. This means that less than 10 liters of installation space are required per kW of laser power – only a third of the space taken up by comparable fiber lasers!

### **Laser Drying for the Production of Lithium-Ion Batteries**

Last but not least, the Laserline trade fair presentation is rounded off by the presentation of a diode laser-based drying process that supports low-emission and economical series manufacturing of lithium-ion batteries. It has been developed under the leadership of Laserline as part of the IDEEL project (Implementation of Laser Drying Processes for Economical & Ecological Lithium Ion Battery Production) and has made laser-drying of anodes and cathodes in a roll-to-roll process possible for the first time. The diode laser with its homogeneous and precise beam placement either supplements or entirely replaces the convective drying process that has dominated the market to date, and reduces the total energy requirement of the drying process by more than 25 percent. Compared with conventional GigaFab drying lines with energy load requirements of over 1000 kW, the new process ultimately enables a significant reduction in process-related CO<sub>2</sub> emissions.

For more information on Laserline's products, interested parties can visit:

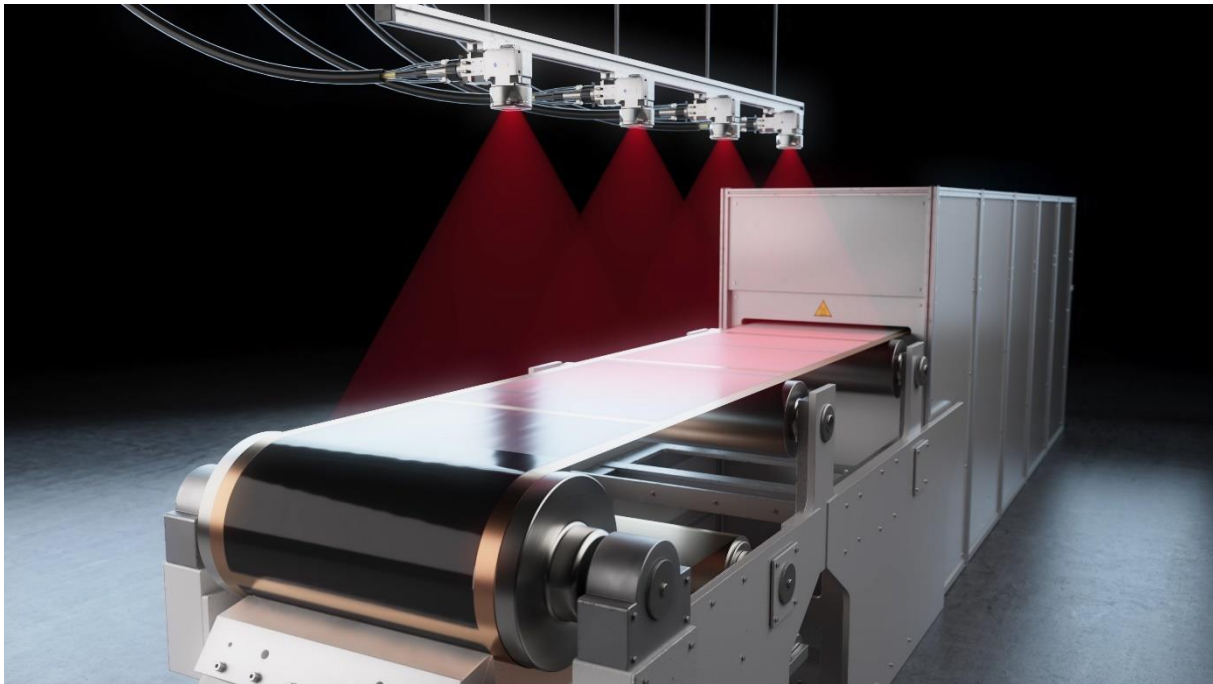
<https://www.laserline.com/de-int/>



**Figure 1: Additive manufacturing of a copper component using a blue diode laser. ©Laserline**



**Figure 2: Powder-based laser coating of a brake disc. ©Laserline**



**Figure 3: Production of laser-dried anodes and cathodes in a roll-to-roll process. ©Laserline**

#### **About Laserline:**

Laserline GmbH, based in Mülheim-Kärlich near Koblenz, Germany, was founded in 1997. As a leading international manufacturer of diode lasers for industrial material processing, the company has established itself as a cornerstone of this innovative technology and can look back on more than 25 years of company history. More than 6,500 high-power diode lasers from Laserline are currently in use worldwide, demonstrating their performance in a wide variety of processes and applications. Laserline currently employs around 370 people and has international subsidiaries in the USA, Mexico, Brazil, Japan, China, South Korea and India. Further information is available at <https://www.laserline.com/en-int/>

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