

BECOMIX

Mischtechnik

Intelligent and efficient

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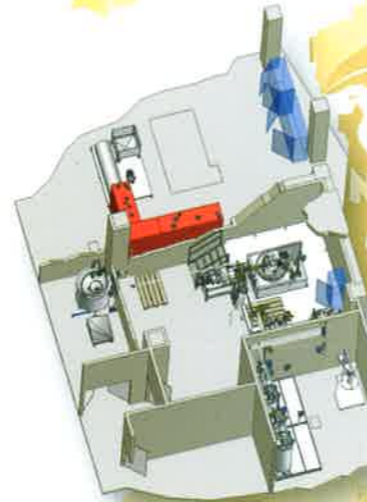
Intelligent and efficient

Production plants for cosmetic, pharmaceutical and chemical products

BECO Lab-Mini 2,5



3D-Engineering



RW-Type



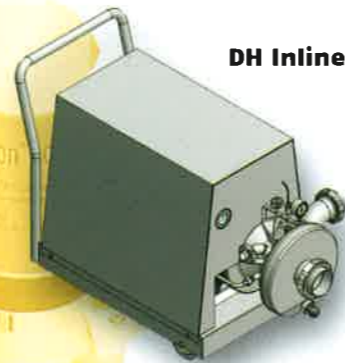
RW 15 Laboratory Mixer



LVM-Type



DH Inline-Homogenizer



CIP Storage Tanks



LIM-Type



BECOMIX PRODUCTION PLANTS, E. G. FOR:

- ▶ eye drops
- ▶ chemical pastes
- ▶ shower gels
- ▶ hair dyes
- ▶ cough syrups
- ▶ injectables
- ▶ lipsticks
- ▶ skin care creams
- ▶ pharmaceutical gels
- ▶ ointments
- ▶ shampoos
- ▶ sunscreen products
- ▶ inks
- ▶ toothpastes
- ▶ ...





Only the perfect combination of the pieces produces a complete picture

BECOMIX

MIXING TECHNOLOGY / PLANT ENGINEERING

BECOMIX stands for efficient homogenizing technology, competent plant engineering as well as highest quality and reliability. In 1974, Mr. Alwin Berents, the later founder of BECOMIX, set up his own engineering company. Since the foundation of BECOMIX in 1978 we have planned and built production plants, which have meanwhile been installed in each of the five continents worldwide.

INTELLIGENT INNOVATIONS

Numerous patents and current applications for patents prove the continuous innovation of the BECOMIX engineers. A multitude of process "revolutions" concerning the production of emulsions, dispersions, shampoos, sterile productions, food etc. has been developed together with and for our clients in our laboratory.

TURNKEY ENGINEERING / WORLDWIDE START-UP

Competent, experienced engineers plan and design complex production plants and complete manufacturing areas for our customers. When doing so, not only the process technology is specified, but also a detailed spatial arrangement and even single pipes are designed and simulated by means of our **3-dimensional CAD system**. Thus, a "nasty surprise" is excluded when carrying out the installation at site. All production plants are completely assembled in the BECOMIX plant by mechanics and electricians with worldwide experience. As far as possible, the whole pipework and cabling is already built, tested and approved in the BECOMIX plant. In consequence, installation times in the customer's plant are minimized and there is the certainty that everything will function as desired.

A strong group of leading specialists

BBB

PRESSURE VESSEL PRODUCTION OF HIGHEST QUALITY

Founded in 1995 in continuation of an apparatus engineering company, the Stephan Berents GmbH & Co. Behälterbau KG (BBB) has kept the long-standing experience of its employees in the production of pressure and agitator vessels made of stainless steel. Surface executions, which are suitable for the pharmaceutical industry (electro-polish and/or mirror-finish polish), and **highest quality and reliability** for the vessel production – these are the attributes of BBB in our company group.

WORLDWIDE AUTHORIZATIONS

International authorizations, such as **EU, ASME (U.S.), CSEI (China)** etc., guarantee this quality, experience and delivery capability also for vessels, which are e. g. supplied to the U.S., to China, Russia, Japan, Canada and to other North or South American countries, to Africa, Australia, Asia and Europe, and they exclude "prototype experience" caused by unknown suppliers or subcontractors.

ECONOMICAL PRODUCTION

Minimum overheads allow economical production and high flexibility. Simple, single-wall storage tanks, e. g. for the integration into tank farms, up to complex multi-wall agitator vessels, are manufactured efficiently, economically and with a lot of experience.

RWH

SOFTWARE AND AUTOMATION

In 1998 the long-lasting success we already had with the BECOMIX TOUCH-IN/TEACH-IN automation system for batch processes led to the foundation of RWH as independent company, which is specialized in software applications for the pharmaceutical, cosmetic and process technology industry. Complete production management systems (PMS) or the single modules "weighing with raw material tracking", "dosing", "TOUCH-IN/TEACH-IN process automation", "store-keeping" etc. have meanwhile been installed at our customers, so that the PMS system of RWH is the only further system, which is required and installed in addition to ERP systems like SAP.

VALIDATED SOFTWARE FOR THE PRODUCTION

What makes the RWH programmers stand out is their competence in process technology questions, which they have gained from the close exchange of experiences and information with the BECOMIX engineers. The RWH programmers speak and understand the language of the users in the field of production and fabrication. Therefore even the most complex systems are structured practically and are easy to operate, so that shortest installation times are guaranteed. All requirements of the pharmaceutical industry and all demands on the documentation, such as **FDA, EU, GAMP** etc., and also complete software validations according to the V-model are fulfilled, which has already been verified by numerous installations in the U.S., in Europe, Japan, China, North and South America etc. The fact that our software is used worldwide without any problems also shows the special reliability, which is one of the remarkable features of this software.

Mixing technology Process technology CIP/SIP



MIXING AND HOMOGENIZING TECHNOLOGY

The special know-how of BECOMIX consists in rationalizing simple mixing processes and in solving most complicated mixing and processing tasks. This concerns the laboratory scale but also especially the bulk production. We have meanwhile solved numerous "impossible" mixing tasks together with our customers in our laboratory, where new mixing techniques and procedures are continuously developed and tested in practice. Numerous patents are and were developed here and mark the way of BECOMIX.

"Revolutions" of BECOMIX are for example:

- ▶ **Patented DUO-homogenizer** with shearing-intensive "homogenizing" mode or "pumping" mode with low shearing effect, simply achieved by the change in direction of rotation and the special geometry.
- ▶ BECOMIX agitator and scraper systems (patented several times) with **vertical and additionally with horizontal mixing effect** for shortest heating and cooling times.
- ▶ Integrated CIP/SIP, suitable for pharmaceutical production.

The homogenizers, turbo-dissolvers, anchor/scraper agitators, co-axial agitators, magnetic agitators etc. developed by BECOMIX are in use worldwide.

INNOVATIVE PROCESS TECHNOLOGY

The BECOMIX mixing technology allows the most efficient processes, such as e. g. **HOT/COLD** for the production of emulsions, where the hot wax phase is emulsified directly with the cold water phase, so that the cooling time is saved to the greatest possible extent; this makes it e. g. possible to realize emulsion batch times of approx. 75 minutes for a 5000 l machine! Or **instant powder dispersions**, e. g. for structure formers like Carbopol or active ingredients, so that dissolving and dispersion times are minimized. Or direct mixing-in of big quantities of powders (active ingredients)/pigments without premixing or predissolving, e. g. for applications in the pharmaceutical, toothpaste or lipstick production. Or **direct diluting of e. g. Texapon/SLS 70 % or other raw materials, which are difficult to dissolve.**

CIP / SIP

CIP (cleaning in place)/SIP (sterilization in place) is an important part of the BECOMIX construction and development and is standard for all BECOMIX machines. A machine execution without dead areas and the avoidance of narrow gaps, screws, studs, seals and O-rings are special characteristics of the BECOMIX machines. Minimized maintenance and optimized cleaning is the result. Many innovations are developed from this aspect only. CIP/SIP is a permanent element of the BECOMIX research and development.



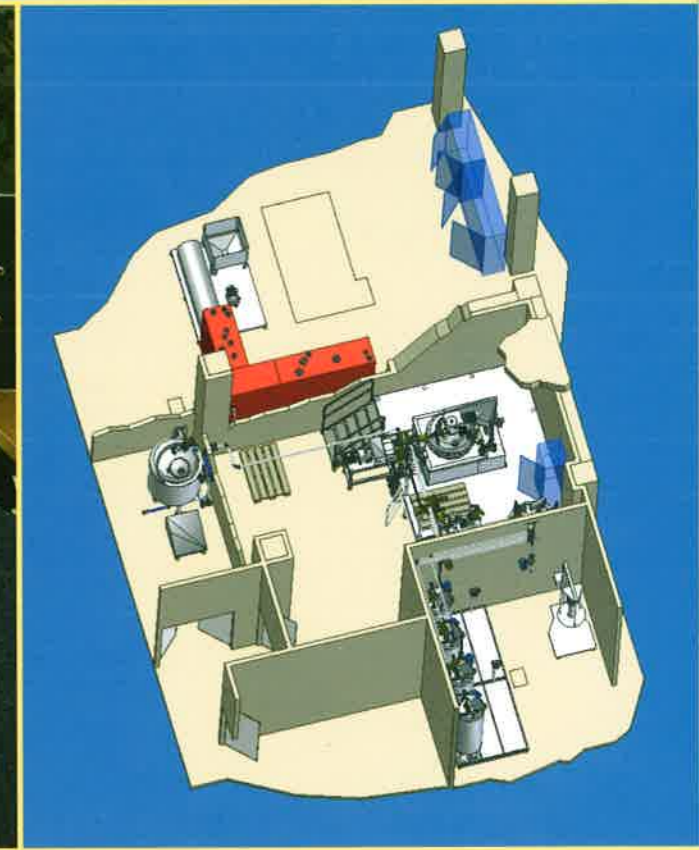
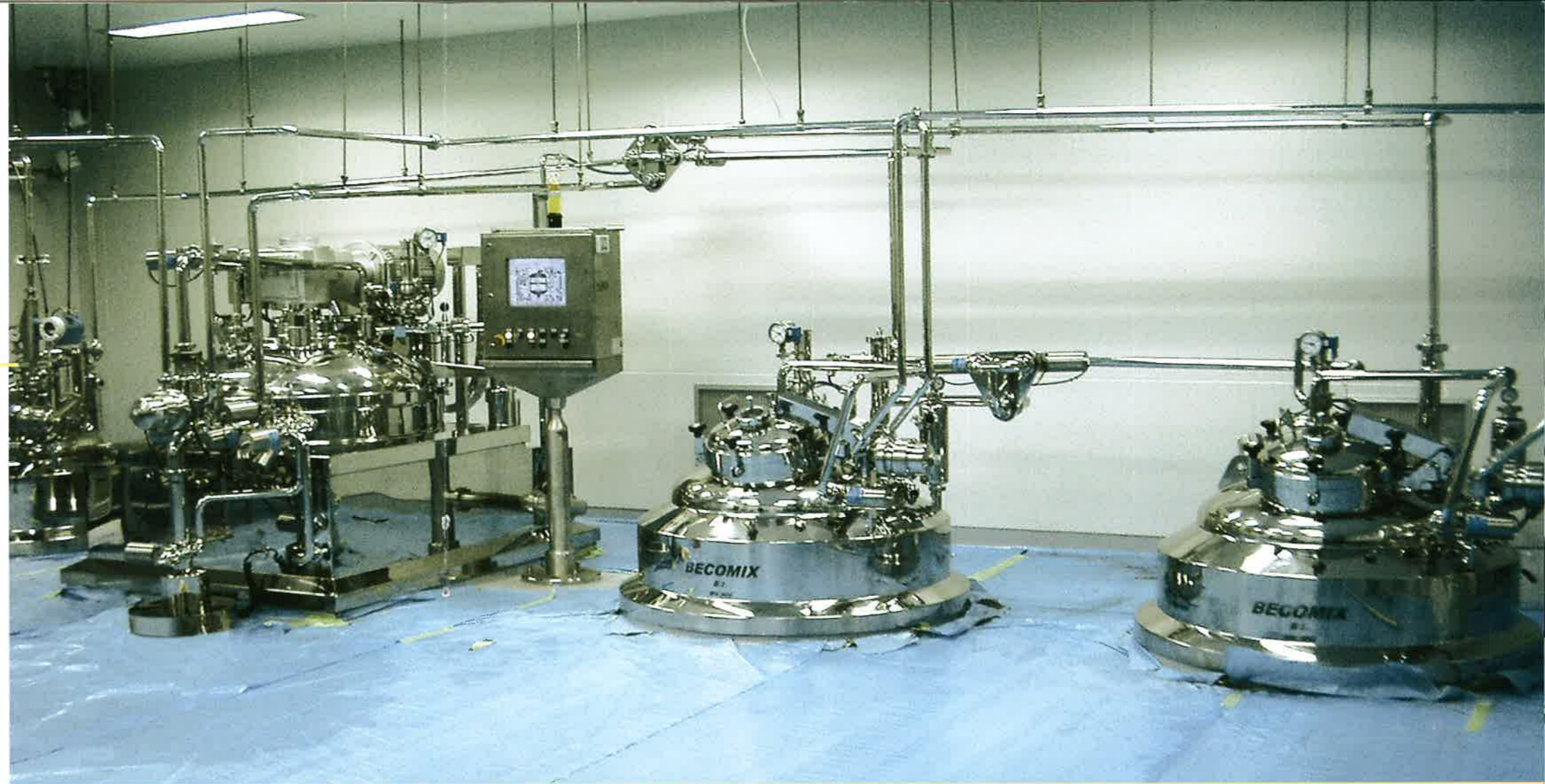
on the top: RW 15 CD for the galenical department at Aventis, Frankfurt

on the top: typical RW-model

at the bottom: Process development with customers in the BECOMIX laboratory

Turnkey production plants

Building turnkey production plants for new production centres in Europe or overseas, this challenge is our daily task. From the process engineering, the spatial engineering in a **three-dimensional virtual room** up to the start-up and the complete documentation according to the requirements of the pharmaceutical industry: Our customers are used to such service, no matter whether this does "only" concern the production plants or also tank farms, CIP plants (for tanks and filling machines), energy racks, dosing devices – according to **ATEX** or to other **Ex-proof (US) requirements**. We have proved our special knowledge for pharmaceutical demands and especially also for sterile production with a multitude of plants, being equipped with a simple push button control or with a fully automated production management system.



on the top: turnkey pharmaceutical plant with automated production and CIP/SIP, Japan

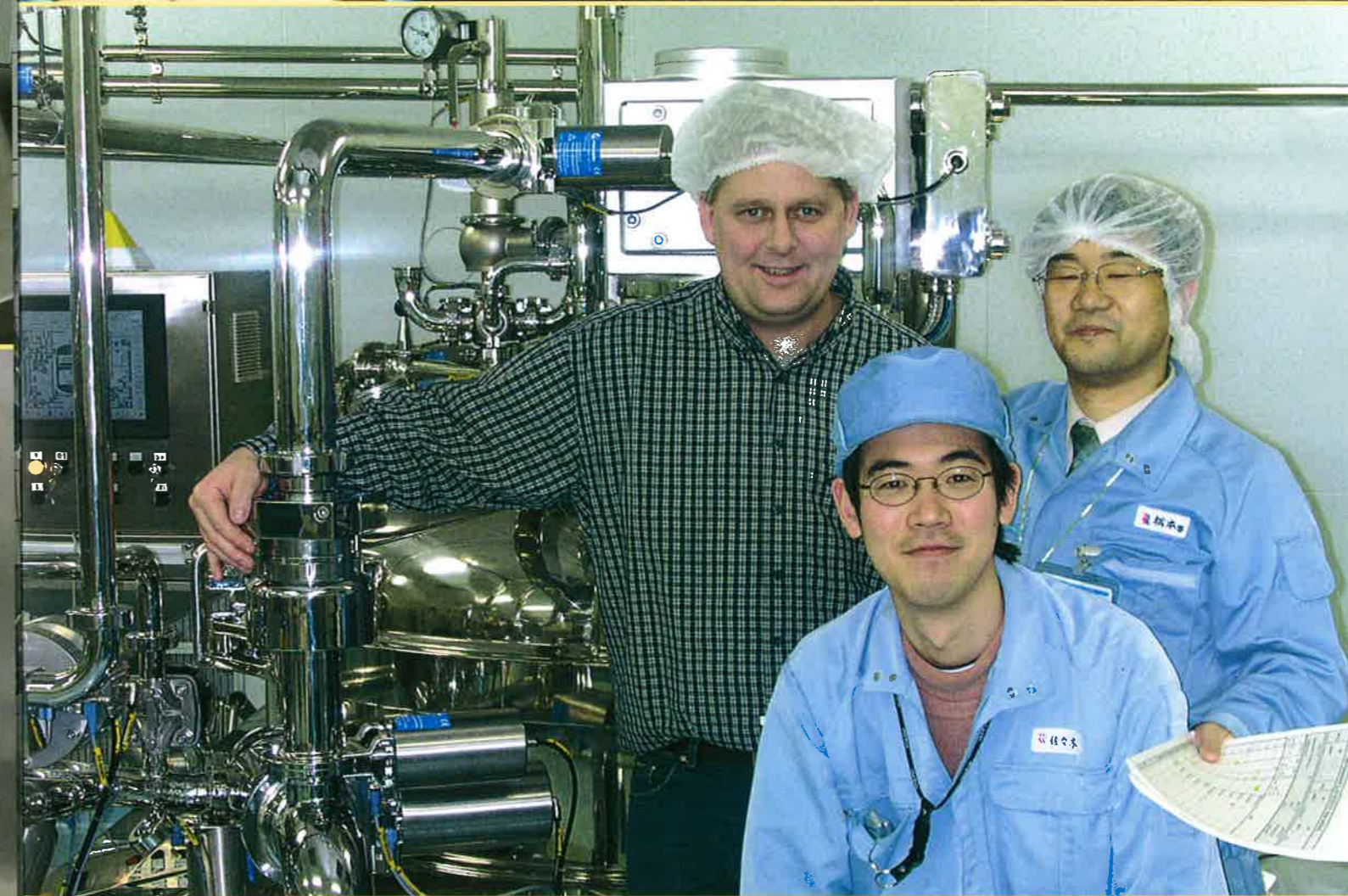
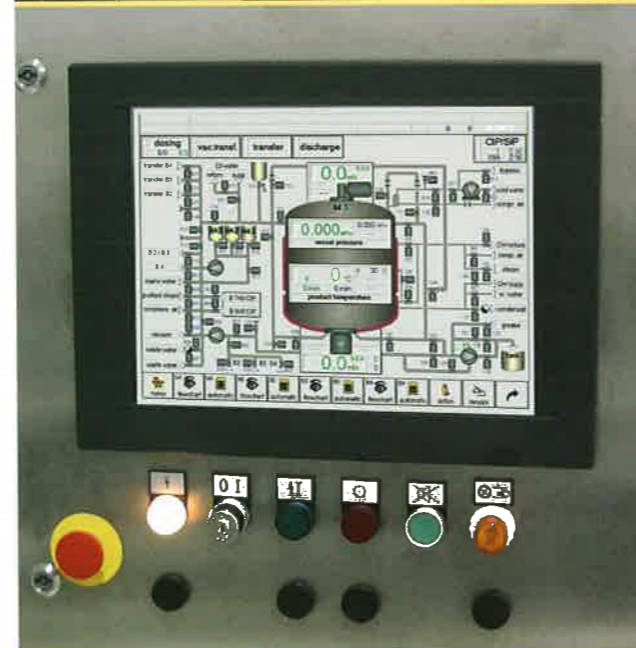
at the bottom: three-dimensional design in the BECOMIX engineering office

at the bottom: pharmaceutical project with raw material supply, production and storage as well as energy room, realized for EU

Software for the production

In 1986 BECOMIX had already built the first software system for the complete automation for our BECOMIX production plants. The great success of these automation systems finally resulted in an own business sector and in 1998 in the foundation of the software company RWH with software systems, which considerably exceed the original production plant. Extensive **production management systems (PMS)** or also single modules for **fully automated processes** (batch, "conti", CIP), **weighing** and storage, **dosing, material traceability**, interfaces to SAP etc. nowadays constitute the range of products. With our background of production and user practice we speak the same language as our customers and thus fulfil customer-specific requirements in an uncomplicated way.

Numerous systems in the pharmaceutical industry prove the high quality, particularly also of the documentation. Development and qualification correspond to the V-model and to the GAMP guideline. To fulfil the latest FDA or EU requirements is our daily business. Deliveries and installations in each of the five continents verify the reliability of our systems. Therefore, due to the integration into the company group, complex systems and orders, which do not only include engineering and process technology, but also turnkey plant production and PMS-systems, can be executed reliably and with highest quality.



on the top: continuous raw material traceability and management

in the middle: weighing system for batch-related weighing, Hardware make Mettler

at the bottom: Touch-operating unit in the production

on the top: production control room of a fully integrated production management system (PMS)

at the bottom: successful start-up of a fully automated production with several plants



10000 l production plant, Beiersdorf NV



on the top: sterile production, 500 l, fully automated, Germany

on the top: 2000 l production plant, Hoffmann-La Roche

in the middle: 1200 l production, Cardinal Health

in the middle: liquid production for homeopathic products, Medice

at the bottom: dermatological production, RW 320 CD, Dr. Wolff

at the bottom: 6000 l production plant for care products, Beiersdorf