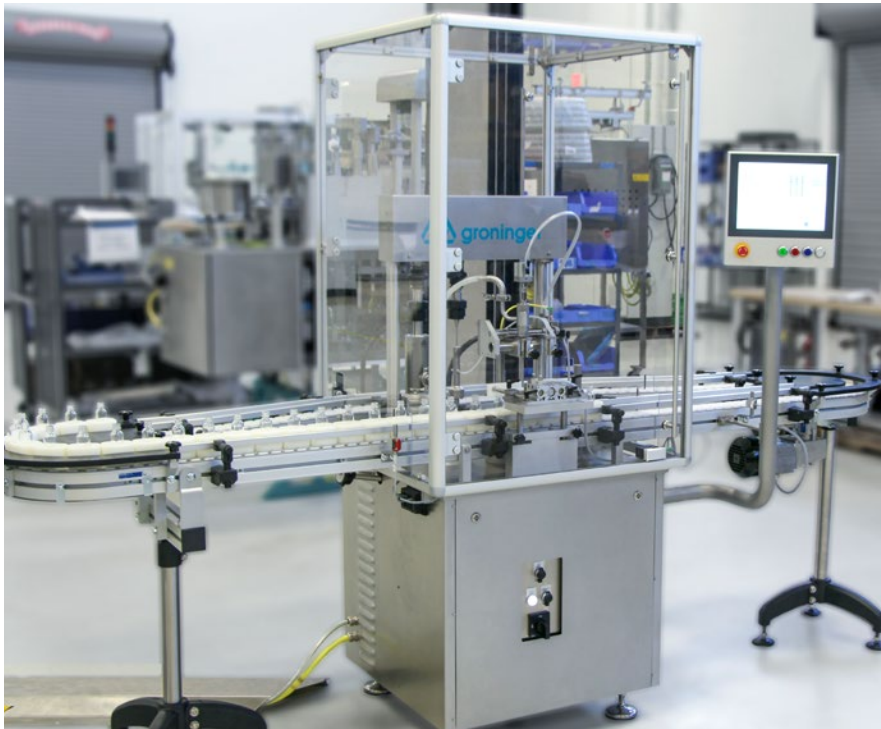


# Drive & Control profile

## Groninger customizes VarioFlow *plus* for compact filling machine



Groninger liked that Rexroth's VarioFlow *plus* is engineered to be a cost-effective conveyor solution for a broad range of applications in the food, packaging and healthcare fields.

Many automation systems providers are developing lower-cost, compact packaging solutions for smaller-scale and start-up companies that seek to deploy automation technology cost-effectively and increase their throughput and flexibility.

Groninger ([www.groningerusa.com](http://www.groningerusa.com) Charlotte, NC), a Germany-based

company with operations in North America, supplies customized filling and packaging machines to the global pharmaceutical and cosmetics industries.

The company recently launched the lite-F filling machine, targeting the growing ranks of private-label and start-up companies in the cosmetics

### Challenge:

Provide an efficient, cost-effective conveyor for a new filling machine targeting private-label and entry-level packagers of cosmetics and medical products

### Rexroth Solution:

VarioFlow *plus* flexible chain conveyor featuring optimized sliding characteristics for the chains and slide rails, and less friction in the curves

### Results:

- Cost-effective components, low-friction moving surfaces and easy assembly make VarioFlow *plus* the perfect fit for the lite-F filling machine
- Rexroth product team meets extremely tight timeframe on custom conveyor design, fabrication and integration
- Flexible VarioFlow *plus* components and ease of assembly and reconfiguration, enable the lite-F machine to be connected to other machines and automation lines in the future
- Efficient and productive use of MTpro software to brainstorm and refine design
- Established successful and open collaboration between Groninger and Rexroth engineering teams

industry. Key to the efficiency and flexibility the lite-F system offers is the machine's conveyor—the **VarioFlow plus** from Bosch Rexroth ([www.boschrexroth-us.com](http://www.boschrexroth-us.com) Charlotte, NC.).

### **New system targets entry-level packagers**

Groninger's portfolio includes fully automated high-speed production systems for filling, closing and handling vials, syringes and bottles for pharmaceutical and healthcare products, as well as filling, sealing and handling machines for cosmetics such as perfumes, lotions, hair care products and makeup.

Recently, the company expanded its machine portfolio to fill the gap between manual table top units and fully automated high-speed production lines. "We recognized the need for smaller, versatile filling and closing machines, to give growing private-label and start-up companies the chance to automate their production with a minimal investment," said Lothar Burger, managing director of Groninger USA.

The first model in the Groninger lite line is the lite-F, a two-headed filling unit that can fill up to 2,700 units per hour and is able to process containers up to 500 ml and/or 16 oz. It has a compact footprint, measuring only 460 cm long by 100 cm wide and can process both glass and plastic containers.

It is designed to fill liquids of a variety of consistencies (from water-based products to thicker viscosities such as creams) in a single machine and can replace manual filling systems typically used by smaller private-label companies, enabling them to



Whether for vertical or horizontal conveying, VarioFlow plus's wide selection of standardized curves and arcs opens up new planning and implementation possibilities.

significantly increase throughput and expand their customer base.

### **Demo puts VarioFlow plus to work**

The lite series are the first Groninger machines to be designed and manufactured at the company's Charlotte, North Carolina, headquarters. For Groninger's customers, the cost-effective systems increase productivity by using a combination of manual processes and automation: Workers place empty containers onto one side of a moving conveyor, and they are carried by the machine's conveyor to a filling head. The containers are filled one at a time, then indexed away from the filling head by the conveyor to a discharge point.

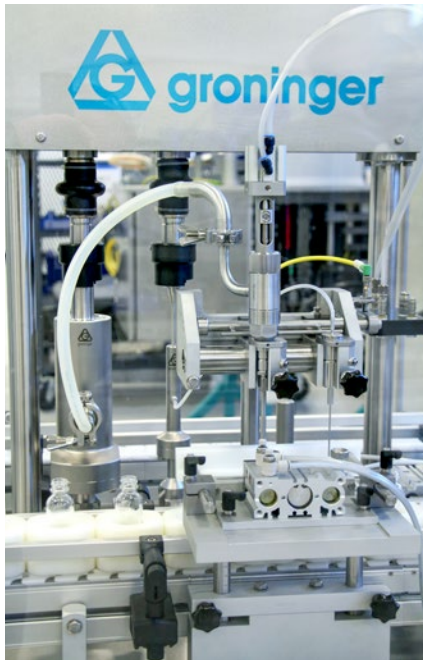
The conveyor on the system is a continuous oval loop, giving plant operators the freedom to decide where to station operators who load the empty bottles and remove the

filled bottles for further processing and packaging.

According to Dave Gozlan, business development manager for Groninger USA, at the time that the design for the lite-F was being finalized, senior executives from the company had the opportunity to see a VarioFlow plus demonstration.

Always looking for ways to innovate, Groninger appreciated several aspects of the conveyor's design, as well as Bosch Rexroth's openness to quickly custom-configure conveyor elements—in a very short timeframe—to better fit the lite-F's design.

"The Groninger and Rexroth technical teams quickly got together to see what we could accomplish," said Matthias Schiedeck, VarioFlow sales manager for Bosch Rexroth. "And with what they were trying to do with the lite-F, we quickly identified the specific technical requirements



A benefit of the VarioFlow *plus* is the smooth motion of the conveyor carrying the containers, particularly in filling sequences where there is stop and start sequences of motion.

and modifications we would need to do to make the VarioFlow *plus* work for Groninger.”

#### **Tight turnaround**

The new generation of Rexroth flexible chain conveyors, VarioFlow *plus*, is engineered to be a cost-effective conveyor solution for a broad range of applications in the food, packaging and healthcare fields. It has optimized sliding characteristics for the chains and slide rails, fewer joints with low-friction materials, gliding surfaces that do not require machining, and connection technology engineered for easy assembly and modification.

VarioFlow *plus* is offered in track widths ranging from 65 mm to 320 mm, with standard, in-stock materials including 45-degree and 90-degree curve sections. In the lite-F,

empty containers are indexed into one end of the machine and quickly transported on the VarioFlow *plus* conveyor to the filling heads. After filling, they are then transported to a discharge point.

The main challenge the Rexroth team faced was fitting the VarioFlow *plus* into the existing lite-F design—which was nearly ready for fabricating and was scheduled to debut at a major tradeshow in less than three months’ time. This required the creation of two custom curves, one with a seven-degree angle and another with a 15-degree angle and modified/customized connection points with longer infeed and discharge sections to fit the conveyor’s closed-loop around the filling station equipment.

“We worked closely with the Groninger team to understand the best way to integrate VarioFlow *plus*,” Schiedeck said. “We were able to work out ways to customize certain conveyor components in a very short timeframe to meet Groninger’s schedule.”

The conveyor can easily accommodate the lite-F’s maximum container size—up to 120 mm long by 100 mm wide—as well as transporting containers directly on the belt or moving “pucks,” which are carriers that contain multiple containers.

“We knew it was a custom design,” Gozlan said. “But we could see that we could sit down and work with Bosch Rexroth to get a more customized solution, without incurring significant additional costs.”

“We’re glad that we found a partner in Rexroth who is willing to work with us to develop our needs further, which was something Rexroth’s competitors weren’t as willing to do.”

One key tool that aided the team in meeting the tight deadlines was Rexroth’s exclusive [MTpro software](#). It is a Windows-based program for designing and configuring conveyor systems. User-friendly and easy to learn, it lets users combine catalog components to form assemblies and systems in a virtual 3-D format, with



VarioFlow *plus* can be configured based on the customer’s specific needs. Groninger required the creation of two custom curves, one with a seven-degree angle and another with a 15-degree angle and modified/customized connection points with longer infeed and discharge sections.



support of a built-in rule engine to ensure the solution will work in the real world.

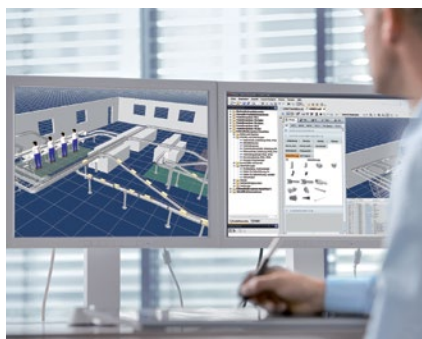
“We used MTpro to brainstorm with Groninger on how to use VarioFlow *plus*,” Schiedeck said. “Immediately it helped us determine that an initial component design wouldn’t work, and so with MTpro we were able to quickly work out an alternative set of components to solve the challenge.”

### Compact and flexible transport

VarioFlow *plus* has features that help Groninger design the lite-F to fit the needs of the machine’s target markets. This includes its compact size to keep the overall machine’s footprint down for the smaller private-label manufacturers with limited plant floor space.

In addition, according to Gozlan, VarioFlow *plus* has easy assembly and interchangeable design features that will enable manufacturers to modify or expand their footprint in the future. “The flexibility of the VarioFlow *plus* design makes it possible to connect the lite-F to upstream or downstream machines, if the end user wants to increase their level of automation in the future.”

Shortly after the first version of the conveyor was supplied, Groninger added a further request for future systems: modularity that allows



Rexroth’s easy to use MTpro design and configuration software helped determine the right set of components needed for Groninger’s conveyor layout.

additional flexibility in connecting with upstream or downstream machines. This will enable the VarioFlow *plus* to convey filled bottles from the lite-F to a bottle capping machine the Groninger plans to deploy in the near future.

“With VarioFlow *plus*, if an end user wants to link the machine, for example with a downstream machine, the closed-loop system can easily be converted into a U-shape system and connected to a second closed-loop system, such as a capper, using only a few steps,” Schiedeck said.

A key concern is the smooth motion of the conveyor carrying the containers, particularly in filling sequences where there are stop-and-start sequences of motion. “The way the VarioFlow *plus* works, the connection points are

much cleaner and smoother operating than the competition, and that gave us confidence that it would deliver the smooth motion we need,” said Gozlan.

VarioFlow *plus* components are manufactured to very tight tolerances and feature fewer joints; advanced, low-friction materials; and optimized sliding characteristics for the chains and slide rails, to minimize motion and reduce both component wear and dust generation.

### A new partnership

Both companies are pleased with the results and the efficient, productive relationship they have established.

“When you do something custom, as we were doing with the unique angles that we needed with the VarioFlow *plus*, you expect that cost may be significantly higher,” Gozlan said. “However, what pleased us at Groninger was that, when all was said and done and the components ordered, it still ended up costing less than the competitor’s solution.” Groninger has already ordered a second VarioFlow *plus* conveyor and plans to consider including it in future machine designs.

#### Do you have an application worthy of a case study?

Contact Susan Strauss: 610-694-8352  
[susan.strauss@boschrexroth-us.com](mailto:susan.strauss@boschrexroth-us.com)

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The Drive & Control Company

**Rexroth**  
Bosch Group

Bosch Rexroth Corporation  
14001 South Lakes Drive  
Charlotte, NC 28273-6791  
Telephone (800) 739-7684  
[www.boschrexroth-us.com](http://www.boschrexroth-us.com)