

Press Report

Modular storage silos

Prefabricated silo elements offer a competitive advantage with regard to flexibility, easy handling and tightness

In the tire industry, high demands are placed on the storage of products. The tightness of the silos is particularly important to prevent contamination of the environment. If a silo cannot achieve tightness, the damage is great - for the environment, for the plant employees and for the company itself. This results in high costs, as well as the fact that most silos are job-manufactured and therefore cause high transport costs and costs for assembly on site.

However, the modular Bolt-Tec silos of Zeppelin Systems do not only guarantee absolute tightness, but have also proven themselves in terms of flexibility, planning reliability and efficiency in the recent years. The prefabricated silo segments can be transported at low cost by ship using standard containers or by road on trucks. Even silos with a storage volume of up to 1,000 m³ can be delivered to their respective point of destination, regardless of the local conditions such as infrastructure or legal regulations regarding road transport. Furthermore, on-site assembly is easy, no specialist crew is required.

Another important point is security of supply: The Bolt-Tec silos with a high storage volume stockpile a larger quantity of raw materials. This secures the manufacturer in the event of delays in the supply chain of raw materials and enables him to maintain production. At the same time, the high storage capacity has a positive effect on procurement costs. These are the advantages for all companies who have to deal with volatile markets and need to be able to respond quickly.

Zeppelin Systems is the first company using the innovative welding technology friction stir welding for the production of Bolt-Tec silos. This technology enables a significantly faster, more economical and dimensionally accurate production of the segments. Up to now, this method has only been used in lightweight construction in the aerospace or automotive industries. Not only is it unique in terms of speed and economy, but also the material properties of the produced weld seams are unbeatable in relation to conventional processes. Furthermore, this process does not require any welding consumables or shielding gas, making consumables superfluous.

The portal processing plant at the Friedrichshafen Zeppelin location now enables serial production and thus an automated production process. The production line is fully automated and ensures reproducibility at an extremely high level.

The core of the fully automated process is this ground-breaking welding technology. Here, a rotating, hard-wearing tool is pressed into the joint gap between two clamped work pieces. The friction between the tool and the work piece causes the material to heat up and the aluminum is plasticized without reaching the melting point.

This results in a flawless, high-strength weld seam and heat-affected zone.

In addition, the new welding process proves its worth through its high seam strength, welding seams flush with the metal surface. This process does not require a liquid weld pool, which prevents seam faults typical for aluminum such as pores or solidification cracks.

This procedure is further easier on the workers and also safer due since no toxic fumes arise. The environmental impact is also significantly lower.

This system comes with a number of advantages when it is later installed on the operation site. First, there are the reduced freight charges. The silo parts can be transported on standard trucks or standard containers. Afterwards, local staff assemble the silo parts on site with screw connection. Weather is no longer an issue, because no additional welding is necessary. The silo may even be installed inside a building. The modular construction even enables a later capacity increase of the silo without time-consuming welding on site.

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About Zeppelin Plant Engineering

With more than 1,400 employees in 22 locations worldwide, the Strategic Business Unit (SBU) Plant Engineering specializes in the development and manufacturing of components and plants for the handling (storage, conveying, mixing, dosing and weighing) of high-quality bulk materials. It is in these sectors that Zeppelin Plant Engineering provides its customers with support from project development to engineering, production, automation, control technology, on-site assembly and commissioning through to after-sales service. Customers of this SBU range from plastics producers and processors to manufacturers in the rubber and tire, chemicals and food industries. Zeppelin Plant Engineering carries out various tests on an industrial scale for these target groups at three technology centers throughout Germany. For more information: www.zeppelin-systems.com.

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About the Zeppelin Group

The Zeppelin Group operates more than 200 sites around the world. In the 2018 fiscal year, it had around 9,000 employees who generated sales of 2.9 billion euros. Group-wide collaboration in the Zeppelin Group revolves around a management holding company and six strategic business units: Construction Equipment EU (sales and servicing of construction

machines), Construction Equipment CIS (sales and servicing of construction and agricultural machines), Rental (rental and project solutions for the construction and industry sectors), Power Systems (drive, propulsion, traction, and energy systems), Plant Engineering (engineering and plant engineering) and Z Lab (new digital business models). Zeppelin GmbH is the Group holding company. It is legally domiciled in Friedrichshafen and has its head office in Garching near Munich. For more information, visit zeppelin.com.

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