

SILO STORAGE AND BLENDING SOLUTIONS

INTELLIGENT STORAGE AND BLENDING OF BULK MATERIALS.

SMART STORAGE SOLUTIONS

zeppelin-systems.com

ZEPPELIN®
WE CREATE SOLUTIONS

ENGINEERING YOUR SUCCESS

A low-angle, upward-looking photograph of several large, cylindrical industrial silos or storage tanks. The silos are constructed from metal with visible rivets and seams. They are set against a dramatic sky with a gradient of colors from deep blue at the top to bright orange and red near the horizon, suggesting a sunset or sunrise. The perspective creates a sense of height and scale.

ABOUT ZEPPELIN SYSTEMS

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.

From plant planning and project implementation to aftersales service including process optimization.

As an integrated solution provider, Zeppelin Systems delivers complete solutions from a single source.



WE ARE EXPERTS IN PLANT ENGINEERING

Our experience guarantees your success!

Zeppelin Systems individually develops and manufactures every plant. It goes without saying that, in doing so, we address the needs and challenges of our customers. We develop tailored solutions using innovative processes, smart technologies, high-performance components and efficient services, depending on the industry and sector.

Zeppelin Systems draws on many years of cross-industry experience and is a professional in the handling of high-quality bulk materials. The wide-ranging portfolio is rounded off by the unique worldwide network of technology centers, which performs trials and tests on an industrial scale. This ensures one thing: Your success! **We Create Solutions!**

Zeppelin Systems' business segments

PLASTICS INDUSTRY

FOOD INDUSTRY

TIRE AND RUBBER INDUSTRY

BATTERY INDUSTRY

CHEMICAL INDUSTRY

HIGH-INTENSITY MIXERS AND MIXING SYSTEMS

SILOS

COMPONENTS

SERVICE

PLANT MODERNIZATION

SILO MANUFACTURING IS A MATTER OF EXPERIENCE

Zeppelin Systems delivers the optimal silo solution for every requirement.

Silo manufacturing has a long-standing tradition at Zeppelin Systems. Even in the early 20th century, during the era of airship construction, aluminum containers were being expertly welded. This special know-how developed into the driving force behind the realignment of Zeppelin companies after the Second World War – and made Zeppelin Systems the world's leading plant engineering company for the handling of high-quality bulk materials. Today, thanks to a worldwide network on six continents and production facilities in the key economic regions, we ensure personalized consultation and support on site in all relevant markets.

GLOBAL EXPERTISE

Zeppelin Systems has extensive experience in the plastics, chemical and food industry. Customers in the rubber and tire sector also benefit from our global expertise. With Zeppelin Systems' solutions, the entire process and value chain can be seamlessly supported. Systems and components and, of course, silos are fully integrated into the overall process with precision and reliability.

TYPES: BOLTED OR WELDED

Depending on the requirements, storage capacity and installation location, we offer different types of silos in aluminum or stainless steel: bolted (Bolt-Tec), welded (Weld-Tec) or welded on-site (Panel-Tec).

WELD-TEC † **PANEL-TEC** † **BOLT-TEC** †



ZEPPELIN[®]

WE CREATE SOLUTIONS

SYSTEM SOLUTIONS



STORAGE AND BLENDING TAILORED TO YOUR NEEDS

Benefit from our wide range of customized solutions.

With decades of experience, we ensure cost-effective, reliable and careful handling of your high-quality bulk materials. Regardless of your industry, you always get the optimal solution for your challenge!

STORAGE: RELIABLE AND SAFE.

The correct static and process-oriented design of silos is crucial. In addition to country-specific regulations, such as wind and seismic loads, our comprehensive solution portfolio also includes constructive explosion protection. The process-oriented silo design prevents bridging, funnel flow, asymmetric flow zones, segregation, or condensation buildup. Proven anti-honking systems further ensure smooth and uninterrupted operations. If the flow properties are unknown, they are determined in advance by means of shear tests. In many cases, the extensive range of accessories with key components manufactured or developed in-house is used for the design.

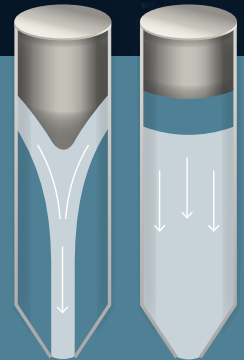
BLENDING: GENTLE AND HIGHLY EFFICIENT.

Compared to mechanical mixers, blending silos from Zeppelin Systems operate with minimal dynamic forces and offer product-friendly handling with outstanding blending precision. Additionally, the volumetric capacity is significantly higher. Thanks to their design, the blending silos are completely maintenance-free and enable full residue-free discharge. With near-zero energy consumption during operation, they offer exceptionally low operating costs.

TYPES OF FLOW

Core flow: During product discharge, only the bulk material moves over the outlet opening; dead zones are created in the cone area.

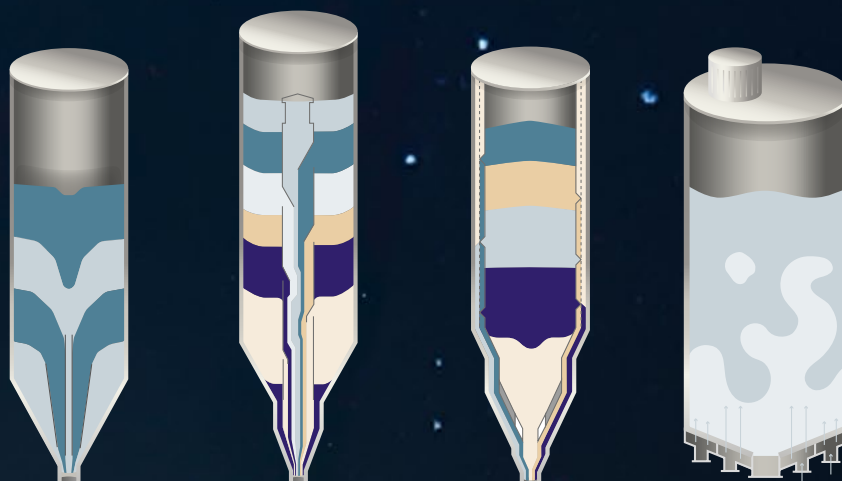
Mass flow: During product discharge, the entire silo contents start to move.



THE OPTIMUM FOR PLASTIC RECYCLING

Consistent product quality is crucial, especially in the production and recycling of plastics. Zeppelin Systems silos are able to stabilize process and raw material fluctuations and quickly and efficiently homogenize bulk materials. Pellets, powders and flakes can be handled flexibly. Blending silos specially designed for deodorizing recycled materials ensure effective odor and taste neutralization. This process is highly energy-efficient, particularly when utilizing gravity blending solutions.





| | MULTI-FLOW | CENTRO-BLEND | MULTI-CHANNEL | FLUIDIZED BED MIXER |
|--|-------------|--------------|---------------|---------------------|
| Free flowing powders 50–500 μm | ✓ | ✓ | ○ | ✓ |
| Free-flowing granulates 200–3000 μm | ✓ | ✓ | ✓ | — |
| Poorly flowing materials | ✓ | ✓ | | |
| Mixer size [m^3] (maximum) | 1500 | 300 | 3000 | 1000 (3000) |
| Type of energy input | gravimetric | gravimetric | gravimetric | pneumatic |
| Specific energy requirement [kWh/t] | 1-3 | 1-2 | <1 | 1-2 |

✓ suitable ○ partially suitable — not cost-effective



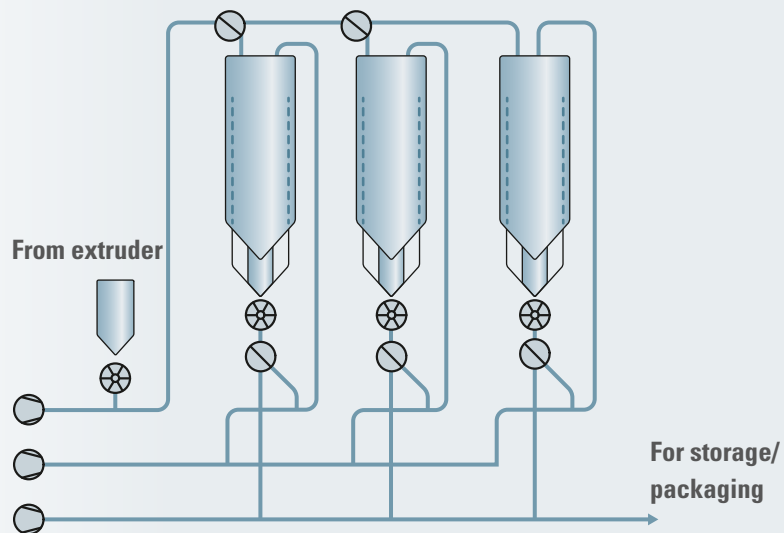
BLENDING IN SILOS – COMPLETELY CUSTOMIZED

Whatever your bulk material, we have the perfect silo solution for it.

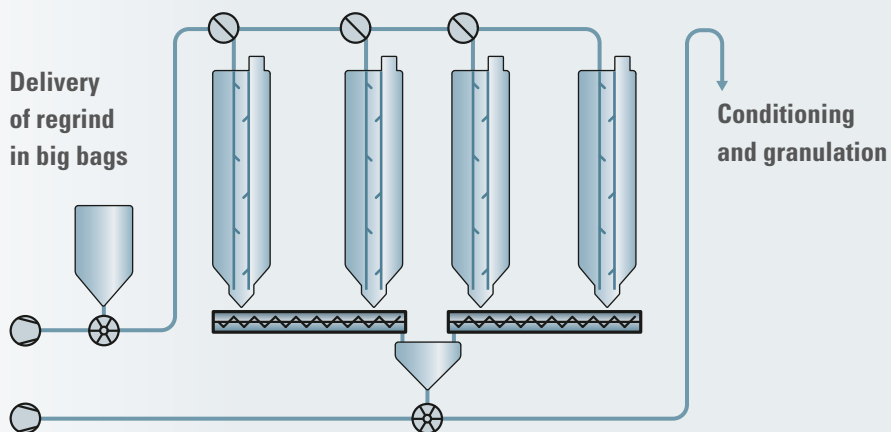
The requirements and properties of your bulk materials are crucial when determining the blending concept. Do you process poorly flowing powder, granulates or freely flowing powder? How homogeneously does your product need to be mixed for optimal processing? How much cleaning is required when mixing – for example, if you change the product or color more often? Do you work continuously or in batch mode?

Questions about questions – but we have the answers: with four silo types that ensure product-suitable handling of your bulk materials.

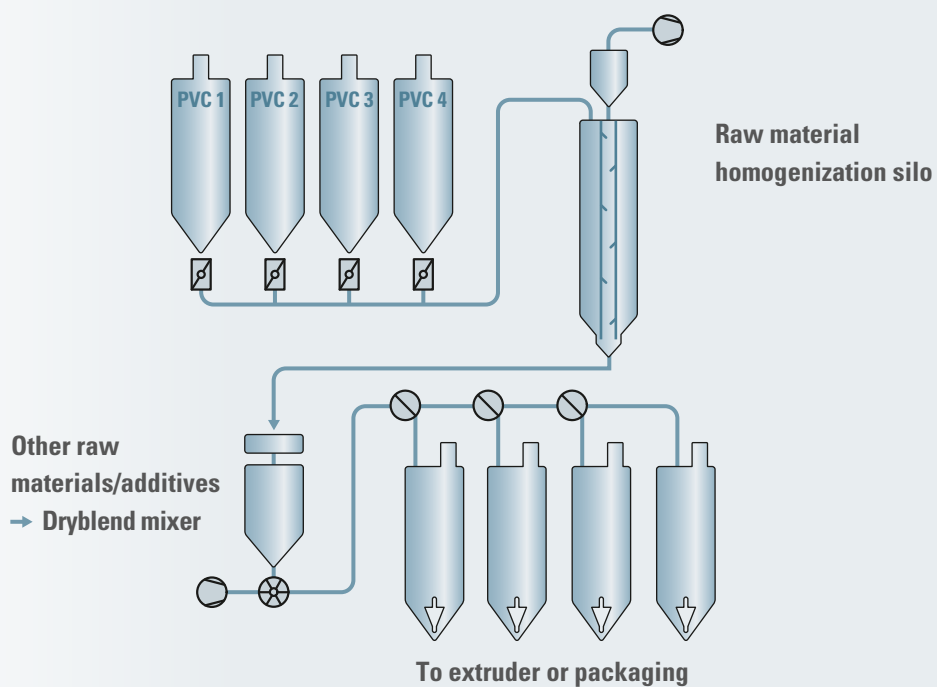
**TYPICAL USE OF
BLENDING SILOS
IN POLYOLEFINE
PRODUCTION**



**TYPICAL USE OF
BLENDING SILOS
IN RECYCLING**



**TYPICAL USE OF
BLENDING SILOS
IN PVC PROCESSING**





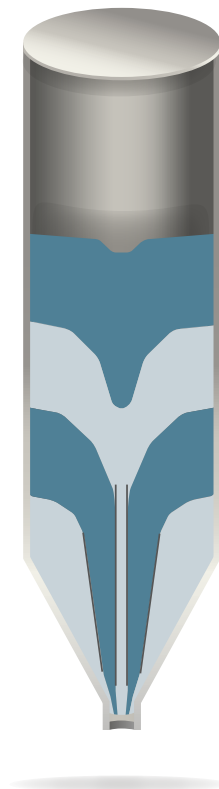
MULTI-FLOW BLENDING SILOS

Cost-effective from storage to blending silo.

If a conventional silo needs to be upgraded to a blending silo, the Multi-Flow blending concept from Zeppelin Systems is the ideal solution. The term refers to a blending hopper that can either be factory-installed in the storage silo or retrofitted by bolting or welding. The versatile blender is designed for easy to poorly flowing bulk materials and is suitable for both continuous and non-continuous blending operations.

HOW IT WORKS:

The Zeppelin Multi-Flow blending hopper is designed to create a differential flow rate between the hopper and the lower cylindrical section. This results in different residence times, thereby bringing about the blending effect. Multi-Flow blending silos are particularly efficient when the height-to-diameter ratio (slenderness ratio) is less than 2.5. Inside the hopper, support comes exclusively from flat vertical ribs, which makes cleaning easier.



BENEFITS

- Cost-efficient blending solution
- Existing silos can be quickly and easily retrofitted with this blending hopper
- Blending achieved through wide range of residence times and mass flow
- No additional internal components, ensuring easy cleaning of the blending hopper
- Reduced height due to internal blending chamber
- Residue-free discharge
- Can be used in combination with degassing systems

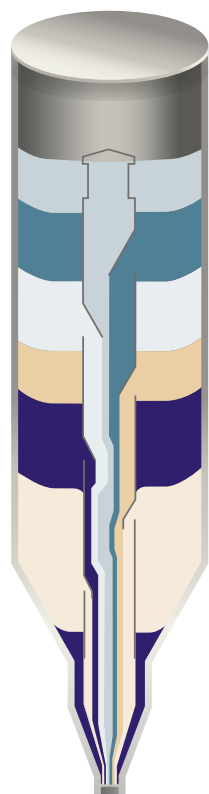
CENTRO-BLEND BLENDING SILOS

The solution for poorly flowing bulk materials.

With its large central blending tube, the Centro-Blend blending silo ensures smooth blending of plastic powder, recycled goods, granulates or free-flowing elastomers, even with poorly flowing bulk materials. It is suitable for continuous and batch blending and is designed for dimensions from 7 to 300 m³.

HOW IT WORKS:

Bulk material is drawn from various heights by means of a central blending pipe with multiple intake openings. Baffles of different sizes are welded in above the swallow openings. This ensures the same parts are removed from all layers. The product from the blending pipe is dosed into the product from the outer ring of material in the blending chamber.



BENEFITS

- No product buildup or dead zones due to the flat surfaces of the deflection plates
- Designed specifically for mass flow
- Easy integration into process workflows





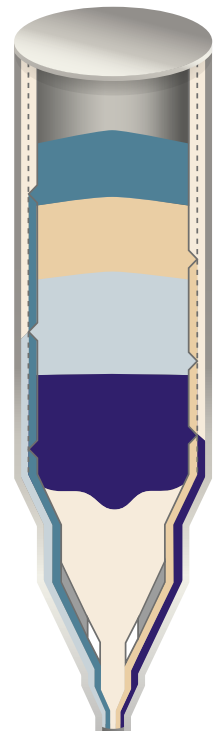
MULTI-CHANNEL BLENDING SILOS

The solution for poorly flowing bulk materials.

Multi-channel blending silos are ideal for poorly flowing bulk materials such as granulates with particle sizes above approximately 0.5 mm. They can be used for continuous and batch blending applications.

HOW IT WORKS:

The bulk material is simultaneously removed from 18 different heights via blending tubes running vertically in the blending silo and fed to a central blending chamber. In this blending chamber, the 18 individual streams are combined with the mass flow from the central discharge hopper. Six blending tubes, each with three chambers, are installed internally. The product output at the blender discharge is made up of a mixture from the entire silo.



BENEFITS

- Batch homogenization
- Can be used at different fill levels down to approximately 25%
- The design of the blending silo, to optimize mass flow, guarantees a good, reproducible homogenization result
- Seamless integration into processing
- A single pass is sufficient for many applications in continuous operation
- Residue-free discharge
- Can be used in combination with degassing systems
- Blending tubes are welded to the silo wall
- No additional fixings are required for the blending tubes

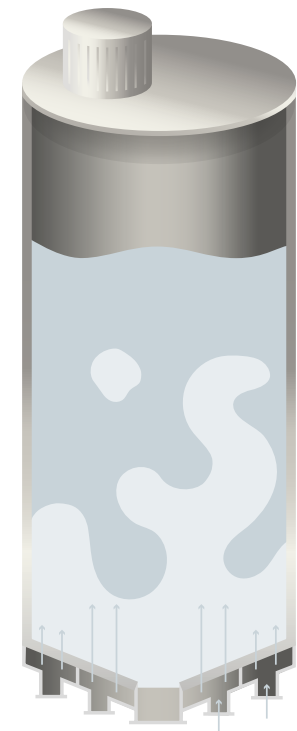
FLUIDIZING BED BLENDING SILO

The solution for fluidizable bulk materials.

Fluidizing bed blending silos are ideal for mixing fluidizable bulk materials with particle sizes of less than 500 μm , such as powders. It is used in batch operation.

HOW IT WORKS:

Blending in the fluidized bed is achieved through random relative movements of particles. To enable this free movement, the bulk material is permeated and fluidized by a fluidizing gas, typically air. The horizontal blending effect can be strengthened by varying aeration in the different flow zones, resulting in an optimized blending effect and reduced blending time.



BENEFITS

- Designed for fluidizable powders
- Gentle homogenization, as external forces barely impact individual particles in a fluidized state
- Suitable for bulk materials sensitive to breakage and abrasion
- Additional degassing of the product
- Efficient blending of very large quantities of powder with minimal energy consumption





BOLT-TEC SILOS

Why weld when you can bolt?

The Bolt-Tec silo from Zeppelin Systems stands out thanks to its smart, uncomplicated design: The silo segments are automatically prefabricated, which enables a short delivery time. They can be transported by truck or ship in a standard container. This saves both time and costs. On-site assembly is also possible even in tight spaces, such as buildings. Thanks to the modular design, you do not need Zeppelin personnel for this, but can also carry out silo assembly yourself with a few helping hands. The modular design also allows the silo to be moved or its storage capacity to be expanded at any time.

NEXT GENERATION SILO DESIGN.

The exceptional quality of Bolt-Tec silos is due to the high-precisions friction stir welding (FSW) process. This welding method ensures a perfect seal that makes the silo completely maintenance-free, as well as allowing extremely tight tolerances. The unique, seamless bolting technology creates a smooth internal surface, preventing product residues. A range of selectable cone angles enable optimum discharge of the bulk material.

PRECISE CONNECTION WITH MAJOR BENEFITS

- Accurate sealing: internal, circumferential seal
- Maintenance-free bolted joints for increased safety
- Gap-free profiles: easy installation thanks to precisely manufactured segments



TECHNICAL SPECIFICATIONS

- Diameters: 4050 / 5400 / 6750 mm
- Capacity: 64 – 1100 m³
- Mechanical design pressure:
-5 to +45 mbar (g)
- Working temperature: -20 to +80 °C
- Long or short base skirt

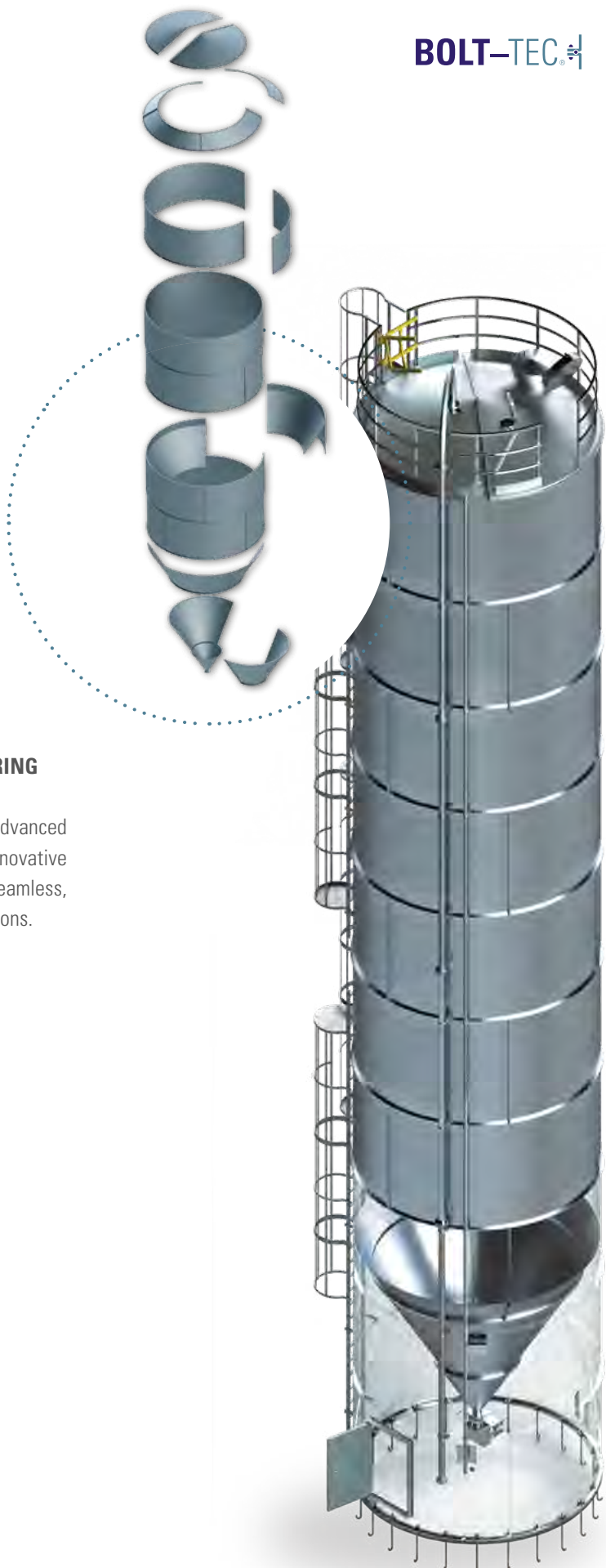
INNOVATIVE: PERFECTED SEGMENT MANUFACTURING

Bolt-Tec silos are manufactured with precision using the advanced Friction Stir Welding (FSW) process. The result of this innovative welding process is robust, durable flange connections for seamless, quality-assured welds – for a silo that can last for generations.

YOUR BENEFITS AT A GLANCE:

- Low transport charges
- Easy, fast assembly
- Minimal assembly costs
- Suitable for indoor assembly
- Enables increased volume
- Reliable planning
- Flexible positioning
- Very high tightness due to internal seal
- No risk of weathering
- Weather-independent installation

**MAXIMUM COST-EFFICIENCY
WITH TOP-LEVEL QUALITY!**



PANEL-TEC SILOS

Fast and efficient assembly.

Panel-Tec silos are the first choice if larger volumes between 500 and 2000 m³ need to be stored. Our Panel-Tec concept also uses prefabricated silo segments for fast on-site assembly, which are transported cost-effectively to the construction site in containers. Flanged connections enable the modules to be quickly joined and bolted together, which means that the silo can be assembled in the shortest possible time.

For this purpose, the silo segments are prefabricated with high precision in an automated production line. The silos are then internally welded automatically on-site.

OPTIMAL DESIGN – FROM CONE TO ROOF

The new cone design allows quick and precise alignment of the cone sections. The interior of the cone is designed without edges to ensure the optimal flow of bulk material even without grinding the weld seams. When it comes to the silo roof, you have three variants to choose from. By the way, our Panel-Tec silos can also be equipped with Zeppelin Systems blending or degassing functionalities.

TECHNICAL SPECIFICATIONS

- Diameters: 4,000 - 9,500 mm
- Capacity:
500 - 2,000 m³

ROOF PITCH ANGLE

- 15°
- 35° / 15°
- 35° with platform



**Panel-Tec
silos**

WELD-TEC SILOS

Comprehensive storage solutions for every application.

For shorter distances to the installation site or for smaller silo volumes, many customers prefer the classic Weld-Tec silos. We also guarantee premium long-term quality here. If design or process engineering criteria call for conventionally welded production, Weld-Tec is the first choice as well.

WELD-TEC IS ALWAYS A GOOD FIT

Weld-Tec silos are suitable for all types of bulk material. They are built using individual segments that are prefabricated in quality-assured process manufacturing at the Zeppelin Systems facility. The silos are precision-welded on the inside with circumferential and longitudinal seams in full welding – in other words, all circumferential shell welds are simultaneously welded on both sides. Weld-Tec silos are available in diameters from 2400 to 4200 mm.

QUALITY YOU CAN RELY ON

Weld-Tec silos from Zeppelin Systems undergo customer-specific quality checks, including X-ray inspection, as well as various material testing methods. In addition, they are certified in accordance with EN 1090. The static design is carried out in-house. All in all, this results in a quality that is standard for Zeppelin Systems silos.

WELD-TEC MULTI-CHAMBER SILOS: SMALL FOOTPRINTS

Multi-chamber silos in Weld-Tec design offer cost-effective solutions for limited space conditions. The versatile silo concept is suitable for a wide range of products or small batches and is ideal for efficient batch separation. The silos are divided into two or more chambers by welding in additional cones. Material from the upper chamber is transferred to the lower section via discharge pipes.

TECHNICAL SPECIFICATIONS

- Designed for bulk densities from 6 kN / m³ to 10 kN / m³
- Optional cone installation with 90° / 60° angles
- Concrete foundation or steel structure as anchoring
- Long or short base skirt



WELD-TEC INSERT SILOS: REDUCED TRANSPORTATION COSTS

As the name suggests, Weld-Tec slip-in silos can be transported inserted into each other, thereby significantly reducing the freight volume and the resulting freight costs.

- Capacity: 25 – 350 m³
- Optimized cone angles: 0° / 50° / 60° / 90°
- Long or short base skirt

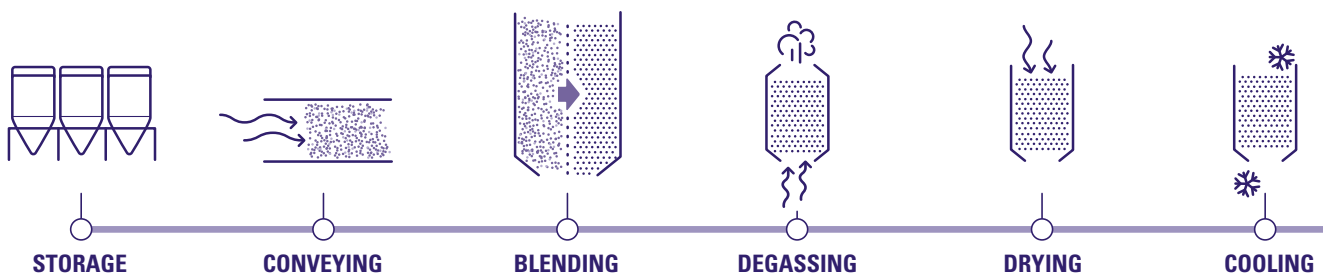


TONS OF PROCESS KNOW-HOW

With Zeppelin Systems, your bulk materials are in the best hands.

No matter what bulk material volumes you handle: Reliability in daily use is the top priority for process silos. This is where the process engineering knowhow of our silo specialists truly shines.

Whether degassing residual monomers, drying or even temperature control within a silo or purge bin – our technology always ensures perfect results.



KNOWING WHAT WORKS

A great deal of experience and process know-how is required to optimally design a silo for individual requirements. As a worldwide leading plant engineering expert, we also offer you valuable insights gained in our company's own network of technology centers.

PRODUCT DEGASSING

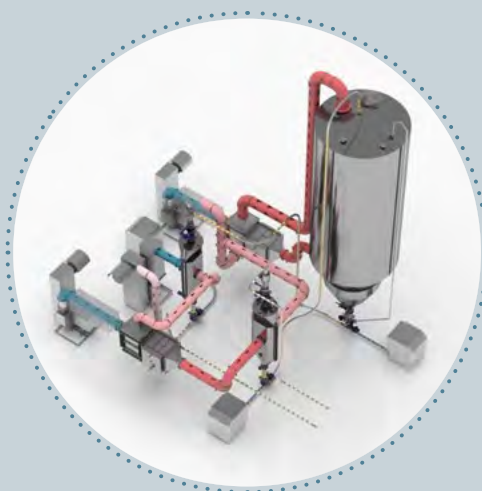
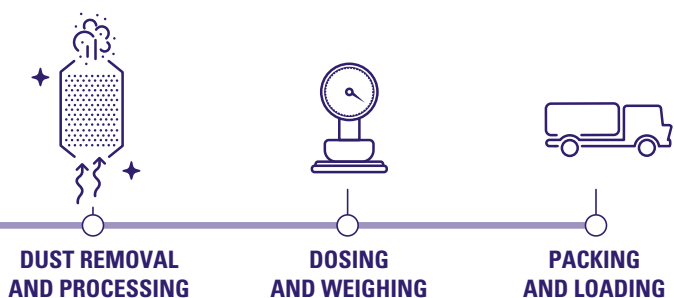
The removal of residual monomers is a crucial step in production, particularly for LDPE, to reach the LEL (Lower Explosive Limit). Whether as a purge bin or silo with a stepped cone – the decisive factor is the design, which should be based on mass flow and free of dead zones.

PRODUCT DEGASSING

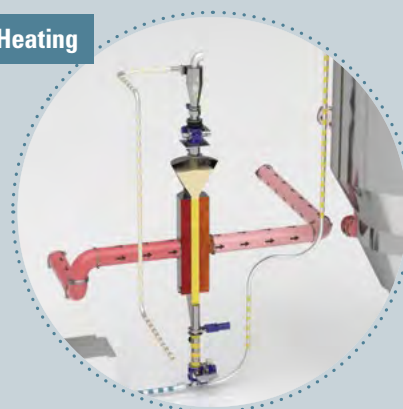
Heating or cooling the product in the process – or a combination of temperature control and degassing of the bulk material – are further ways to optimize processes.

PRODUCT AND FLOW CHARACTERISTICS

Every bulk material is different – it is therefore crucial to know how the bulk material behaves. Whether freeflowing or poorly flowing products, granulates or powders: For customized product features, our experts have customized solutions. Process silos rely on mass flow to achieve the process parameters.



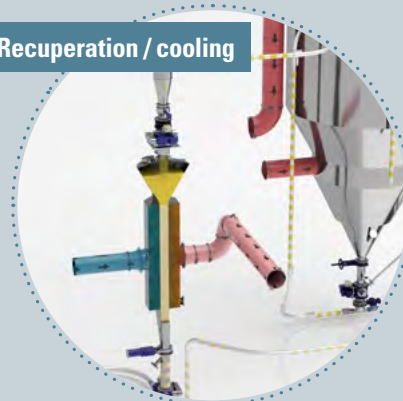
1. Heating



2. Degassing



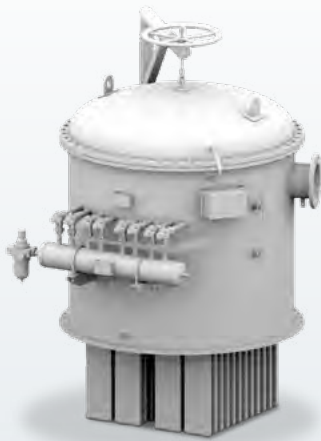
3. Recuperation / cooling



EVERY SYSTEM IS ONLY AS GOOD AS ITS COMPONENTS

For all your silo needs – special components from Zeppelin Systems.

We develop and produce all components that are crucial for the cost-effectiveness and efficiency of your overall system in-house. This is where decades of process experience and the construction of hundreds of plants come into play. That is how we create tried-and-tested, state-of-the-art components that can be seamlessly integrated into your overall design.



ZEPELIN SYSTEMS FILTER

The fully automated vent filter with pneumatic cleaning ensures continuous dust removal from the conveying air in pneumatically filled silos. High separation efficiency with constant low filter resistance.



ZEPELIN SYSTEMS SILO CONTROL AND MONITORING SYSTEM

The system is designed for control, monitoring, data storage and visualization. Thanks to the modular system, it can be scaled from a single silo to complex silo systems. The system can be expanded step by step using simple plug-in technology.



ZEPELIN SYSTEMS VIBRATORY BOTTOM

The vibration bottom is designed to activate the product flow and to convey non-fluidizable bulk materials that do not flow easily. A counterweight motor generates horizontal, circular vibrations, which are transferred to the product column to ensure consistent flow.



ZEPELIN SYSTEMS AERATION CONE

The pneumatic aeration system combines fluidization with mechanical movement to ensure complete and residue-free discharge. Powdery bulk materials that are particularly easy to fluidize are discharged reliably and with the utmost care for the product. Depending on the application, it can be combined with additional aeration units (e.g., aeration hoses/pads).



ZEPELIN SYSTEMS ROTARY FEEDER

Modern systems ensure raw materials are delivered as close to the machinery as possible. Conveying from the external silos to the day tanks in the production halls is carried out using powerful, product-friendly technologies.



ZEPELIN SYSTEMS DIVERTER VALVE

Diverter valves distribute, collect and direct the bulk material. If required, they can be upgraded to customized special valves depending on the bulk material – with sealing systems that minimize maintenance work or hardened inserts for longer service life.



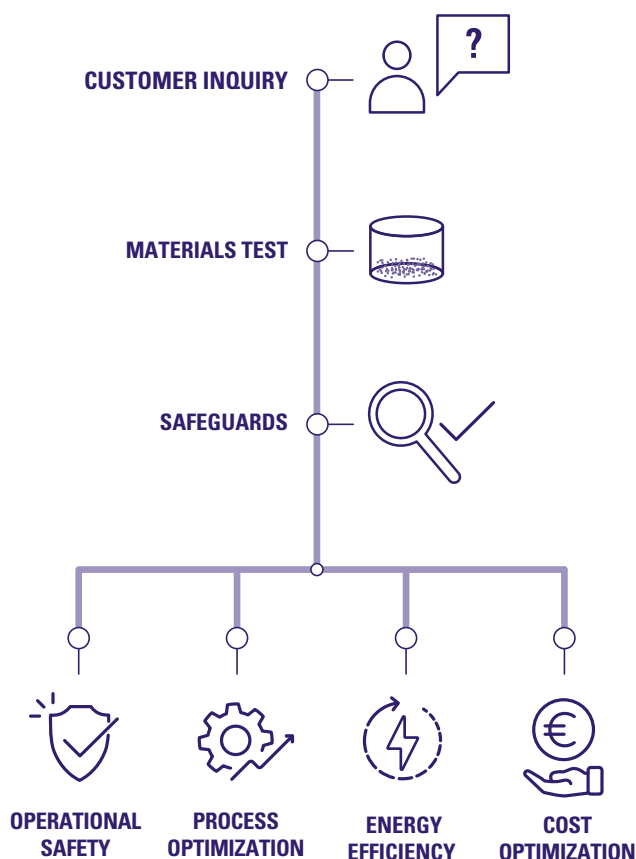
PRODUCT KNOWLEDGE IS KEY

The Zeppelin Systems Technology Center – Your Trusted Decision-Making Partner.

In-depth work with the customer's products is mandatory for efficient processes. Only with deep product knowledge can reliable, process-optimized, energy-efficient, and cost-effective systems be realized.

The Zeppelin Systems bulk material technology center is equipped with all components and systems that are relevant from a process technology point of view. This is where we carry out full-scale industrial trials, thereby minimizing uncertainties in the scale-up. Special structures are also possible without any problems. To ensure you have a sound basis for your investment decision, our experts will carry out a detailed design analysis.





CUTTING-EDGE MEASUREMENT TECHNOLOGY

Numerous test facilities guarantee optimal results. Data is recorded seamlessly using state-of-the-art measurement technology. We determine the relevant design parameters and create detailed test reports, forming a solid basis for your plant design. In addition, we will provide you with comprehensive advice on the other options. New and ongoing developments are thoroughly reviewed.

No matter where you build your plant: As a customer of Zeppelin Systems, you always have direct access to our technology center, thus securing a decisive advantage for your operational success. Take advantage of this opportunity!

OUR SERVICES AT A GLANCE

CONVEYING TECHNOLOGY

- Dense flow and flight conveying of a wide variety of bulk materials
 - Dimensions: DN 65 – 225
 - Conveyance: 10 – 460 m
 - Throughput: up to 200 tons per hour
- Hydraulic granulate conveying
- Dense flow conveying of sensitive bulk materials
- Suction-pressure conveying of granulates and powders
- Airlocks in different sizes and designs (high-pressure, medium-pressure and blow-through feeders)
- Pressure vessels

STORAGE, DISCHARGE, MIXING AND DOSING TECHNOLOGY

- Storage silos and containers with different discharge systems
- Different mixing silos for powders, granulates and flakes
- Small component additive dosing
- Bulk material heating and cooling
- Bulk material deodorization with the Fresh-TEC process

SCREENING, SEPARATING, CLEANING

- Granulate cleaning with different screening systems
- Drum screener or wire separator
- Pigging system for cleaning pipes
- Various filter systems and cyclones



WE ARE AT HOME IN ALL MARKETS

... and produce there, too.

Our global network of subsidiaries worldwide includes project management capacities and suppliers as well as production facilities in the most important economic regions of Europe, America and Asia. This means that if you want to establish or expand a new site, we are usually already there.

CLOSE TO CUSTOMERS WORLDWIDE.

Take advantage of the benefits of a global plant engineering expert: We are familiar with the local conditions, national regulations and standards and legal provisions and seamlessly integrate them into our plant concepts. We offer you personal support on-site in the respective

national language and always in the right time zone. And thanks to a dense supplier network at every location in the world, you benefit from a high degree of localization, shorter delivery times and competitive pricing. Invoicing is done in the local currency, offering added convenience.

Compared to small, local providers, you will benefit from Zeppelin Systems' global know-how and the experience of interdisciplinary engineers who truly understand your business. We always develop the plant concept, design and calculations in close collaboration with the customer, therefore providing a one-stop service. This makes us your competent solution provider with a full service guarantee.





TECHNOLOGY IS NOT EVERYTHING

The people behind Zeppelin Systems.

Whether as a partner, supplier or employer – what truly matters is people. At Zeppelin Systems, we value teamwork. This principle applies across our global network, in collaboration with our customers, and within the many project teams working every day to achieve shared success. To be internationally successful in plant engineering, you need to offer more than just outstanding technology – you need outstanding employees who understand customer needs, implement local requirements and put together the best plant package based on these factors. This is another reason why Zeppelin Systems can be found wherever the highest value is placed on functionality and process reliability: that is, all over the world.





ALWAYS BY YOUR SIDE

With our 360° services, you benefit from a powerful service package.

At Zeppelin Systems, you can rely on first-class service. For us, the work is far from over once your plant has been designed. We provide assembly and commissioning services – worldwide. We train your employees – in everything from the competent instruction in process engineering workflows and how to properly maintain the plant to how to operate it safely. Additionally, we support you in developing safety stan-

dards. Maintenance work, carrying out inspections and repairs, and a spare parts delivery service are all part of our comprehensive offering.

To ensure your plant operates smoothly, we offer preventive maintenance that detects and eliminates any malfunctions at an early stage. If an unexpected error still occurs, use our remote maintenance.

ZEPPELIN SYSTEMS 360° SERVICES

Professional support at every stage
of your project

Zeppelin offers service with real added value. That's because we supply turnkey plants as well as complete systems, mixers, silos and components - and stand by your side throughout the execution of your project. This applies not only to the construction of new plants, but also to modernization projects. In this way we provide professional support and a smooth project flow, individually tailored to your requirements.

Choose from practical modules for all activities on your project. You can book the modules on a daily basis or as a package. We will be happy to put together optimally designed service solutions for your plant.

FASTER TO YOUR GOAL: YOUR ADVANTAGES AT A GLANCE

- No trouble with incomplete deliveries:
We check every package
- Optimal project coordination:
We know how your plant must be constructed
- Safety through technical competence:
Nobody knows our plants better than we do
- Accelerated workflow: We work as one team
- Assured start of production:
We ensure reliable deadlines through clear planning
- Optimal production output/performance:
We provide continuous support

PERFECTLY SUPPORTED!

THE PACKAGE FOR YOUR PROJECT SUCCESS

1 INCOMING GOODS INSPECTION

2 ASSEMBLY / INSTALLATION

3 COMMISSIONING

4 PERFORMANCE TEST

5 TRAINING

6 SPARE PARTS SUPPLY

7 SERVICE CONTRACTS



Zeppelin Systems GmbH

Graf-Zeppelin-Platz 1
88045 Friedrichshafen
Germany

Phone +49 7541 202 - 02
Fax +49 7541 202 - 1491
zentral.fn@zeppelin.com

zeppelin-systems.com