

## ZEPPELIN SYSTEMS GMBH ZEPPELIN REIMELT GMBH HENSCHEL MIXING TECHNOLOGY

### Company

- Network of locations worldwide: approx. 50
- Own subsidiaries worldwide: 19

### Employees

- 1,100

### Key products

- Mixing and Compounding systems - installed worldwide: 20,000
- Bulk materials handling systems - installed worldwide: 10,000

## ZEPPELIN<sup>®</sup> REIMELT

### Company

For more than 50 years the business Unit HENSCHTEL Mixing Technology (Kassel) of the Zeppelin Reimelt GmbH, since 2009 a member of the Zeppelin Group (Friedrichshafen), has been developing, producing and supplying mixers, complete systems and compounding system for bulk materials in the plastic processing and chemical industry worldwide.

Each system for mixing, preparing, coating, granulating and compounding is laid out individually according to our customers' requirements – as a turnkey solution from the raw material supply to the semi-finished or final product. Our comprehensive know-how stand for a system concept without interface. This also comprises the development of integrated software solutions for a smooth process automation.

In our own laboratory, our experts develop and execute new systems and are available to provide consulting service and execute tests on behalf of customer. Based on the permanent dialog with the raw material producers and processors, our employees are always on the current standard of knowledge.

### Material

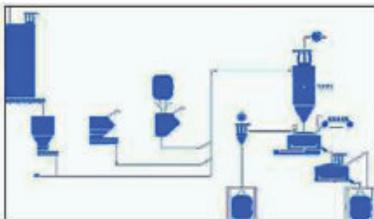
The specific properties of raw materials, such as wooden flour, natural fibres or starch have to be considered when designing systems for the production of bioplastic-compounds. Next to the immanent temperature sensibility also the selection of thermal-plastic binders is essential for the processing temperature when compounding natural fibres. Besides the mostly different melting points and viscosity of the polyolefins, also the use of PVC as carrier represents a demanding challenge for the processing.

Bioplastic Composites demand the highest standards of filter technology. Due to the very specific raw material characteristics with a high degree of humidity of more than 10%, low particle weight and permanent explosion risk, only perfectly dimensioned aspiration systems will work effectively.

Objective of this processing is the production of an homogenous, dust-free and free-flowing agglomerate with a defined residual moisture, based on raw materials with almost any particle geometry. Only these material characteristics ensure a perfect processing in reproducible high quality for further process steps.

### Products

Heater-/Cooler mixer combinations type FM/KM and FM/HM with very specific design features are used for the agglomeration of a wood-polymer-mixture to a processible compound. With this technique the batch operation also enables processing of raw materials with a high moisture content of more than 10% without pre-drying. This again increases the economic efficiency considerably compared to other granulating systems.



# ZEPPELIN<sup>®</sup>

## REIMELT

For this purpose, Zeppelin Reimelt offers systems with unique advantages:

- Surface properties of the end product
- Fracture behaviour of the profile
- Dye yield
- Throughput of extrusion

The system design is based on product properties, required throughput and feeding mode of the mixer.

The scope ranges from strictly manual feeding of all components to a fully automatic storage, conveying and weighing system.

Zeppelin Reimelt offers know-how for a broad concept and delivers a turn-key system solution which is perfectly designed for the requirement – everything from a single source.

Our specialists are at your disposal for expert advice from a first concept to handing over a complete operational system.

With the knowledge of a multitude of delivered systems, Henschel offers a special solution for this application, too:

- Anti-static, steam-permeable filter
- Insulated and electric heated housing and wiring
- Pressure-resistant design
- Integrated explosion-suppression systems
- Quick-release flaps for ventilation cables
- Components according to ATEX

### A superior concept

The Henschel Compounder RHC offers the solution for this complex task by using novel screw elements which have been specially designed for the compounding of natural fibres.

Filling degrees of up to 70% can be realised due to high volume based on OD/ID ratio of 1.66 at highest flexibility in formulation design as well as choice of raw materials. With a length of the process unit of 48 D the filler is being added through two side feeders and mixed into the polymer melt in different places. For degassing of a moisture content of up to 12% specially developed degassing side feeders are installed additionally.

The single screw extruder ESE with a process unit of merely 8 D provides the necessary pressure build-up before pelletizing system or die respectively and provides nearly unpressurised operation inside the compounder. The material specific product properties can thus be improved significantly compared to conventional systems.

Only this method of gentle processing enables an extremely high output with an specific energy consumption less than 0.2 kWh/kg which cannot be realised with comparable systems.

Lifetime of the screws of up to two years and the barrels of up to four years can be realised by a powder-metallurgic coating of screw elements and barrels. This coating is applied by hot isostatic pressing at a temperature of 1,400°C and a pressure higher than 1,000 bar.



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