

Innovative Bulk Solids Technology

Plants – Systems – Components





A century of experience gained through your tasks

The Zeppelin Group is among the leading manufacturers of plants for storing, conveying, blending, and dosing of premium bulk solids. Thanks to our world-wide activities and locations in all important industrial centers we can always provide our clients with the latest, most innovative and reliable technology to ensure maximum economic success.

As the direct successor of Count Ferdinand von Zeppelin who turned the human dream of flying into reality by building his legendary airships over a century ago, we are used to looking ahead. Constantly innovating, striving for perfection and maximum functionality in our products has turned us into the company that Zeppelin is known as today: the technology leader for handling premium bulk solids.



On site world-wide – always near our customers. Production plants in Germany, Belgium, Brazil and Saudi Arabia, production partners in Thailand and China as well as subsidiaries and representations all over the world enable Zeppelin to serve its customers with speed, flexibility and the utmost closeness to them. More than 200 engineers – including specialists in chemical engineering – guarantee innovative and economic construction of plants.





Zeppelin has been the leader in the international market of silo construction for decades. Thanks to our own modern manufacturing and the international experience of our assembly staff and service engineers we guarantee quality of the highest level.

Competence in bulk solids handling – you can rely on Zeppelin

The Zeppelin Group and its various divisions are focused on the requirements of their customer groups. All activities have, however, one thing in common: the economic handling of premium bulk solids.

Silo plants for the plastic, food, and chemical industries integrated in one logistics concept: from consultation and design to manufacture, assembly and after-sales service.

Turn-key plants for the plastics processing and chemical industry as well as for rubber producers and tiremakers.

Conveying components for any application: for powders or pellets, for high or low pressures, for products with good or poor flowability, for standard or special applications.

Silogistic: turn-key plants for plastics producers, engineering companies and forwarders. Zeppelin is the world-wide leader in the planning and construction of logistic centers and manufacturing plants.



Pulling all the strings: the central office for the industry sector is located in Friedrichshafen, Germany. Here, in the world's largest Technology Center for pellets and powders, tests are carried out on an industrial scale. The test results are available to all subsidiaries, therefore allowing our clients to always be on the safe side – no matter where their plant is located.



Zeppelin – complete logistics centers from one supplier

The quality of a complex system depends on the quality of its individual components. Therefore, we develop, design, and produce the most important components of a logistic plant ourselves.

Zeppelin supplies turn-key plants from one single source. Whether silos or conveying technology, from the civil to detailed engineering, from the coordination of the suppliers to the assembly and the initial operation of the plant on site. Thanks to the knowledge and skills of the different subsidiaries, and the thorough selection of

partners and the assignment of certified suppliers you will benefit from:

- a complete system adjusted to your requirements
- innovative concepts to meet your specific demands
- low life cycle costs thanks to optimized operating expenses
- rapid plant availability due to reduced interfaces and optimized processes
- coordination of all foreign suppliers
- a single contact responsible for the complete project for a minimum of interfaces



The Zeppelin business activities at a glance

Silo technology: aluminium or stainless steel silos for storage, blending and homogenization. From design via production to the assembly including steel structures and complete equipment.

Conveying technology: layout, planning, manufacturing of all important components, delivery and assembly as well as initial operation, consultation and problem solving.

Warehouse concepts: outside or inside storage. From lightweight construction halls to the planning of office spaces.

Packaging technology: from complete bagging lines via palletizers to equipment for filling bulk storage bins.

Control and management systems: from control systems for single machines via SPS control systems to complete warehouse management systems.

Civil engineering: from surface consolidation via foundations and mains to drainage and truck weighing systems.

Logical concepts ensure smooth logistic processes.





Zeppelin plants for the plastics processing industry: benefit from the trends we are setting

Zeppelin is the leader in the international market for turn-key plants designed for the handling of premium bulk solids. Zeppelin's division for processor plants has specialized in high performance logistics for bulk plastic materials required by plastics processors.

Long-term experience, a reference list showing all important and renowned enterprises in the plastic industry as well as a variety of patented processes reveal the success of our technologies.

Zeppelin is the technology leader especially for processing plants for PVC, compounding plants or for the manufacturing of cross linkable polyethylene cables by the cable industry. A world-wide network providing project management capacities on six continents and production plants in the most important economic regions ensure both continuous personal consultation and local assistance as well as the reliability of a partner with world-wide activities.

Our main focus is the economical operation of your plant. An exact quantity and compound of the raw material (pellets, powder, recycled material, or other bulk solids) must be filled into the production process in specified conditions at the right moment. Zeppelin's technology stands for achieving the highest quality of your products with safe and reliable plant equipment.





Innovative technologies for economical raw material management

Zeppelin's first-class technologies are also implemented in plants for the rubber industry and the production of tires which require special technologies and know-how. The integration of Motan Materials Handling GmbH into the Zeppelin Group has ensured the technological leadership in this important market segment.

The international rubber and tiremaking industries can therefore benefit from a twenty-year experience and all advantages offered by a successful internationally-acting industrial group. More than 500 plants set up at locations world-wide as well as a reference list with all major industry-related enterprises mark our success.

Zeppelin supplies complete systems from one single source from the reception of raw materials via storage and conveying to weighing and proportioning (also for lightweight constituents). Technical innovations such as a patented slow-velocity conveying method for granulated carbon black – considered as trendsetting in the industry – stand for Zeppelin's excellent reputation all over the world.

For the core components of complex systems we again rely exclusively on our own know-how: experienced Zeppelin specialists work on development, manufacturing, quality management and assembly.



Conveying systems that meet your individual requirements

You require to your plant to provide utmost process reliability, maximum economic efficiency, and to ensure the appropriate bulk solids' quality suitable for conveying. Zeppelin offers its customers the highest possible profit and advises them accordingly from begin on.

Basically two types of conveying systems are used in the production of bulk solids, in logistics terminals, or for feeding the processing machines. The system used depends on the customer's requirements.

Pneumatic conveying (dense or dilute phase): gas or air is used for conveying the product.

Hydraulic conveying: water is used for conveying the product.

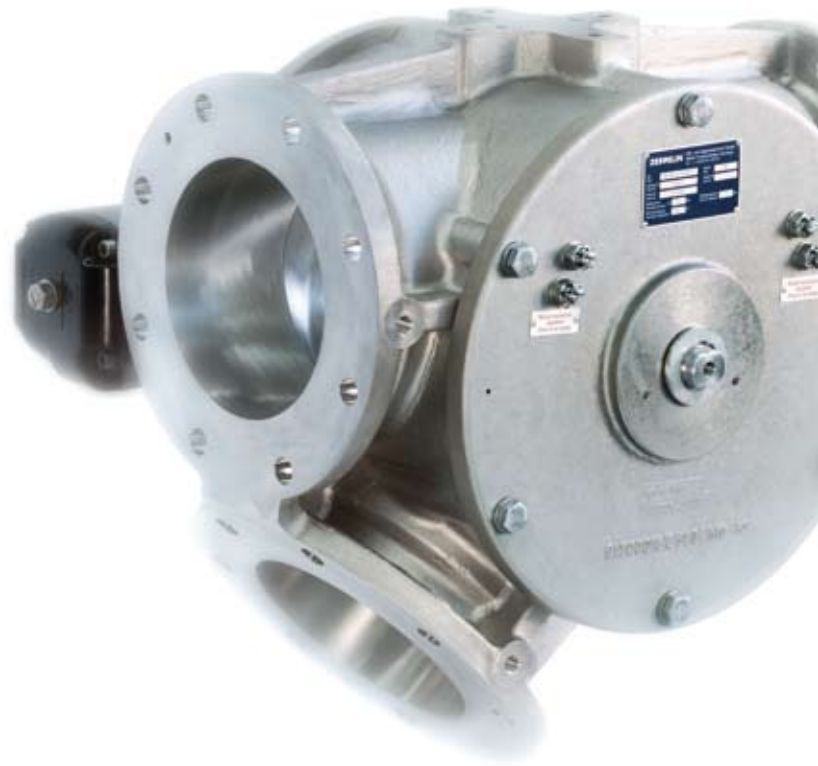
In order to comply with the customer's requirements, Zeppelin has developed processes for special applications (such as complicated bulk solids like glass fibers or powders).

The patented Pump-Flow-Concept®, for example, combines the flexibility of



suction-type conveying with the efficiency of pressure-type conveying. It is primarily used for processors with a 3 – 8 t/h consumption.

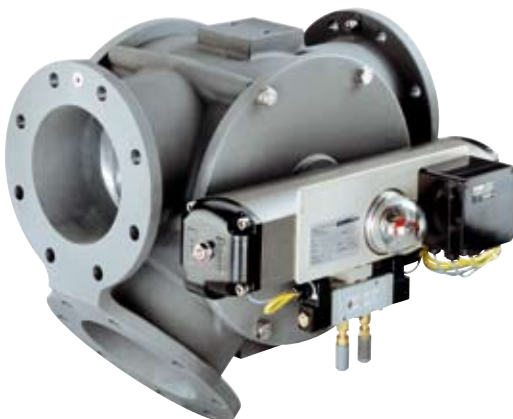
Two special bypass systems (Overflow and Airfloat) allow the use of the gentle dense phase conveying even for fine powders. The bypass systems blow secondary air through valves into the conveying pipes at exactly defined intervals. This process ensures trouble-free dense phase conveying, a method which is preferably used for granulated carbon black or silica due to the low rate of particle destruction.



The complete
Zeppelin program:
trouble-free workflow
for optimized processes

The reliability of a complete system depends on the quality of its individual components. Therefore, we at Zeppelin started long ago to develop, design, and produce the key components ourselves. Because our customers expect highest functionality and reliable Zeppelin quality.

A particularly clever feature of Zeppelin's new program of diverter valves: the modular system allows individual tailoring of the valve to your specific requirements.





You receive field-proven components designed to fit perfectly into the system. When it comes to defining the right product and design you will benefit from the sound advice given by the internationally leading system supplier and rely on the speed and flexibility of a strong industrial group of companies.

Pellets or powder, plastic material, rubber, carbon black or other bulk solids, high or low conveying capacities, high pressure or medium pressure rotary feeder for each application. Zeppelin offers a suitable, technically perfected and economical solution.



Silos and vessels from the international market leader

Concerning silo technology the advantages for our customers are clearly visible: thanks to our production facilities in Germany, Belgium and Brazil, production partnerships in Saudi Arabia, Thailand and China as well as representations all over the world we are able to react with particular speed, flexibility and cost efficiency -to your requirements. You will of course benefit not only from the specific advantages of the Zeppelin products!

Storage silos:

- available in shell diameters ranging from 2,400 to 9,000 mm *
- standardized for bulk densities of 6 kN/m³ and 10 kN/m³ *
- with long or short silo skirt
- for anchoring on steel structure or concrete foundation
- with a comprehensive range of accessories from silo management to control systems

*others available upon request





The right solution for every application

Zeppelin does not only offer a large variety of silo types: decades of experience and thousands of silo plants supplied to locations all over the world are the basis for a product program that covers all of your needs.

Prefabricated silos or silos in panel version: the individual prefabricated segments are assembled on site, providing advantages in case of unfavorable weather or extremely tight schedules.

Emboxable silos: reducing transport costs significantly. The assembly on site is carried out quickly and smoothly.

Blending and homogenization silos: Zeppelin offers a large range of blending and homogenization silos, suitable for bulk solids with good and poor flowability (e.g. powders, pellets, recycled products, dryblends, compounds). These systems are available as turn-key or retrofit solutions.





Leading edge technology is no luck, it's an achievement

Your investments in individual components or complete systems must be profitable. Using the right product for a specific application, readily available and at a fair price. To achieve such results, Zeppelin, as the technology leader, runs a powerful Development and Technology Center that provides the different technologies used for handling bulk solids.

To further contribute to your success, we offer the services of our Technology Center whose capabilities span the entire Zeppelin product range. Acquiring comprehensive information on your product helps you to select the best possible component or plant design.

Our Technology Center is built on an industrial scale to meet our customers' wide range of demands. This enables us to provide tailored solutions to your individual tasks, from trials on an industrial scale to special configurations that can be quickly installed.



Powders or pellets – we have all the answers

The heart of our research and development activities are the two Technology Centers – one specially designed for pellets and the requirements of the large scale chemical industry, and the other for powders and additives (for the rubber and plastics processing industries).

Whether commercial-size installation or processing plant, we conduct full scale tests to avoid the uncertainties of scale-up calculations with the help of the Technology Center's impressive range of options. Because our customers naturally expect maximum process reliability, Zeppelin provides them with unquestionable results as a solid basis for their investment decisions.

To ensure the completeness and accuracy of the results, Zeppelin provides:

- competent result analysis by its specialists
- conclusive test reports and documentation
- determination of relevant design parameters



World-wide on site – always near our customers

A successful enterprise gains experience through the tasks of its customers. Therefore, Zeppelin subsidiaries and representations are located all over the world offering you personal contact at any time. Moreover, the economical manufacturing of special products, thanks to the specialization of its production sites, is one of Zeppelin networks' strengths.

All Zeppelin companies benefit from the research and development facilities and the central quality assurance located in Friedrichshafen. Our specialists, all leading experts in their fields, are there to assist you.

Because of this specific know-how, our quality management is an appreciated and esteemed partner, providing quality assurance and inspection services to the aircraft and automotive industries.

In our air conditioned measuring center also the geometry of large parts can be verified.



First-class quality is the result of hard work

Zeppelin, as a successful and internationally active industrial group, holds authorizations for all important and relevant welding and manufacturing techniques. We at Zeppelin do not leave anything to chance when it comes to first-class product quality.

From product design via own research facilities to manufacturing, we at Zeppelin rely exclusively on our own expertise. Our customers' operational success depends on the quality of our plants and components. As a reliable partner for our demanding customers we never make compromises.

Only highly-qualified personnel works in our manufacturing and assembling centers, providing the flexibility necessary for construction plants world-wide. You can trust us to deliver your product fast, reliably and with the highest quality.



The Zeppelin Group of companies: All specialists under one roof

Zeppelin Systems GmbH
Leutholdstr. 108
88045 Friedrichshafen
Germany
E-mail: zentral.fn@zeppelin.com

Zeppelin Belgium N.V.
Munsterenstraat 9
3600 Genk
Belgium
E-mail: zeppelin.belgium@zeppelin.be

Zeppelin Technology Far East Pte, Ltd.
237 Alexandra Road
#03-03/04/05 The Alexcier
Singapore 159929
Singapore
E-mail: info@zeppelin.sg

Zeppelin Systems USA, Inc.
11050 West Little York
Building D
Houston, TX 77041
USA
E-mail: zeppelin-usa@zeppelin-usa.com

JMB Zeppelin Equipamentos Industriais Ltda.
Rua João XXIII, N° 650
Bairro Cooperativa
CEP 09851-707
São Bernardo do Campo
São Paulo
Brazil
E-mail: info@jmbz.com.br

**Zeppelin Systems India Pvt. Ltd.
& Alpha Project Services Pvt. Ltd.**
Level 4, ADM Building
Alembic Campus
Alembic Road
Vadodara - 390 003
India
E-mail: info@zeppelin-india.com

Zeppelin Solid Technology (Beijing) Co. Ltd.
111#, Parkview Center
No. 5, Fangyuan West Road
Chaoyang District
Beijing 100015
China
E-mail: office@zeppelin-china.com

Zeppelin Plast Tech Srl.
Centro Direzionale „Summit“
Palazzo „C“/Via Brescia, 26
20063 Cernusco sul Naviglio (MI)
Italy
E-mail: info@zeppelin-zi.com

Zeppelin Systems Ltd.
Multiflex 5, Core 27
Little Oak Drive
Sherwood Business Park
Annesley
Nottingham NG15 0EB
United Kingdom
E-mail: info@zeppelin-uk.com

Zeppelin Representative Office Moscow
Leninskij Prospekt 95 A, Room 464
119313 Moscow
Russia
E-mail: marcus.reichmann@zeppelin.com

Zeppelin Gulf Company Ltd.
Dammam-Jubail Highway
PO Box 1495
Al-Jubail 31951
Kingdom of Saudi Arabia
E-mail: zeppelingulf@zeppelin-gulf.com

Zeppelin Silo ve Sistemleri Imalat Sanayi Ticaret A.S.
F. Kerim Gökay Cad.
Ortabahar Sok. No. 6/32
34732 Göztepe – Istanbul
Turkey
E-mail: mehmet.tuerker@zeppelin-tr.com

Presented by:

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