



GLATT INGENIEURTECHNIK

YOUR PARTNER FOR PROCESS AND PLANT ENGINEERING

OFFERING TECHNOLOGY FROM A SINGLE SOURCE

PARTICLE DESIGN FOR FUNCTIONAL POWDERS, GRANULES AND PELLETS

*Particle design and
particle engineering.
From nano to macro!*

Customized complete solutions for the production of functionalized powders and ready-to-use granules are our specialty.

As a pioneer in fluid bed and spouted bed technology, Glatt has many years of experience in developing process solutions. High-temperature processes based on fluid bed and powder synthesis in a pulsating gas stream can be used to produce bulk particles with enormous potential for high-performance applications. Targeted combinations of shaping and thermal treatment generate homogeneous, easy-flowing, dust-free - even coated - particles with new, previously unattainable properties and functions.

We operate a modern technology center at our site in Weimar, Germany. Using small-scale equipment, we develop the processes on a laboratory scale. We then use pilot plants to determine the optimum process parameters for reliable scale-up. Tailored to the specific requirements of our customers, we design, supply and commission high-performance production plants. For partners without their own production sites, we take over the contract manufacturing of their products. We are regionally and internationally connected with science and industry communities.



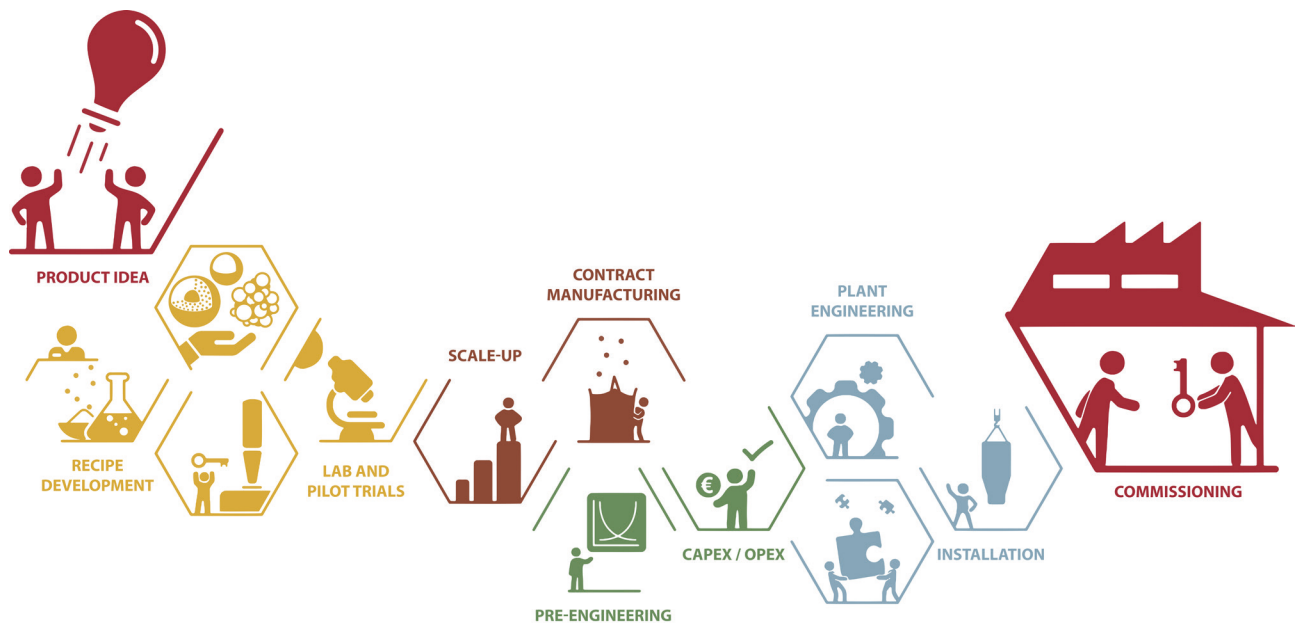
The selection of the most suitable technology is made according to the product requirements of our customers!

- » Glatt powder synthesis in a pulsating gas stream
- » Glatt fluid bed and spouted bed processes:
 - including spray drying and spray granulation, spray agglomeration, film, lipid and hotmelt coating, active ingredient layering, micro-encapsulation, calcination
- » Glatt PHOS4green: Technology mix for the recovery of phosphorus from ashes with direct transfer into fertilizer granules

Powders, granules and pellets are in demand as additives or ready-to-use products for numerous applications:

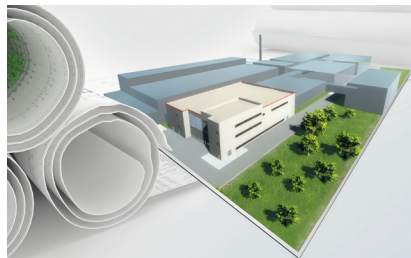
- | | | |
|---------------------|--------------------|------------------------|
| » Algae extracts | » Fruit acids | » Solid electrolytes |
| » Anode materials | » Instant products | » Spices |
| » Catalytic powders | » Microorganisms | » Stabilizers |
| » Ceramic powders | » Pigments | » Surfactants |
| » Collagens | » Plant extracts | » Sweeteners |
| » Diamonds | » Polymers | » Texturizing agents |
| » Enzymes | » Proteins | » Vitamins |
| » Essential oils | » PUFA | » X-ray contrast media |
| » Flavors | » Salts | » and many others |

FROM THE PRODUCT IDEA TO INDUSTRIAL PRODUCTION

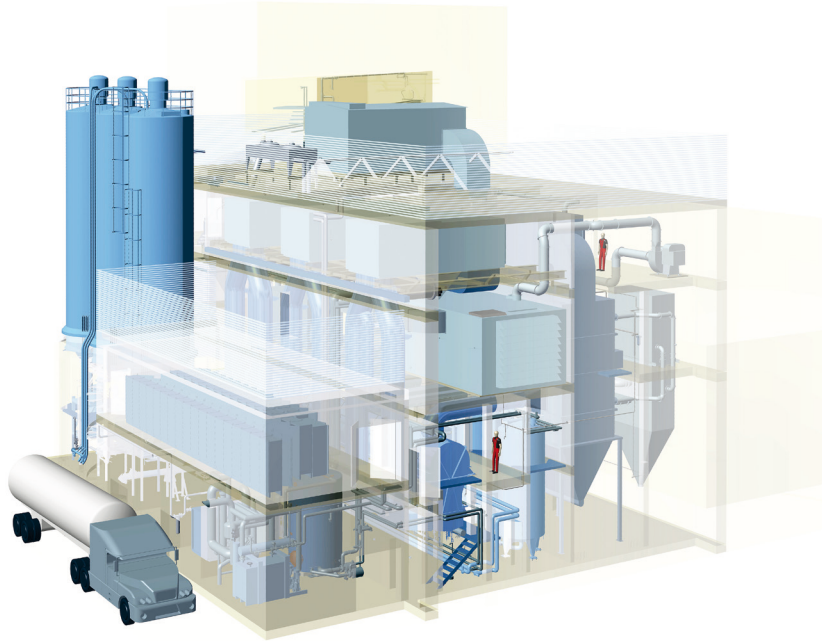


*Particle design. Plant engineering. Process expertise. Technical know-how.
Many years of global experience. The combination of our strengths makes us unique!*

As a technology innovator and experienced plant manufacturer, our competencies allow us to offer a unique concept: deliver of a factory designed around a sustainable production process that has been adapted to the individual needs of the customer. Worldwide! We work hand-in-hand with our customers from the initial idea through plant design and commissioning of their production site.



PLANT ENGINEERING AND FACTORY DESIGN



With our expertise in the area of process and factory engineering we develop and optimize processes for the production of:

- » pharmaceutical + biotechnological products such as tablets, coated tablets, capsules, injection and infusion solutions, drops and juices, ointments, vaccines, insulin, blood plasma products, biosimilars, active pharmaceutical ingredients (API), a. o.
- » powders, granules and pellets for food and pet food, cosmetics, fertilizers, pesticides, detergents and cleaners, industrial salts, battery materials, paints and varnishes, industrial and medical ceramics, catalysts, building materials and many others

We have worldwide project experience in:

- | | | | |
|--------------|-----------------|----------------|---------------|
| » Algeria | » Germany | » Netherlands | » Sweden |
| » Austria | » Great Britain | » Nigeria | » Switzerland |
| » Bangladesh | » Hungary | » Norway | » Serbia |
| » Belarus | » India | » Oman | » Syria |
| » Canada | » Ireland | » Russia | » Turkey |
| » China | » Italy | » Saudi Arabia | » Ukraine |
| » Denmark | » Kazakhstan | » Singapore | » UAE |
| » Finland | » Latvia | » Slovenia | » USA |
| » France | » Lebanon | » South Africa | » and others |

We plan, design and implement complete production sites!

We install international projects ranging from the expansion or modernization of existing production sites to the construction of entire new factory facilities.

The projects focus on processes for the development, optimization, functionalization and manufacture of products for the food, feed, chemical and fine chemical industries as well as the pharmaceutical and biotechnology industries.

Our customers rely on our comprehensive engineering knowledge and extensive experience in project management.

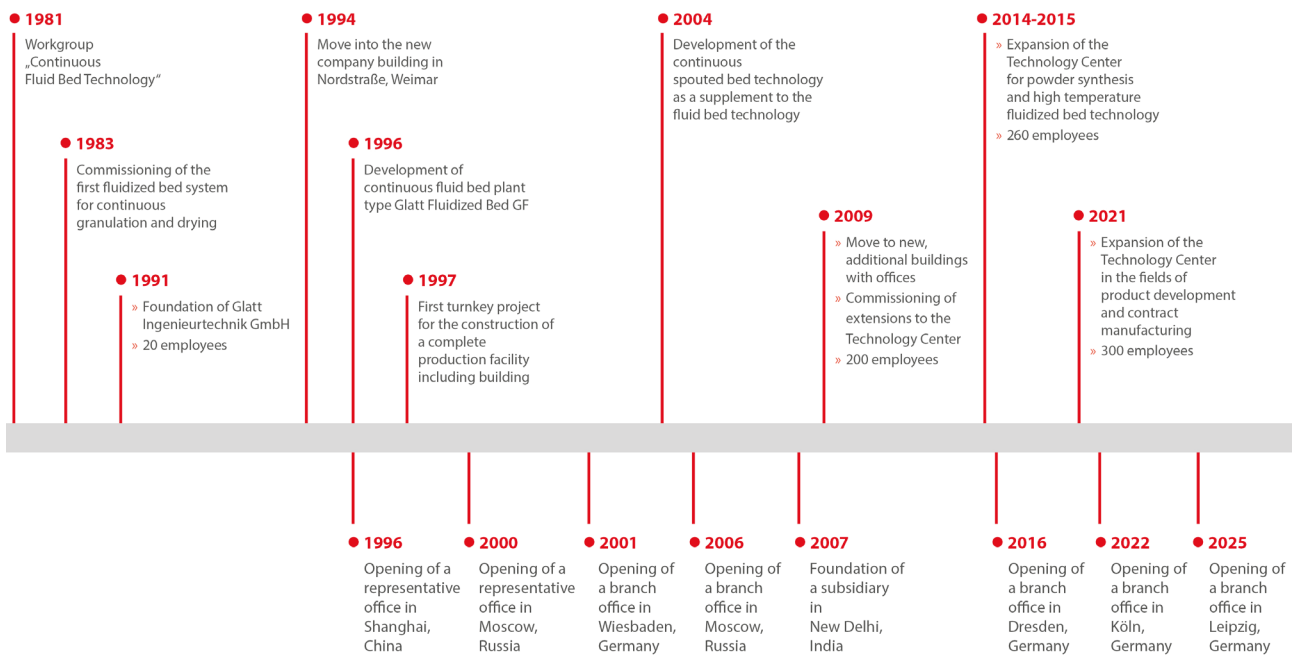
We offer any level of support needed from project planner to installation of an individual piece of equipment to completion of an entire production site.

We optimize manufacturing processes and deliver innovative process engineering with our own technology.

We can couple our unique technologies with existing customer processes to optimize the results for the customer. If needed, we can complement the customer's process know-how with licenses from international partners to bring additional benefits or expanded capabilities.

We develop and deliver optimal, customized and integrated solutions.

OUR ROUTE TO SUCCESS



Integrated into the international Glatt Group, we provide a global network of around 3,000 employees. A large number of representatives across the globe are ready and waiting to act as points of contact for Glatt's complete range of services.



pharma-engineering.glatt.com

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