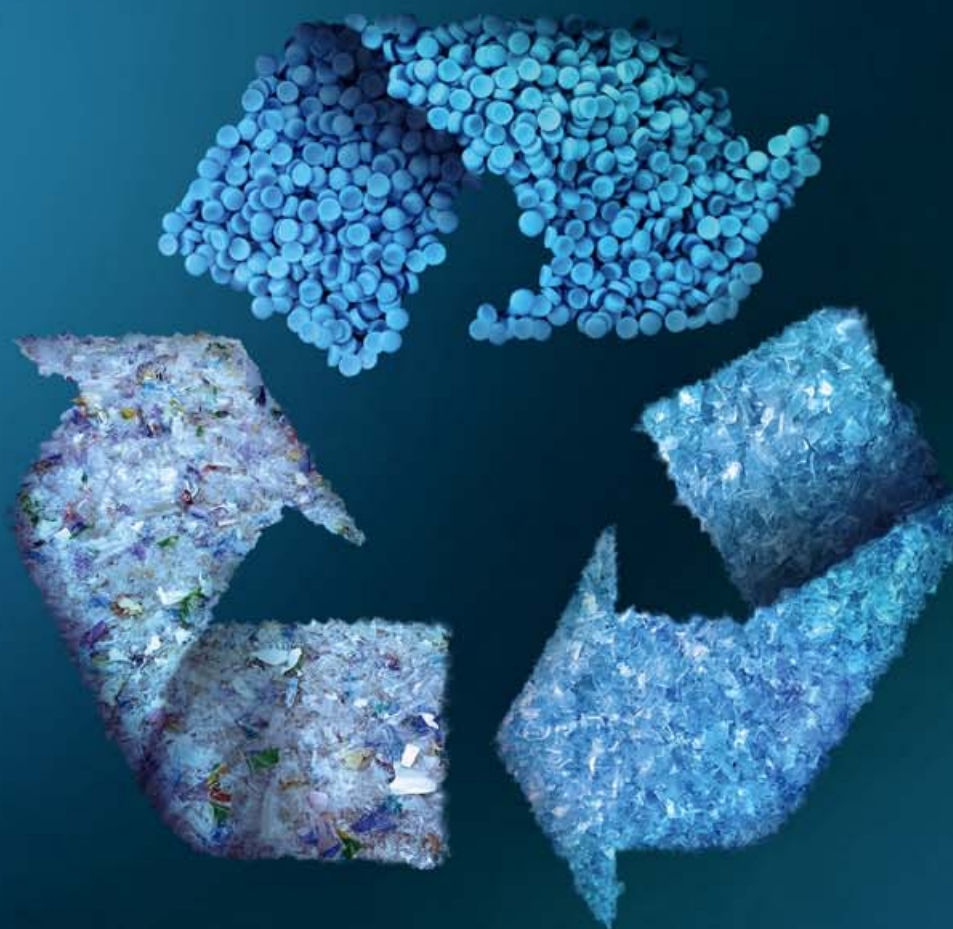


CONCEPTS FOR THE INDUSTRIALIZED CIRCULAR ECONOMY

RECYCLE PLASTICS WITH MAXIMUM EFFICIENCY



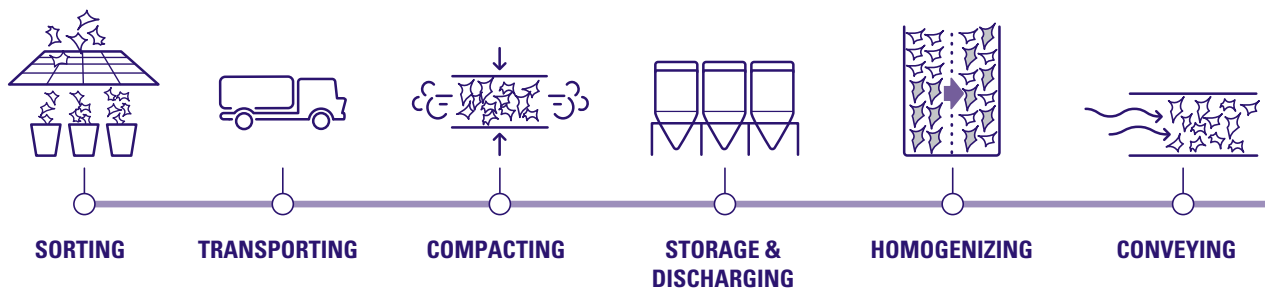
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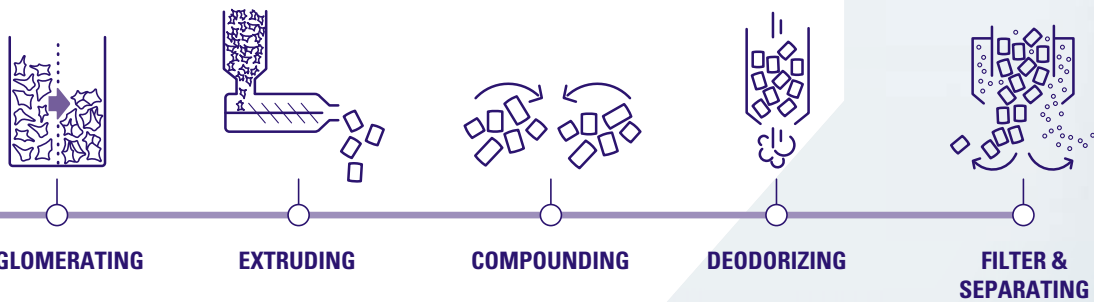
 **ZEPPELIN**[®]
WE CREATE SOLUTIONS

PLASTIC RECYCLING ON AN INDUSTRIAL SCALE? GET IN TOUCH!

How to increase your percentage of recyclates – economically and efficiently.

A world without plastic is unthinkable. However, fossil raw materials, the basic material for plastic production, are in short supply. To help reduce their consumption, we'll show you how to recycle and reuse a higher percentage of recyclates. This is because high throughputs, efficiency and quality make recycling more competitive compared to using virgin materials.





USE MORE RECYCLATES ...

Today, the percentage of recyclates in plastic production is only 15%. The reason: The recycled material often smells unpleasant, which is why it can only be added to the production process to a very limited extent – especially for high-quality products. In addition, storage, homogenization, and precise dosing of flakes or fluffy materials are already a major challenge in recyclate production. The quantity of products to be recycled is also constantly growing, which pushes many systems to their capacity limits.

... WITH INNOVATIVE SOLUTIONS FROM ZEPPELIN SYSTEMS.

We have the right answer to all these challenges: Systems from Zeppelin Systems. We convey high throughputs of up to 30 t/h over a distance of up to 1,000 m. With our discharge modules, we ensure a continuous material flow and can reduce material fluctuations through homogenization. In addition, we can remove odors in our storage modules continuously or in batch operation in a particularly energy-efficient manner. Quality, energy efficiency and cost-effectiveness are of particular importance.

DECADES OF EXPERIENCE AND MATURE TECHNOLOGIES.

As a leading plant manufacturer, we have decades of experience in handling various bulk materials. Whether PE, PP and PS, PET or PVC, your raw materials are in the best hands with us. With our test centers at the Friedrichshafen and Kassel sites, we test the behavior of your raw materials and design your plant precisely for them – ensuring optimum processes and high productivity.

WE INDUSTRIALIZE YOUR RECYCLING PROCESSES.

From small plant concepts to large plants – we scale your processes and adapt them to the requirements of your markets. We offer a customized overall concept with our own components and technologies from network partners, as well as validation via testing.



THE TECHNOLOGY FOR MAXIMUM, ENERGY-EFFICIENT ODOR REMOVAL.

Deodorization systems – tailored to your needs.

With deodorization plants from Zeppelin Systems, you can significantly increase the percentage of recyclates, since they completely neutralize unpleasant odors. This opens up completely new application possibilities for the use of recyclates. In addition to packaging, they can also be used for high-quality end products, such as in the residential, automotive, design and lifestyle sectors.

PREHEATING THE MATERIAL PREVENTS VOC CONDENSATION.

Our continuously operating deodorization systems remove volatile organic compounds (VOC) from recycled plastics using a thermal-physical cleaning process. While short-chain odorous substances are eliminated during the extrusion process, our process can also reliably remove long-chain substances. The advantage of our plants lies in the preheating of the material before it enters the silo. This prevents the condensation of VOCs in the form of oily deposits.

THE CONFIGURATIONS – AS VARIED AS YOUR REQUIREMENTS.

The deodorization systems can be designed in different configurations.

This is achieved on the one hand by various alternatives for preheating the material, and on the other hand by energy-efficient exhaust air concepts that use the process heat for heating the product and the purge air. In addition, we also offer more cost-effective deodorization plants for discontinuous operation – the ideal way to get started in producing odorless plastics. No matter what your requirements are and what recycled plastic you use: We have the solution.

PROGRESS BY TESTING.

Zeppelin Systems has been manufacturing deodorization plants for virgin plastic goods for many years, with throughputs of up to 70,000 kg/h. With the process expertise from over 100 degassing systems, we adapt the systems to your requirements and the behavior of the corresponding bulk material. This is achieved via comprehensive tests on an industrial scale at our test center in Friedrichshafen. This ensures very high process reliability and premium-quality granulates – the basic material for high-quality products.



PROCESSING POOR-FLOWING BULK MATERIALS OPTIMALLY.

We have the expertise – even for fluffy materials.

To ensure high throughputs and economical processing of fluffy materials, it is important to have a precise knowledge of the treatment processes. Our experts assess and characterize the materials, for example with regard to flow and conveying capacity. This is the only way to guarantee optimal interplay of the plant components.

As poor-flowing bulk materials, fluffy materials and flakes tend to form bridges when stored in silos. As a result, the material flow can come to a standstill. The solution: Storage silos from Zeppelin Systems that ensure a reliable, continuous material flow – with intelligent discharge equipment, such as vibration discharge bottoms or discharge screws.

By the way, thanks to their volume of up to 800 cubic meters, we can also handle large quantities of PET flakes with our storage silos.

OPTIMUM HOMOGENIZATION THROUGH MIXED SILOS CENTRO-BLEND AND MULTI-CHANNEL.

Mechanical mixers are usually used to homogenize the flakes. However, the mixing screws installed there

produce fine flakes during mechanical processing and are subject to extreme wear. This results in repairs and downtime. In addition, due to limited size, several mixers are used, which prevents an optimal mixing result, since the mixing contents remain separated from each other by different batches.

With blending silos such as the Centro-Blend and the Multi-Channel from Zeppelin Systems, you benefit from a low-maintenance and low-wear alternative. The well-designed structures are consistently configured for mass flow and guarantee a high mixing quality for a volume of up to 300 m³.

RECYCLING KNOW-HOW FROM A TO ZEPPELIN.

With solutions from Zeppelin Systems, you are ideally equipped to meet the growing requirements for plastic recycling. We ensure perfectly scalable production and are your partner both for the individual process steps as well as the entire process chain.





TESTS IN THE ZEPPELIN TECHNOLOGY CENTER.

We always create individual solution concepts. If necessary, we test the fluffy materials in the Zeppelin Technical Center on an industrial scale before selecting the appropriate technology for the application.



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