

Press release

Battery cell production: Laser drying significantly reduces operating costs and required production space

A white paper from Laserline and RWTH Aachen illustrates the production of laser-dried anodes and cathodes in a roll-to-roll process

Up until now, battery electrodes have been dried primarily in gas-operated conveyor furnaces. However, a recently developed approach based on diode lasers is noticeably superior to the convective drying process and for the first time makes it possible to produce laser-dried anodes and cathodes in a roll-to-roll process. A white paper by Laserline and staff from the PEM (Production Engineering of E-Mobility Components) group at RWTH Aachen University highlights the advantages of this diode laser-based electrode drying process and outlines the path to more efficient, cost-effective and environmentally friendly battery production.

Mülheim-Kärlich, August 01, 2023 – The standard process for drying battery electrodes has long been convection drying in gas or electricity-powered conveyor ovens. However, with ambitious climate protection targets and rising energy prices making this process progressively unattractive, battery manufacturers are therefore increasingly looking for alternatives. So far these comprise either of improvements to established processes or completely new methods such as dry coating or vacuum coating. The former has been championed by Tesla as a viable process for the future and is at least theoretically capable of overcoming some of the fundamental limitations of battery cell production. However, serial implementation is technologically extremely demanding and is additionally restricted by various patent claims.

Against this background an innovative laser drying process for the low-emission and economical series production of lithium-ion batteries has been developed as part of the IDEEL project (Implementation of Laser Drying Processes for Economical & Ecological Lithium Ion Battery Production). Already two years into the project, it draws on Laserline's high-power diode lasers to, for the first time, enable the production of anodes and cathodes in a roll-to-roll process, and, with operating cost savings of 30 percent and a halving of the required production area, is a milestone on the way to CO₂-neutral and competitive battery cell production. Several major battery and automotive manufacturers are currently qualifying the process in pilot production runs and industrial implementation on a broad front is expected from 2024 at the latest.

More detailed information on the design and advantages of the new process can be found in the white paper 'Diode Laser Drying of Electrodes for Lithium-Ion Batteries', authored jointly by Laserline experts and staff from the PEM group. The white paper is available for free download [here](#).

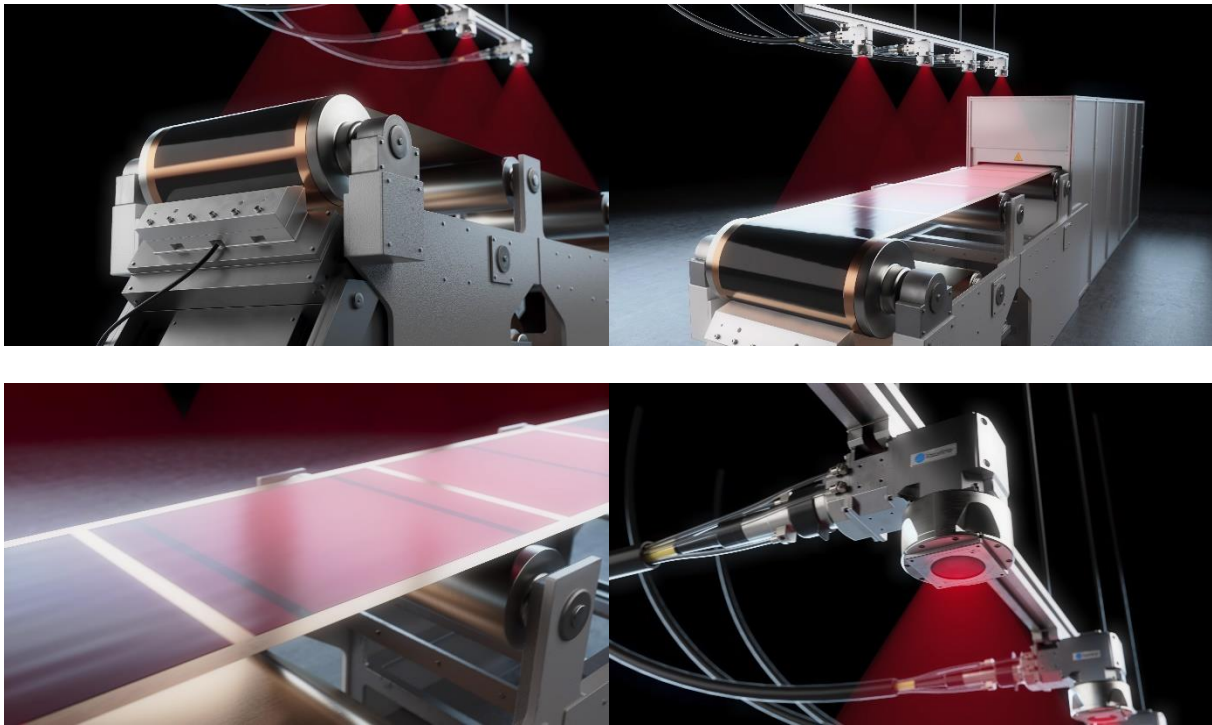


Figure 1 to 4: The newly developed process based on diode lasers now enables manufacturing of laser-dried anodes and cathodes in a roll-to-roll process. ©Laserline

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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