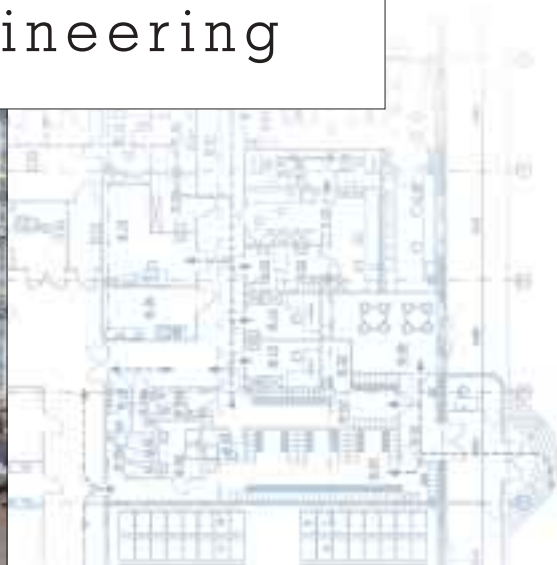




Process and Plant Engineering



From the idea
to turnkey production

- Pharmaceutical industry
- Biotechnology
- Food industry
- Feed industry
- Fine chemical industry
- Chemical industry



- Consulting
- Engineering
- Implementation



We set the standard

From the idea to turnkey production

In the last two decades, Glatt Engineering has implemented a variety of projects for different industries all over the world. Our track record includes both extension or modification of existing and also construction of new production facilities - in parts or completely.

Incorporated in the international Glatt Group we have unrestricted access to comprehensive expert knowledge from more than 50 years pioneering and experiences in process technology.

Many processes in today's solid pharmaceuticals production would not be imaginable without Glatt's technologies - Glatt owns patents in many fields.

Innovation and continual further development of our equipment, up-to-date market-oriented services for product development of new dosage forms, authority approved contract production at Glatt-owned production sites, but also a close contact to international research institutions and to researching industrial partners enable us to solve even the complex implementation of formulation requirements for and with our customers.

As a reliable project partner we offer full GMP and environmental compliance in all fields. Applying them ourselves we are familiar to latest regulations. We anticipate market trends at an early stage and help to develop them. All of which enables us to provide sophisticated, customer-specific and tailored solutions and to guarantee smooth processes by professional project management.

Our projects are not only focussed on processes for the production of solid pharmaceuticals but also on the production of liquid pharmaceuticals by sterile and non-sterile processes.

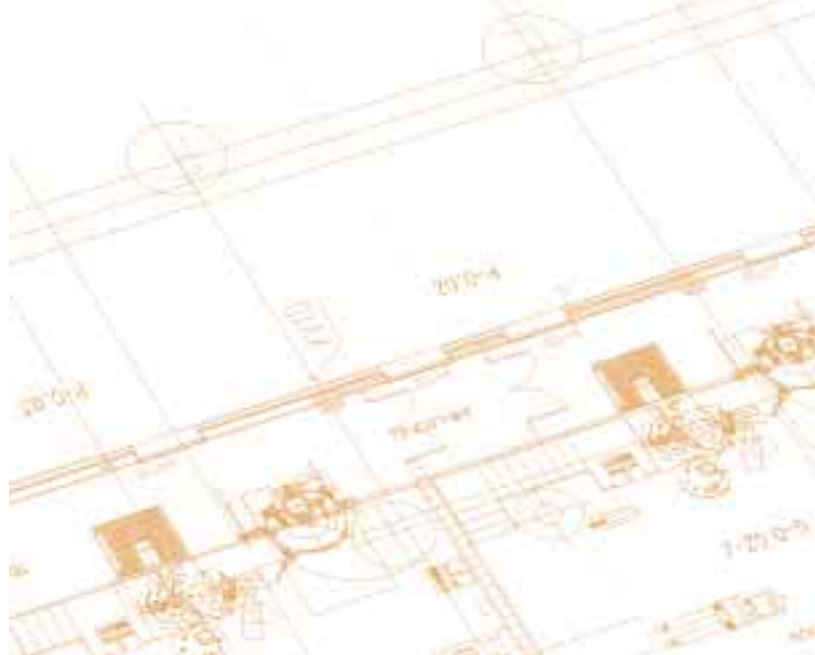
Apart from these longstanding traditions in the pharmaceutical industry, Glatt Engineering is increasingly active in the food/feed, fine chemical and chemical fields where an increasing demand for well-aimed product refinement opens new markets that can benefit from gathered experiences and the use of proven technologies.



Product Development



Process Equipment





Contract Manufacturing

Process and Plant Engineering

Qualification/Validation



Services

Consulting, engineering and implementation also as general contractor

Projects

Processes, production lines and complete production facilities

Focus

Pharmaceutical industry with solid and liquid dosage forms by sterile and non-sterile processes
Biotechnology
Food and feed industry
Fine chemical and chemical industry



Our service portfolio



Glatt – a reliable project partner

Efficient processes, future-oriented technologies, high-quality products, flexibility, security and time to market. The success of your investment depends on a variety of factors. These parameters are both guidelines and motivation for us. Together with you we will find and implement an integrated and tailored solution that ensures your competitiveness on tomorrow's markets.

We develop, engineer and implement

Standalone systems and equipment for research, development and production up to complete plants

- New construction
- Modification and modernization
- Extension

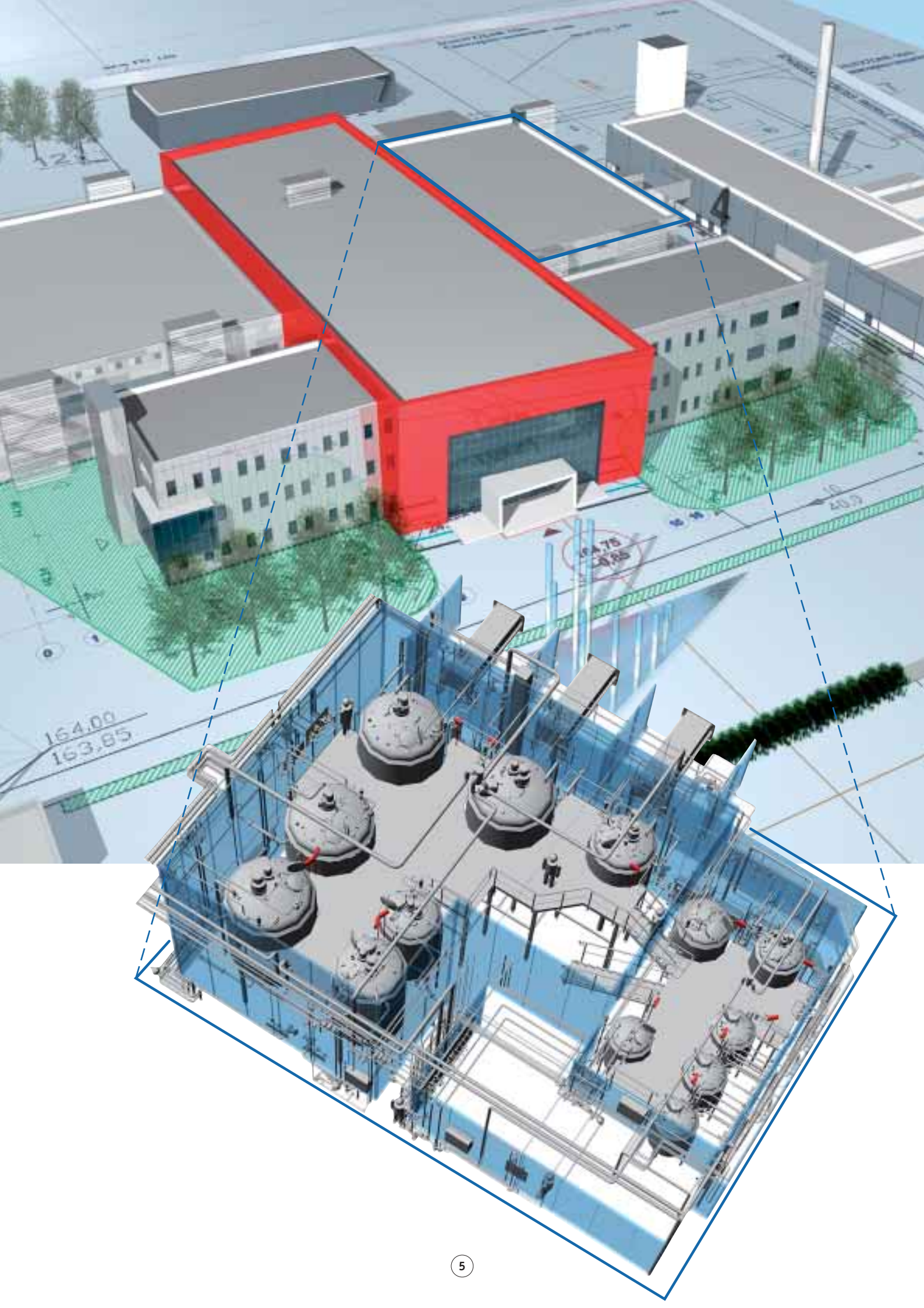
Our service portfolio

- Consulting and support in the project development phase
- Conception and engineering of processes and buildings
- Purchase and expediting
- Project management for engineering and implementation
- Authority approval management
- Licence procurement
- Construction scheduling, management and supervision
- Installation and installation supervision
- Commissioning and commissioning supervision
- Qualification and validation
- Operator training
- Complete project documentation
- After-sales services (maintenance/upkeeping)

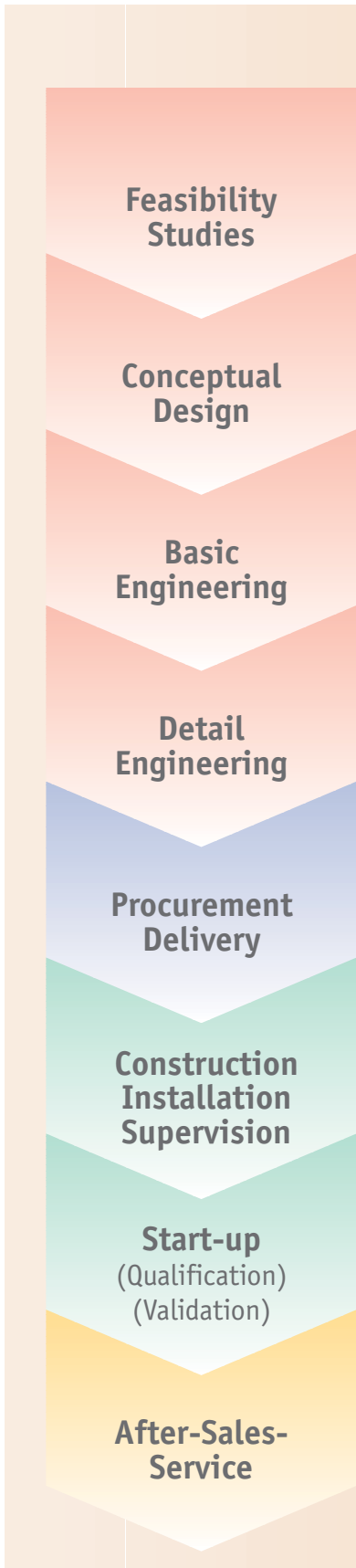
Individual service or complete package

It is your decision how much responsibility you grant us. We are your reliable partner in all project stages as:

- Engineering contractor
for individually selected engineering contents such as process engineering/optimization, qualification/validation, no matter whether feasibility studies, concepts, basic and/or detail engineering is involved
- General contractor
with general engineering from project concept up to construction with overall project responsibility including EPCM services up to turnkey implementation



Independent engineering based on state-of-the-art technology



Glatt Engineering



Project Management:

Engineering



consulting, concept-, basic & detail engineering



Procurement and Delivery



process equipment



Supervision and Training S



construction, installation, commissioning, start-up (qualification/validation)



After-Sales-Service



spare parts, maintenance, trouble-shooting, modifications

Profit from the complete know-how of the Glatt group of companies



Glatt® Product Development
 new dosage forms, based on our own technologies

Glatt® Contract Manufacturing
 own, approved and GMP conform production (pharmaceutical, food and feed industry)

Glatt® Process Equipment
 over 50 years experience in the design and construction of fluid bed systems, high shear mixers, drum coaters, sieves and various systems for solid product handling

Glatt® Technology Centers
 in Binzen (D), Pratteln (CH), Dresden (D), Weimar (D), Ramsey (USA)
 as well as the TTC Technology Trainings Center in Binzen (D)

Pharmaceutical industry

Solid and semisolid dosage forms from sterile and non-sterile processes

- Tablets/film-coated tablets, sugar-coated pills, capsules, sachets, powders, ointments/cremes, suppositories

Liquid proprietary medicinal products from sterile and non-sterile processes

- Infusion solutions in bottles/bags
- Injection solutions in ampoules, phials, vials, carpules, prefilled syringes
- Tinctures, extracts, juices, drops



GMP solid products

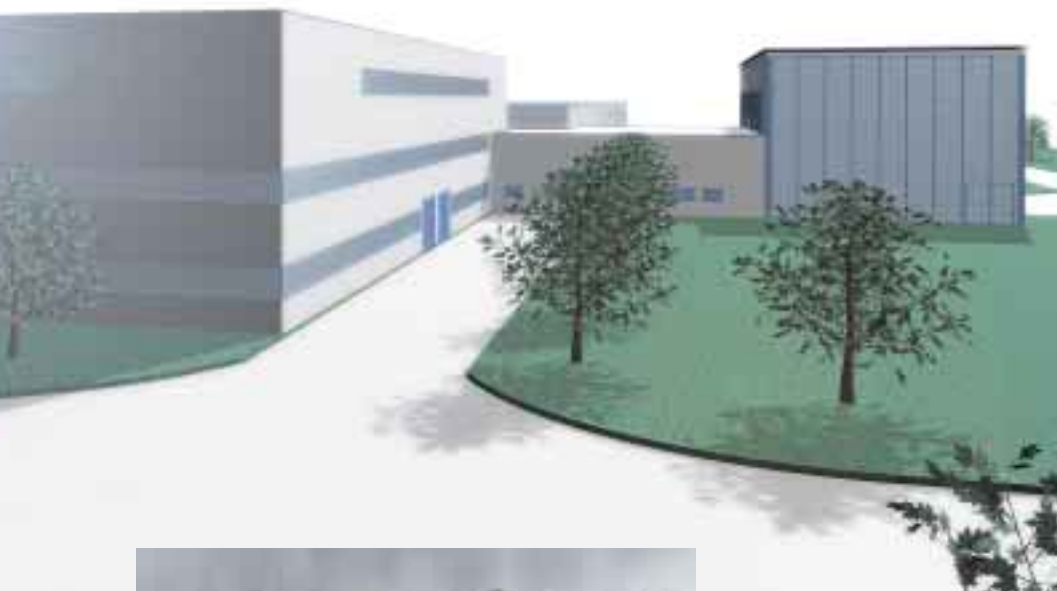
Within the scope of 3 turnkey projects for the contract manufacturer IPC International Processing Center GmbH, Germany, in Dresden several production buildings were built for granulation, coating, classifying, mixing, grinding, weighing and packaging including raw material and product logistics as well as an individual cleanroom concept with ventilation and air-conditioning equipment including a plasma incineration plant. Project period: 2004 - 2009 Plot area: 60 000 m², therefrom approx.. 3 000 m² for production

Infusion solutions (LVP)

As EPCM contract partner for OOO Gematek from Moscow Glatt engineered and constructed a new production facility for infusion solution in Tver, Russian Federation. It uses blow-fill-seal technology in PE bottles with capacities of 500, 250 and 100 ml and can produce 2 400 bottles per hour (12 to 16 million bottles/year). Project period: 08/2002 - 10/2004 Overall plot area: 2 300 m², (reconstruction of a production hall)

API of an X-Ray Contrast Agent

Due to a request from GE Healthcare AS, Norway, of changing from batch to a cost efficient continuous processing, Glatt was awarded with the contract for engineering and delivery of the total process equipment. The implementation work at site, including qualification and support during validation, was done during running production. The product line is unique since it's FDA approved for continuous production of an API for parenteral drugs. Capacity: 270 kg/h Project period: 05/2005 - 09/2006 360 m² on 3 floors



Biotechnology

Blood plasma products

- Albumin
- Immunoglobulin
- Factors VIII and IX

Vaccines

- Injection solutions in ampoules, phials, vials, carpules, prefilled syringes

Insulin

- Solutions and suspensions in vials



Blood plasma products

On behalf of ROSPLASMA and within the scope of a turnkey project Glatt is engineering and implementing a new production facility for plasma fractionation (600 000 l blood plasma/year) and diverse products in Kirov, Russian Federation. Establishing a network of plasma collection and pheresis centres in the Kirov region with project planning, delivery and installation of prefabricated modules.

Project start: 08/2005

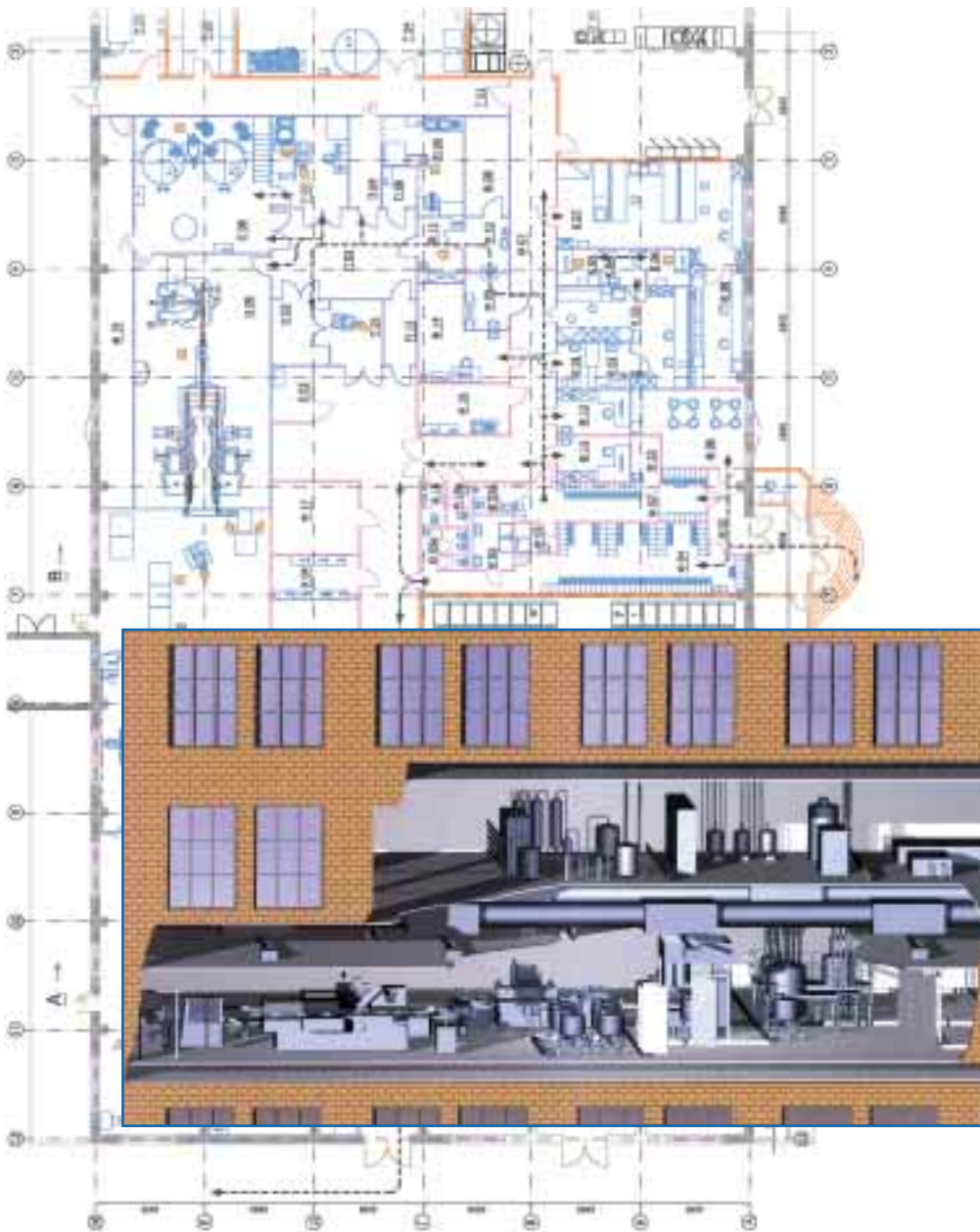
BCG vaccine

In 2000, under the management of Glatt as general contractor for Biomed from Kiev, a new production plant for BCG vaccine was constructed on their Lwow site, Ukraine, by the reconstruction of an existing building. Behring Werke AG, Marburg, Germany, was the licensor.

Insulin (SVP)

From 1995 to 1998, Glatt as general contractor for Biomed, a Kiev-headquartered pharma producer, performed comprehensive engineering services for the new construction of a production and bottling plant for ultrapure insulin.

Capacities: 6 000 vials/h up to 12 million vials/year. For this, an existing building in Kiev, Ukraine, was reconstructed. Hoechst AG, Frankfurt, Germany, was the licensor.



Food and feed industry

Granules and pellets as intermediate and final products

- Instant products as quick-soluble agglomerates
- Food and feed ingredients such as flavors, enzymes, proteins, vitamins

Yeast

- Soft and dry yeast as baking additive

Dairy products

- Baby food, yogurts, quark, milkshakes



Baker's yeast

Al Shaba Yeast Factory is a Syrian yeast producer. From 2003 to 2006, this company appointed Glatt with the modernization and extension of their production site in Aleppo, Syria, to increase the daily output of soft and dry yeast from 32 tons to 50 tons. Glatt implemented this project as EPCM service provider from the survey of existing plant up to production hand-over.

Baby and children food

The Russian company GP VVO Selk-hospromexport appointed Glatt to be the general contractor for engineering and construction of a new milk processing and dairy line in Brjansk, Russian Federation. In 2004, a modern production facility for liquid and pasteous baby and children food products, yogurt and fruit juices processing up to 30 000 litres raw milk per day was accomplished by the reconstruction of an existing building.

Flavors

Phytosynthese in Riom Cedex, France, produce encapsulated flavors for food and feed applications. Glatt delivered a spouted bed granulator ProCell 125 for spray granulation and incapsulation of emulsified oils as a complete plant and headed its commissioning. Production capacity: 50 - 100 kg/h, Project period: 01/2007 - 11/2007.



Fine chemical and chemical industry

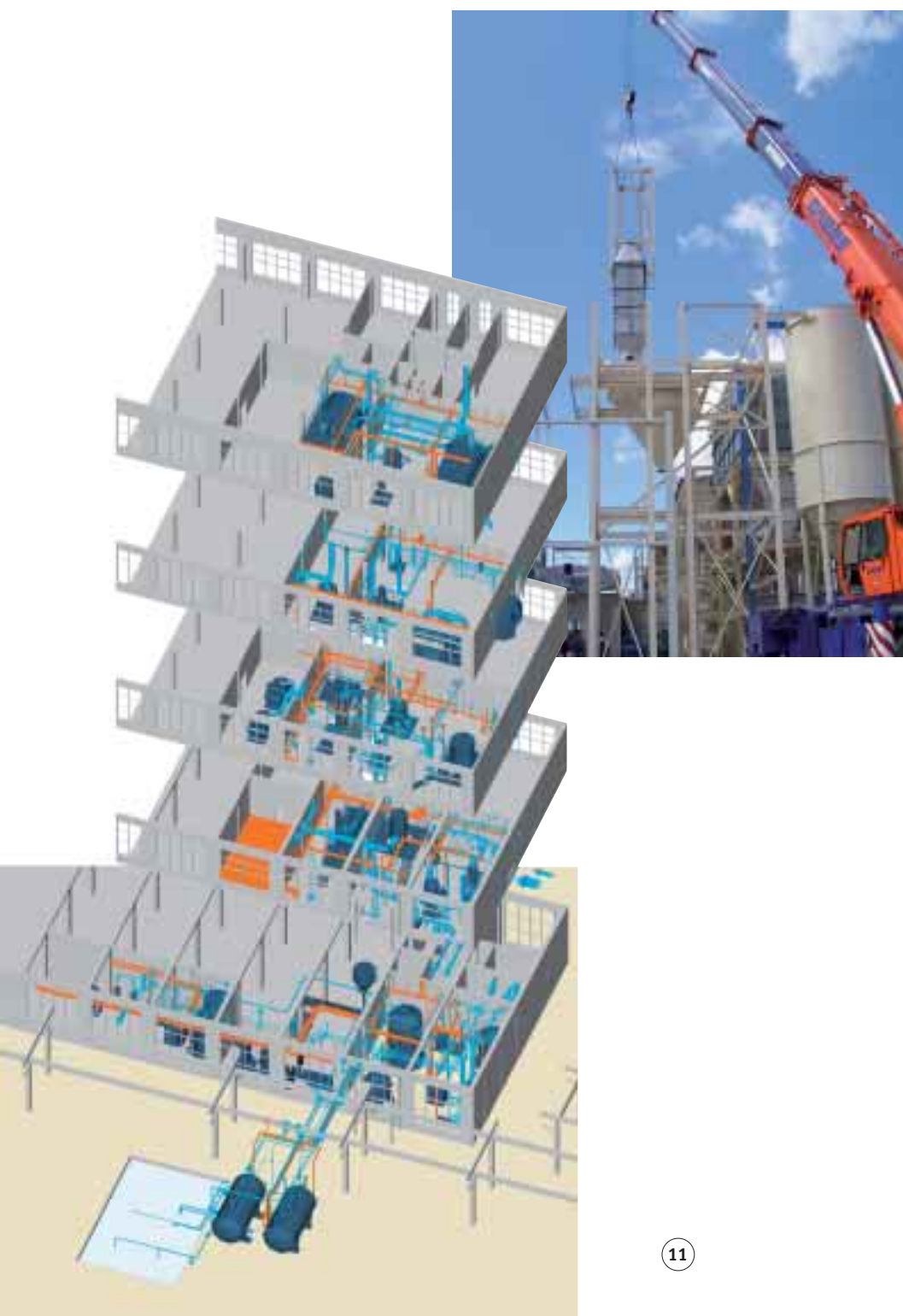
Granules and pellets as intermediate and final products

- Fertilizers, pesticides, detergents and detergent components, enzymes, potash, polymers and many more



Chemical products

- manufactured, prepared and processed, e.g. to improve storage and transport properties



Potash

Within the scope of a turnkey project, Pottaschewerk Staffurt, Germany, appointed Glatt with engineering and construction of the most advanced potash production plant in the world at that time with a fluid bed spray granulation plant and a yearly output of 20 000 tons potash (potassium carbonate K_2CO_3).

Project period: 1999 - 2001

Detergent components

Zschimmer & Schwarz, Germany, produce water softeners. Glatt delivered a fluid bed granulator GFG 500 including building for the spray granulation of these products as a turnkey project. All that the client provided were media and liquid raw materials. Water evaporation capacity approx. 700 kg/h

Project period: 10/1999 - 07/2000

Sodium cyanide as briquettes

In Saratov, Russian Federation, Glatt as general contractor for the Russian Lukoil group, implemented a production facility for sodium cyanide ($NaCN$), which is an important raw material for gold mining, with DuPont, USA, as licensor.

Produced $NaCN$ having a purity $>98\%$ is pressed to briquettes and packed into 50 kg steel drums

Plant capacity: 15 000 t/year

Project period: 30 months (2005 - 2008)

Glatt Engineering



Our Headquarter **Glatt Ingenieurtechnik GmbH**

Nordstraße 12
99427 Weimar/Germany
Phone: +49 3643 47-0
Fax: +49 3643 47-1231
eMail: info@glatt-weimar.de

Our Presence

Glatt Engineering is a business unit of Glatt Ingenieurtechnik GmbH headquartered in Weimar with branch offices in Wiesbaden, Scandinavia, France, Switzerland, Russia, Italy, India and the USA.

At present, the Glatt Group employs approx. 1500 employees in more than 20 companies worldwide.

Numerous representative offices are at your disposal, offering Glatt's complete services. This means: reliability, financial security, and worldwide service for your projects.

Certified according to DIN EN ISO 9001



International located:

Germany

Glatt Ingenieurtechnik GmbH
Nordenstadter Str. 36
65207 Wiesbaden/Germany
Phone: +49 611 89069-7
Fax: +49 611 89069-88
eMail: info@glatt-wiesbaden.de

Russia

Glatt Ingenieurtechnik GmbH
ул. Обручева, 23 - корп. 3
117630 Москва/Россия
Phone: +7 495 78742-89
Fax: +7 495 78742-91
eMail: info.glatt-moscow@mastertelecom.ru

India

Glatt (India) Pharma Engineering Pvt. Ltd.
13 Ground Floor Palam Marg, Vasant Vihar
New Delhi - 110057/India
Phone: +91 11 46052960
Fax: +91 11 46052964
eMail: info@glatt-india.com

Switzerland

Pharmatronic AG
Hohenrainstraße 10
4133 Pratteln/Switzerland
Phone: +41 61 826-9726
Fax: +41 61 826-9727
eMail: info@pharmatronic.ch

Italy

pgs engineering s.r.l.
Via F. De Lemene, 8
20151 Milan/Italy
Phone: +39 02 3349-1015
Fax: +39 02 3349-0270
eMail: info@pgs-engineering.it

USA

Ramsey Design Group
(Division of Glatt Air Techniques Inc.)
20, Spear Road, Ramsey, NJ 07446/USA
Phone: +1 201 825-1391
Fax: +1 201 825-0389
eMail: info@ramseydesign.com

www.glatt.com



We set the standard