

PRESS RELEASE

Zeppelin Systems presents innovative solutions for battery mass production at the Batteries Event in Lyon

Lyon, October 14, 2024. As leading expert in the efficient processing of raw materials, plant manufacturer Zeppelin Systems will be presenting pioneering high-performance mixers, innovative mixing processes and efficient material conveying and dosing systems for the production of battery masses at stand C43 in the Convention Centre in the French city of Lyon from October 16 to 18. Looking for customized solutions for safe and efficient raw material handling in the battery sector? This is exactly what global plant manufacturer and turn-key solution provider Zeppelin Systems stands for. We Create Solutions!

High-performance intensive mixer for maximum efficiency

The FM high-performance intensive mixers from Zeppelin Systems are characterized by their ability to disperse and homogenize raw materials highly efficiently. This makes them the ideal choice for the resource-saving and safe production of battery masses, both in dry and semi-dry mixing processes. They can implement individual shear rates and temperature profiles in various process steps in order to effectively disperse nanoparticulate conductive additives, activate binder materials in a targeted manner and fibrillate them. This not only achieves an even distribution of the raw materials, but also changes the particle structure in a targeted manner, which leads to an increase in bulk density and energy density. The mixers also offer customizable wear protection, which ensures a long service life even with abrasive materials. 'Our intensive mixers have already proven themselves with international battery manufacturers, and we are convinced that we can further expand our involvement in this future market,' says Ralf Boschert, CFO of Zeppelin Systems GmbH. He adds: 'Thanks to our many years of experience in the industry, we are able to react quickly and flexibly to our customers' requirements in battery mass production.'

Comprehensive expertise in raw materials handling

The handling of raw materials plays a decisive role in the production of dry-coated electrodes. Zeppelin Systems has many years of expertise in this area. This includes not only the rapid emptying of a wide variety of containers, but also particularly gentle pneumatic conveying, which prevents segregation of the end product. In addition, the company's sophisticated containment technology ensures the safe handling of toxic materials. Precise dosing of the individual components into the mixer and reliable discharge - even with raw materials that are difficult to fluidize thanks to special

discharge aids – are key elements of process reliability. The Zeppelin Batch Management System also ensures complete batch traceability.

Calender dosing innovation

To ensure continuous and precise dosing of the calender rollers, Zeppelin Systems engineers developed their own calender dosing system. “The dosing unit for the calender has a continuous material supply with level monitoring in the hopper, which means that the calender rollers cannot run empty. The special geometry of the hopper prevents any bridging effect, and the development of dust from the hopper and vibration channel is also not an issue”, explains Hubert Stojanovic, Vice President for Performance Materials at Zeppelin Systems GmbH.

Testing and optimizing processes – in Zeppelin Systems’ technical department

Zeppelin Systems operates three test centers where process-critical processing steps can be tested and improved. One example is the Test Center for Mixing Technology in Kassel, where processes are developed and tested on individually configurable mixers at laboratory and production scale. For various AAMs (anode active materials) and CAMs (cathode active materials), such as LFP, NCA, NCM or graphite, test series have been carried out recently with various customers and research institutions. The various products’ behavior with regard to fluidizability, caking, discharge behavior, product destruction, etc. are investigated at the test center in Friedrichshafen. A separate test setup is currently being created here to enable calender dosing testing for various AAMs and CAMs for Zeppelin Systems customers. In addition, a very wide range of product analyses are carried out in the company’s own bulk material laboratory; these include moisture measurement, particle size and distribution, bulk density determination, and shear tests.

Projects with more than 150 gigawatts implemented to date

Zeppelin Systems’ battery-mass expertise is valued worldwide. Customer projects of over 150 GWh have been implemented to date in Germany, Sweden, the USA, India and South Korea. In addition, Zeppelin Systems is playing a key role in national and international research and development projects. Notable examples are the EU-funded GIGABAT project and the German GUTBatt project. GUTBatt involves process development of scalable material structuring as well as dry mixing and calendered dry electrode production for lithium-ion batteries with liquid and solid electrolytes. We Create Solutions!

Picture Caption: The FM high intensity mixer from Zeppelin Systems is perfectly suited for the production of battery masses and the mixing of highly abrasive and toxic bulk materials.

© Zeppelin Systems GmbH, for publication, free of charge. Please notify us or send us a copy for our records.

About Zeppelin Plant Engineering

Zeppelin Systems specializes in the design, construction, and technological upgrading of industrial plants for storing, conveying, mixing, dosing, and weighing high-quality bulk materials and raw materials. With around 1,900 employees worldwide, Zeppelin Systems provides daily solutions for customers in the plastics, chemical, rubber, and tire industries. Customers in the food industry also value Zeppelin Systems' many years of technological know-how and experience in delivering turnkey solutions. From plant planning and project implementation to after-sales service including process optimization – Zeppelin Systems is an integrated solutions provider, delivering complete solutions from one source. Every Zeppelin plant is characterized by customized features to meet specific customer requirements, smart automation solutions, and comprehensive service. We refer to this as the embodiment of engineering art, and we apply it to the entire life cycle of a system. With roots in Germany and global operations at more than 20 sites around the world, Zeppelin Systems makes industrial-scale testing available to its customers, thereby facilitating the assessment and sustainable optimization of their plant design. Zeppelin Systems also develops and manufactures mechanical and plant engineering components that can be seamlessly integrated into third-party systems. We create solutions for our customers every day. We Create Solutions! For more information, visit www.zeppelin-systems.com.

About the Zeppelin Group

The Zeppelin Group offers solutions in the construction industry, drive and energy systems, engineering and plant engineering. The Group provides customers with expertise in a number of areas, from the distribution and service of construction, mining, forestry and agricultural machinery, through rental and project solutions for the construction sector and industry as a whole, to drive and energy systems as well as engineering and plant engineering, and enhances its offering with digital capabilities in all areas. Zeppelin is represented in 26 countries worldwide. In the 2023 financial year, the Group workforce comprised over 10,000 employees and generated sales of EUR 3.9 billion. The Group organizes its activities into five strategic business units (Construction Equipment Germany/Austria, Construction Equipment International, Rental, Power Systems, and Plant Engineering) and the Strategic Management Center for Group IT Services. Zeppelin GmbH is the Group holding company. It is legally domiciled in Friedrichshafen and has its head office in Garching bei München. The Zeppelin Group is a foundation-owned company. Its roots can be traced back to the establishment of the Zeppelin Foundation by Graf Ferdinand von Zeppelin in 1908. For more information, visit zeppelin.com.

Zeppelin Systems GmbH
Graf-Zeppelin-Platz 1
88045 Friedrichshafen
Deutschland

Evelyn Müller
Head of Global Marketing & Communication
Tel.: +49 7541 202 1545
Fax: +49 7541 202 – 14 05
E-Mail: evelyn.mueller@zeppelin.com
zeppelin-systems.com