

# Gabriel-Chemie

## Consistent Digitalization of Production and Filling Processes

### Short Profile

**Name:**

Gabriel-Chemie Gesellschaft m.b.H

**Website:**

[www.gabriel-chemie.com](http://www.gabriel-chemie.com)

**Industry:**

Process industry

**Products:**

Masterbatches for plastics production

**Locations:**

Gumpoldskirchen (AT)  
Subsidiaries in GER, GB, HU, CZ, PL,  
RU, ES, IT

**Employees:**

approx. 550 (2016)

**Revenue:**

approx. €100m (2016)

### Highlights

- Custom-made products tailored to the customers' needs
- Significant increase in quality secures pole position in market
- Delivery times reduced by up to 70 percent
- Costs cut by 20 to 30 percent



Seat shells in football stadiums in the clubs' colors and with perfect flame protection. Auto parts that neither charge statically nor emit any odors. Food packaging with an integrated oxygen barrier to protect the perishable contents. Wherever plastics are used nowadays, the material has to have very specific properties. This is possible with the masterbatches made by Gabriel-Chemie Group, based in Gumpoldskirchen, Austria. Masterbatches are a type of concentrate in granular shape, which the customers of Gabriel-Chemie later add to natural plastics, the so-called raw polymer.

This process can best be explained by comparing it to how lemonade is made: The soft drink can be produced by mixing fruit juice, sugar and flavoring agents with water. Alternatively, you can use a syrup which contains all coloring and flavoring additives in concentrated form and then add a little bit of water in just the right proportions. This is far more convenient.

### Ten Thousands of Individual Recipes

"We keep a large number of raw materials. With the production process standardized to a considerable extent, we have to combine these raw materials to make an individual product of which customers tend to make very high demands," says Helmut König, Chief Technical Officer (CTO) of Gabriel-Chemie Group. For this purpose, they already have ten thousands of recipes that can be used for production purposes – the family business's trade secret. In order to be able to ensure optimum control and map such a sophisticated production process, the SME opted for the comprehensive ERP solution proALPHA in 1999. With this decision, Gabriel-Chemie also paved the way to Industry 4.0.

"Of course no one called it that back then," says head of IT, Fritz Bauer. But the goals at the turn of the millennium were the same: reduced costs, increased quality, shorter delivery times and higher customer satisfaction thanks to extensive automation. As the central element for planning and controlling, proALPHA continues to lead the way here.

### proALPHA Supports Sophisticated Production Process

The groundwork for the smart factory was laid by a graphic control station, developed by Gabriel-Chemie based on proALPHA. Then the Siemens process control system was connected to the ERP system at various points, for example the process measuring and control technology used for providing the raw polymer and for weighing the powder pigments and additives. "Today all our machines communicate with proALPHA in real time," Helmut König points out.

The production process for the individual masterbatches starts in various silos, where the most important raw polymers are stored and transported to the respective weighing and mixing stations via pipes. On the graphic control station's screen, every silo has a number which corresponds to the storage location in the Materials Management module in proALPHA. The numbers of the pipes and tubes leading to the appropriate weighing and mixing stations are also displayed here.

Once the pipes have been connected to the silos, the weighing process can start. Based on the recipe stored in proALPHA, the target quantity required is automatically delivered to a scale. proALPHA also determines which weighing process needs to be carried out using which scale. The scales have various tolerance limits depending on how accurate the ingredients need to be weighed. This ensures both quality and reproducibility of color mixtures and end products. Once the correct quantity of the raw polymer has been moved to the mixing tank, the corresponding inventory postings are triggered in the system. After the work orders planned for a mixing machine are selected in the so-called scales cockpit, the display shows the current version of the bill of materials for the recipe. There the pigments and additives to be mixed with the raw polymer are already displayed in the corresponding quantity and the right order, so that they can be dosed without error. The quantity weighed here is also posted in proALPHA. Then the mixing process starts, after which the customized masterbatch can be filled into bags.

"Today all our machines communicate with proALPHA in real time."

**Helmut König**, Chief Technical Officer, Gabriel-Chemie Group



"Our precise weighing and mixing processes are certified by ISO standards. Our customers benefit from this since certain steps in delivery control thus become obsolete, saving them process costs," Fritz Bauer says proudly. To Gabriel-Chemie, this is a clear advantage over the competition, because not every competitor is available to provide such a service.

#### Approaching the Smart Factory Step by Step

Once the masterbatch has been filled in bags, the most recent smart factory project takes over. The mixed granulate is delivered to the customer on pallets, and the plastic bags are piled on top. Still, logistics have to satisfy various customer wishes regarding packaging, such as a variable number of bags per order, specific customer labels, various "palette loading patterns", and much more besides. The ERP system calculates suggestions for loading the pallets as efficiently as possible and in such a way that they do not have to be repackaged on their way to the customer.

#### Intelligent Product Memory with Barcodes

To automate the processes to a large extent, one of the existing palletizing lines was supplemented with a label printer and a sensor that determines the pallets' height. Since this system is connected to proALPHA, the required information can easily be exchanged.

The bags to be packed on the pallets for an order are labeled with a barcode. A conveyor belt takes them from the filling station to the automated palletizing line, where the code is scanned. The "intelligent product memory" stored in the ERP system now determines the optimum loading pattern based on the bags' weight, bulk density and the designated pallet weight. The palletizer receives

this information and can now start layering the bags. Then the entire pallet is automatically wrapped, labeled and posted in proALPHA Materials Management. At the same time, the ERP system triggers a transfer order to relocate the goods to the high-bay warehouse. In future, the optimum storage location is to be assigned automatically based on the pallet height determined by the integrated sensor.

#### Consistent Digitalization Pays Off

Consistent digitalization at Gabriel-Chemie has shown measurable results: the quality of masterbatches has increased significantly, because hardly any errors occur anymore during the sophisticated processes at Gabriel-Chemie. Manufacturing costs have been reduced by at least 20 to 30 percent. And thanks to quicker processes, delivery times have been reduced by 70 percent.

"We have already gone about three quarters of the way towards the smart factory," says Helmut König. Further projects are already being planned and are to be implemented by 2020. Although there's still quite a lot to do, the CTO believes that Gabriel-Chemie is among the world's pioneers of Industry 4.0 in its industry. This also has an impact on the company's sales: whereas the industry is seeing an average growth of one to two percent per year, Gabriel-Chemie has an annual growth of eight to twelve percent.

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