

Drive & Control profile

Bosch Rexroth machine automation provides modularity for innovative KHS poucher



Rexroth provided a drive and control system for the KHS Innopouch K-series, a modular, flexible pouching machine with fast setup and changeover times and the ability to expand easily as needed. *(photo credit: KHS)*

Integrated motor and drive, control and pneumatics platform aids KHS in developing modular, flexible pouching machine

There's a revolution taking place in the aisles and on the shelves of your local grocery store. A slow but steady shift from traditional can, bottle, and carton packaging to stand-up pouch containers has transformed the packaging industry. Drinks, food, and non-food items packaged in attractively printed stand-up

pouches are becoming the standard rather than the exception.

KHS Flexible Packaging (Sarasota, FL www.khs.com) an international manufacturer of filling and packaging systems for the beverage, food, and non-food industries, is leading the way in the stand-up pouch trend with the development

Challenge

Provide modular, versatile, easy-to-configure control system with fast setup and changeover times for KHS pouching machine

Bosch Rexroth Drive and Control Solution

IndraDrive Mi integrated motor and drive platform; HF03-LG pneumatics valves with integrated serial communication; AS-Series air-prep unit; PPC-R motion logic and robotic controller

Results

- Servo and pneumatic control provide more machine flexibility
- Quicker setup and changeover times
- Built-in machine modularity without sacrificing performance
- Reduced need for cable connections, 30 percent less wiring
- Drastic reduction in control cabinet size
- Flexible, clean and modern HF03-LG pneumatic valve manifolds help reduce air consumption and noise



With the IndraDrive Mi, the daisy chain approach to wiring helps with the modular aspect KHS wanted, as well as adding to the clean design of the machine.

KHS says Rexroth's integrated motor and drive platform make it very easy to configure the pouch machine in different ways.

of the servo-driven [Innopouch K-Series](#) pouching machine with electrically integrated pneumatics.

“Filling” a demand for versatile and easy-to-configure packaging machinery, KHS developed a modular, flexible pouching machine with fast set-up and changeover times and the ability to quickly expand its functionality as needed. The company achieved these goals using a versatile integrated motor and drive platform, pneumatics and control package from drive and control specialist [Bosch Rexroth Corporation](#) (Hoffman Estates, IL www.boschrexroth-us.com).

Innopouch K-Series modular pouch machine

The Innopouch K-Series is a form, fill and seal (FFS) machine that can process pouches from traditional film roll stock or by using pre-made pouches. With four different models in the series, each machine is highly flexible due to the use of leading

edge servo and pneumatic control technology. The machines can process fin-seal pouches and stand-up pouches ranging in size from 80 x 80mm, and up to 350mm long and up to 360mm wide. Pouches are handled by a linear double gripper system and the machine is configurable with several tandem filling stations. In addition, with its open, hygienic design, each model is simple and easy to clean using a low-pressure washer.

The Innopouch K-Series may use from eight to 16 axes of motion per machine for items such as forming seals, indexing pouch material, cutting and opening the pouches, gripping, pouch puckering, top sealing, and a pouch pick-off to put on a conveyor. With the Rexroth servo and pneumatic system, KHS was able to build in better flexibility for timing, the ability to make changes on the fly, link functions together and provide quicker set-up and changeover

time. Previously, it might take two to four hours to change from one pouch size to another. With the Rexroth components, the same task now takes only seconds.

Integrated motor and drive provides machine flexibility

An early adopter of servo technology, KHS turned to Bosch Rexroth for the latest in servo technology to fulfill the modularity needed for the new machine—the company's [IndraDrive Mi](#) integrated servo motor and drive combination controlled by a high-performance Rexroth [PPC-R controller](#) with built-in motion, logic and robotic capability.

“Using a servo platform, which is modular in itself, allows us to put that modularity throughout the machine,” explained Randy Uebler, general manager of KHS Bartelt. “Rexroth’s IndraDrive Mi mimics a lot of the design features we wanted to put in the Innopouch K. The combined motors and drives make it very easy to configure our pouch machine in different ways,” he said.

The Rexroth IndraDrive Mi combines a traditional servo motor



Machine control is provided by a high-performance Rexroth PPC-R controller with built-in motion, logic and robotic capability.

and drive amplifier into a compact but highly functional drive unit. This unique design reduces the size volume by more than 50 percent compared to traditional servo drives consisting of a separate motor and converter. As a result, this drastically cuts down the size of the control cabinet, making it easier to expand functionality.

A notable feature that appealed to KHS is the IndraDrive Mi's innovative cabling design, which significantly reduces the need for cable connections. Only a single combination cable containing both power and communication is needed, so the drives are easy to connect without a lot of wiring.



Instead of valves mounted all over the machine, KHS uses one Rexroth HF03-LG valve bank that can distribute air throughout, which reduces wiring and is expandable for more functionality.

“This daisy chain approach to wiring helps with the modular aspect we wanted, as well as adding to the clean design of the machine,” said Uebler. “With the IndraDrive Mi we were able to reduce our wiring needs by about 30 percent. Plus, we can add features down the road without making drastic changes to the wiring. If a customer wants us to add a new module to the machine, the daisy chain platform makes it very easy to do. The motors also provide localized I/O which simplifies the setup,” Uebler said.

Pneumatics bridges the gap for modularity

Uebler said Rexroth pneumatics play a vital role with the Innopouch K. Air control is critical for accurate positioning of the pouches, so KHS is using Rexroth a modular [HF03-LG pneumatic valve manifold](#) system that provides high flow in a compact package with low power consumption.

“The pneumatics really helped us bridge the gap to modularity,” said Uebler. “Instead of valves mounted all over the machine, we have one valve bank that can distribute air throughout, which makes it cleaner, reduces wiring and is expandable to add valves if we want a bigger machine,” Uebler explained. “We chose Rexroth because they offered a more comprehensive line and a different style of valves with better tech support,” he said.

An additional benefit for KHS was a reduction in noise. “Worldwide legislation involves varying guidelines regarding the noise

decibel level,” said Uebler, “We found we could minimize noise using Rexroth pneumatics. And, by working with one supplier for both servos and pneumatics, there is no conflict of competing technologies.”

The modularity KHS was able to achieve using Rexroth technology reflects a commitment from



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both companies to developing innovative, cutting edge processes and systems. As a result, the stand-up pouch revolution is well on its way to becoming a standard packaging option.

KHS and Rexroth team up to create packaging solutions

A leading global supplier of filling and packaging equipment for the beverage, food and non-food

industries, the KHS Group has remained true to its philosophy of remaining “young” while striving for innovation and high-class workmanship. KHS offers packaging systems of the highest quality and maximum efficiency. From its inception in the 1800s, the company has been an industry leader and innovator.

Bosch Rexroth, a global machine and factory automation supplier, has become a valued automation partner, teaming up with KHS to develop high-tech, modern machinery. More than 10 years ago, KHS turned to Rexroth to help develop its packaging machinery.

“We have many mutual customers and the Rexroth name is well known among them, so they know our machines have the best available technology on the market,” explained Uebler. “Rexroth has never let us down in terms of support, training, personnel, etc. Whenever we need something, they’re always able to produce it for us in terms of hardware, software, and especially people. They are always ready to help,” he said.

Uebler indicated that Rexroth’s advanced tech support and software programming expertise can provide a huge advantage to go with their collaborative mindset. “We can go

to them with ideas and collaborate to overcome limits of commercially available technology,” he said. “They seem genuinely interested in things we want to accomplish.”

KHS and Rexroth also have developed a co-marketing partnership that pays dividends for both companies. In addition to promotional help, Rexroth provides support and resources to help the KHS sales team understand new automation technology so they are equipped to work with their tech-savvy customers.

“A lot of customers want to make sure that what they’re buying is the best available equipment on the market,” said Uebler. “Rexroth helps our sales team become fully versed on the newest technology.”

Rexroth provides a clear-cut advantage to KHS on new development projects: “inside” knowledge. KHS has goals and ideas of what they may want to accomplish but often stretches the limit on existing technology. Rexroth helps KHS take full advantage on what’s available.

“When we get an idea of what we want to do, having an expert in the field like Rexroth is extremely beneficial. Whether its servo, pneumatics or other



Stand-up pouches are becoming the standard rather than the exception for consumer packaging. (photo credit: KHS)

technology, their experts may recommend something different than what we were thinking and can offer alternatives that may work better,” explained Uebler.

KHS contributes to product development on the Bosch Rexroth side as well. When Rexroth is offering something new that KHS could use in an application, the packaging company provides practical, real life experience and testing to determine if the design is feasible or not.

KHS and Bosch Rexroth have established a partnership that has been successful for more than a decade. As each organization continues to be innovative and develop new products and technologies, this mutually beneficial relationship will continue to flourish.

Rexroth
Bosch Group