

Press Report

Modular storage silos

Getting to the silo faster thanks to tried and tested technology and new processes

Friedrichshafen, May 2020. Ten years after launching the modular Bolt-Tec and Panel-Tec design silos, Zeppelin significantly steps up production capacities at its Friedrichshafen location. A new automated production line now enables the company to produce the individual segments of these storage and mixer silos more quickly and cost-efficiently.

Worldwide trade has rapidly picked up speed, with a corresponding increase in demand for flexibility. Companies are forced to respond to these changing conditions more and more quickly. Especially the plastics processing industry is faced with challenges such as volatile raw materials costs or meeting recycling quotas. Shortened delivery times are necessary for companies to be able to respond quickly.

In order to avoid cost and risk-intensive heavy-duty transports as well as conventional on-site assembly, Zeppelin started years ago to develop a concept for modular silo construction. 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. On-site assembly is easy, no specialist crew is required. The advantages of the modular silos are clear: efficiency, flexibility, planning ability, and, due to the easy handling, a high process reliability. An outstanding success - the concept has proved itself around the world.

New welding process

But Zeppelin does not stop there: An innovative welding technology makes it possible to produce the individual segments significantly faster and more economically: friction stir welding technology. Up to now, this method has only been used in lightweight construction in the aerospace or automotive industries. Not only is it unique with regard to speed and cost efficiency, but there are also more advantages compared to traditional welding methods. In addition, this procedure further requires no welding additives or inert gas, making consumables redundant. The welding quality is also outstanding and hardly to be achieved with regular methods.

The portal processing plant at the Friedrichshafen Zeppelin location, commissioned one year ago, now enables serial production and thus an automated production process. The portal processing unit for the production of aluminum silo segments is 32 meters long, 13 meters wide and weighs 80 tons.

The production line is fully automated and ensures reproducibility at an extremely high level.

Creating homogeneous compounds

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. The material compacts during cooling, leaving a homogeneous and high-strength weld seam.

In addition, the new welding process proves its worth through its high seam strength, welding seams flush with the metal surface and a low welding distortion. This is due to the reduced heat input. 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.

Flexibility on the construction site

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 40-foot 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.

Looking into the future

With Zeppelin's entry into silo serial production, the company not only expects distinct competitive advantages on distant markets but also a significant order increase in Europe. After only one year, the company is working a three-shift production line operation. For one, this investment in serial production shows our clear commitment to the Friedrichshafen location and its employees. It also meets the elevated demands of our customers.

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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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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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