

**FOOD, CHEMICALS, FINE CHEMICALS, BIOTECHNOLOGY UND PHARMACEUTICS:**

# **HIGHLY SPECIALIZED TECHNOLOGY CENTER FOR FLUID BED PROCESSES**

**Test your products and develop or improve your processes before going into production. Get supported through feasibility studies, pilot production and plant scale-up. Train new applications or easy and secure plant and product handling. Just make sure, everything is perfect, before losing time or increasing costs.**

Various laboratory plants and equipment in our new, state-of-the-art “Technikum” allow you to test all types of fluid bed processes:

- Drying / Cooling
- Granulation
- Spray granulation
- Agglomeration
- Coating / Encapsulation

We succeed the former business of Heinen Drying, and we have a long lasting experience in food industry, fine chemicals and chemical industry as well as in biotechnology and pharmaceuticals. We know all about fluid bed technology and how to deal with challenging product characteristics or highly specialized process requirements.

## **ALL TYPES OF FLUID BED PROCESSES**

We are experts for fluid bed technology and offer high professional experience in some of the most ambitious industries. The purpose of fluid bed processes is to improve the handling and performance characteristics of a product. This, on the one hand, is to get modified product structures with optimized properties. On the other hand, with fluid bed technology advanced product compositions and even entirely new products can be developed. Shelf life, flowability, instantization, dust reduction, dissolution, microencapsulation of valuable ingredients, coating, are a few examples of the benefits of our advanced fluid bed technology.



Laboratory and pilot plants for all fluid bed processes

### **BENEFITS**

- **Defined residual moisture**
- **Particle size distribution**
- **Flowability, dust reduction**
- **Dissolution and dispersibility**
- **Instant properties**
- **Coating and microencapsulation**



## FLEXIBLE PROCESSING TECHNOLOGY FOR PRODUCT AND PROCESS DEVELOPMENT

In our state-of-the-art Technical Center, we improve or develop your particular product properties with our fluid bed processes. We start with batch systems on the laboratory scale level to prove feasibility and optimize process parameters then we scale-up to continuous or batch production plant sizes. We are able to support you determine the basic parameters to secure and ease a product exchange at production switches with your production equipment. In our Technology Center you can simulate nearly any application situation. Our specialized engineering team and process technicians support you regarding all questions of fluid bed processing and its wide range of applications.

### BATCH-PROCESSES

With our mobile devices minibatch and mobatch, preliminary tests for all types of fluid bed processes can be realized.

#### MINIBATCH

- Interchangeable bowls
- 1,25 l / 2,5 l
- 50 to 2000 g
- 120 m<sup>3</sup>/h air flow
- 140 °C inlet temperature
- Top- and bottom-spray

#### MOBATCH

- Interchangeable bowls
- 2,5 l / 22 l / Coating bin
- 0,3 to 8,0 kg
- 200 m<sup>3</sup>/h air flow
- 180 °C inlet temperature
- Top- and bottom-spray



Reproducible results for plant scale-up

### PRODUCT EXAMPLES:

Cocoa, instant drinks, vegetable powders, aromas, herbs, ceramic slurry, salts, lecithin, citric acid, gelatin, lactose, baby food, soups etc.



Good particle size distribution



Improved dissolution properties



Ideal product properties

### CONTINUOUS FLUID BED

In food processing, the continuous fluid bed technology is the ideal way to gain an efficient production process. Even for the highly regulated pharmaceutical industry, continuous operation becomes more and more important due to its reproducibility and control of the process. With our most flexible laboratory plant Conti FB 20/4 Pilot we can test widely all processes and products. The adjustment of numerous process parameters allows us to develop your product with the desired properties.

- Top- and bottom-spray processes
- Nozzles in any section, various height positions
- Nozzles extensible even during processing
- Product weirs to separate any section
- Plant vibration to enhance fluidization of difficult products
- Air flow range 0,3 m/s up to 2 m/s
- Inlet air temperature up to 180 °C
- Inlet air dehumidification / humidification
- Reproducible process control secures scale-up



Reliable process controlling

### MEASUREMENT AND CONTROL

Sophisticated measurement devices provide for a reproducible plant operation and scale-up. The monitoring of any significant process and plant parameter allows for a full process understanding at any time:

- Full process balancing
- Inlet air temperature control or product temperature control
- Optional inline process parameter monitoring
- Fully automatic process control according to production plants
- Recipe management
- Recording of process data
- Trend graph



Fulfilling individual demands

### LABORATORY EQUIPMENT

Our laboratory equipment provides various physical analysis, e.g. laser or sieve tower particle size analysis, bulk density, tapped density, moisture content measurement, microscope etc. Further analysis like REM, heat conduction, porosity, surface tension, etc., we offer in cooperation with different local institutes or universities.

## BRINGING IDEAS IN MOTION.

Neuhaus-Neotec is a worldwide operating specialist for processing technologies and belongs to the German KAHN Group.

**NEUHAUS NEOTEC Maschinen- und Anlagen GmbH**  
Fockestraße 67  
D-27777 Ganderkesee  
Germany  
Tel: +49 (0) 4221 859-0  
Fax: +49 (0) 4221 859-520  
info@neuhaus-neotec.de

## PILOT PLANTS IN THE NEUHAUS NEOTEC TECHNICAL CENTER

Depending on the application we offer high-performance laboratory and pilot plant systems for continuous and batch fluid bed processing.

### MINIBATCH

A bench type fluid bed laboratory plant for product amounts from 50 to 2.000 g.

Batch sizes	50 g – 2 kg
Bowl volume	1,25 l / 2,5 l
Air plate area	50 cm <sup>2</sup> / 95 cm <sup>2</sup>
Max. inlet air temp.	140 °C



PROCESS	DRYING / AGGLOMERATION	SPRAY-GRANULATION	MICRO-ENCAPSULATION	COATING
Operation mode	Batch	Semi-continuous	Semi-continuous	Batch
Ø Batch/trial	0,5 – 1 kg	–	–	0,5 – 1 kg
Ø Output/hour	–	0,35 – 0,7 kg	0,25 – 0,5 kg	–
Ø Product (dry)/day	5 – 10 kg	3 – 6 kg	2 – 4 kg	4 – 8 kg

### MOBATCH

A flexible mobile laboratory plant for product amounts up to 8 kg.

Batch sizes	0,3 – 8 kg
Bowl volume	2,5 l / 22 l
Air plate area	95 cm <sup>2</sup> / 255 cm <sup>2</sup>
Max. inlet air temp.	180 °C



PROCESS	DRYING / AGGLOMERATION	SPRAY-GRANULATION	MICRO-ENCAPSULATION	COATING
Operation mode	Batch	Semi-continuous	Semi-continuous	Batch
Ø Batch/trial	1 – 2,5 kg	–	–	1 – 2 kg
Ø Output/hour	–	0,7 – 1,5 kg	0,5 – 1 kg	–
Ø Product (dry)/day	10 – 25 kg	6 – 12 kg	4 – 8 kg	8 – 16 kg

### CONTI FB 20/4 PILOT

Ideal for continuous fluid bed processes from 5 to 50 kg/h.

Capacity	5 – 50 kg/h
Air plate area	0,24 m <sup>2</sup>
Max. inlet air temp.	180 °C



PROCESS	GRANULATION (AGGLOMERATION)	SPRAY-GRANULATION	MICRO-ENCAPSULATION	DRYING
Operation mode	Continuous	Continuous	Continuous	Continuous
Ø Output/hour	20 – 35 kg	10 – 20 kg	7,5 – 15 kg	10 – 40 kg
Ø Product (dry)/day	160 – 280 kg	80 – 160 kg	60 – 120 kg	80 – 320 kg