



# NOVO NORDISK

## A new formulation line for insulin vials

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**bürkert**  
FLUID CONTROL SYSTEMS

# A new formulation line for insulin vials

The Danish Pharmaceutical Group Novo Nordisk has chosen Bürkert, the fluid control specialists, to equip its latest productionline for the formulation of insulin vials at its site in Chartres ( Eure-et-Loir), France. A technical solution supported by Bürkert allows the pharmaceutical leader to simplify their processes and increase productivity.

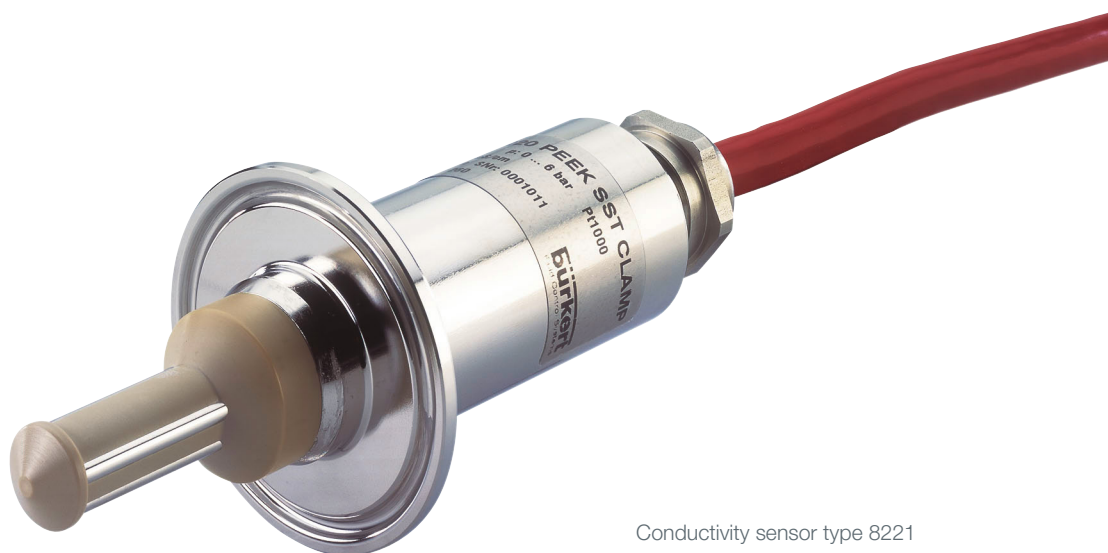
This plant is dedicated to the production and packaging of insulin products with nearly 20 million Euros invested to increase their capacity and build the latest in vial production facilities. “Our Chartres site is divided into three activities – NNP1 unit assigned to the production of 3 mL cartridges, NNP3 unit reserved for packaging products and the new unit will be NNP2, dedicated to the production of bottles” details Olivier Gilles, Technical Project Manager – On Site Vials Formulation Novo Nordisk Chartres. “The new production line will allow the site in Chartres to be a major focus for the production of insulin vials for the Novo Nordisk Group”.



Diaphragm valve type 2103 with control head type 8691 in a clean room at Novo Nordisk

## Did you know?

Type 8221 conductivity sensors are more sensitive to measurement (0.1  $\mu$ S...500 mS/cm) and less affected by the phenomenon of fouling. In addition, Bürkert offers the possibility to combine several of these probes to a single transmitter type 8619 multiCELL, which secures data and facilitates maintenance.



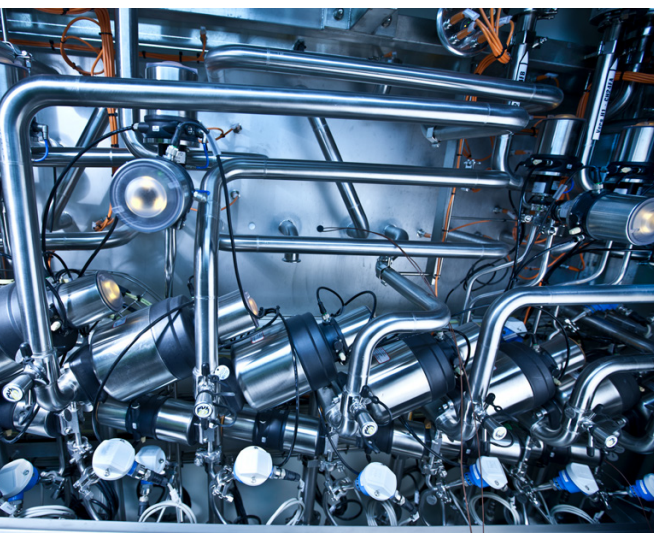
Conductivity sensor type 8221

### Demolish before reconstructing

To build its production line, Novo Nordisk started from scratch. The former production unit has been completely redesigned in order to establish a production strategy which is more easily operable, productive and modern. For the project, the group consulted with several pharmaceutical equipment manufacturers before opting for Bürkert. "It is the only company among the suppliers we met, to have arrived with a team of specialists for each technology sought", recalls Olivier Gilles. He adds: "They came armed with full demonstration equipment and also invited us to see their technology in use at one of their client's installations". The result led Novo Nordisk to join forces with Bürkert to supply their ON/OFF piston valves and ELEMENT diaphragm valve range. "One of the main criteria for selection is that this type of valve has super bright LEDs to give status feedback, visible from afar, even in a very compact space", says Olivier Gilles. "In addition, they are equipped with on-board piloting solenoid valves

and position sensors, embedded to give decentralised control. But an important point is the ease of getting started. These valves have a great feature called "teach-in" for easy, automatic control within a few seconds, for instance after changing a diaphragm, instead of several minutes with other valve designs".

"In addition, these valves were also chosen for their durability", details Yves Chenard, Area Sales Manager for the France's central region at Bürkert. "The controller heads maintain a slight positive pressure, avoiding the formation of moisture, thereby minimising downtime".



Mixing liquid for the formulation tank



multiCELL controller type 8619

Another criterion for selecting Bürkert was flexibility, as this project employs a different manufacturer of valves in contact with the insulin. “We also wanted to have the same functions for the visualization and control of these valves. We then proposed to adapt their control head onto these types of valves”, says Olivier Gilles. Thus the NNP2 unit was equipped with a total of nearly 370 valves and almost 675 control heads from Bürkert. Novo Nordisk has not only sought Bürkert valves for their line formulation technologies, but also Bürkert’s conductivity probes – type 8221. “We chose these sensors for their wide measuring range, reliability and repeatability. We use them to monitor the discharge for our CIP fluids and also to control the final rinse lines from our tanks and piping after acid washing”, explains Olivier Gilles. In all, there are 44 probes and 15 controllers supplied by Bürkert for the NNP2 unit at Novo Nordisk, specified in close collaboration with Bürkert’s Engineering team.

Through its partnership with Bürkert, Novo Nordisk was able to devise a process solution that improved production yield, whilst simplifying its operability and maintenance. Validation of the installation is scheduled to be completed in September 2013, and production of the first batch of vials of insulin in 2014. Due to this successful collaboration, the pharmaceutical leader is planning to partner with Bürkert for a possible NNP1 unit revamp. “This unit is still based on the old technology. If ever we were to revamp NNP1, I have no doubt that we will try to transfer the benefits of the technologies used on the NNP2 unit”, concludes Olivier Gilles.



Control Head 8691 on a novaseptic valve



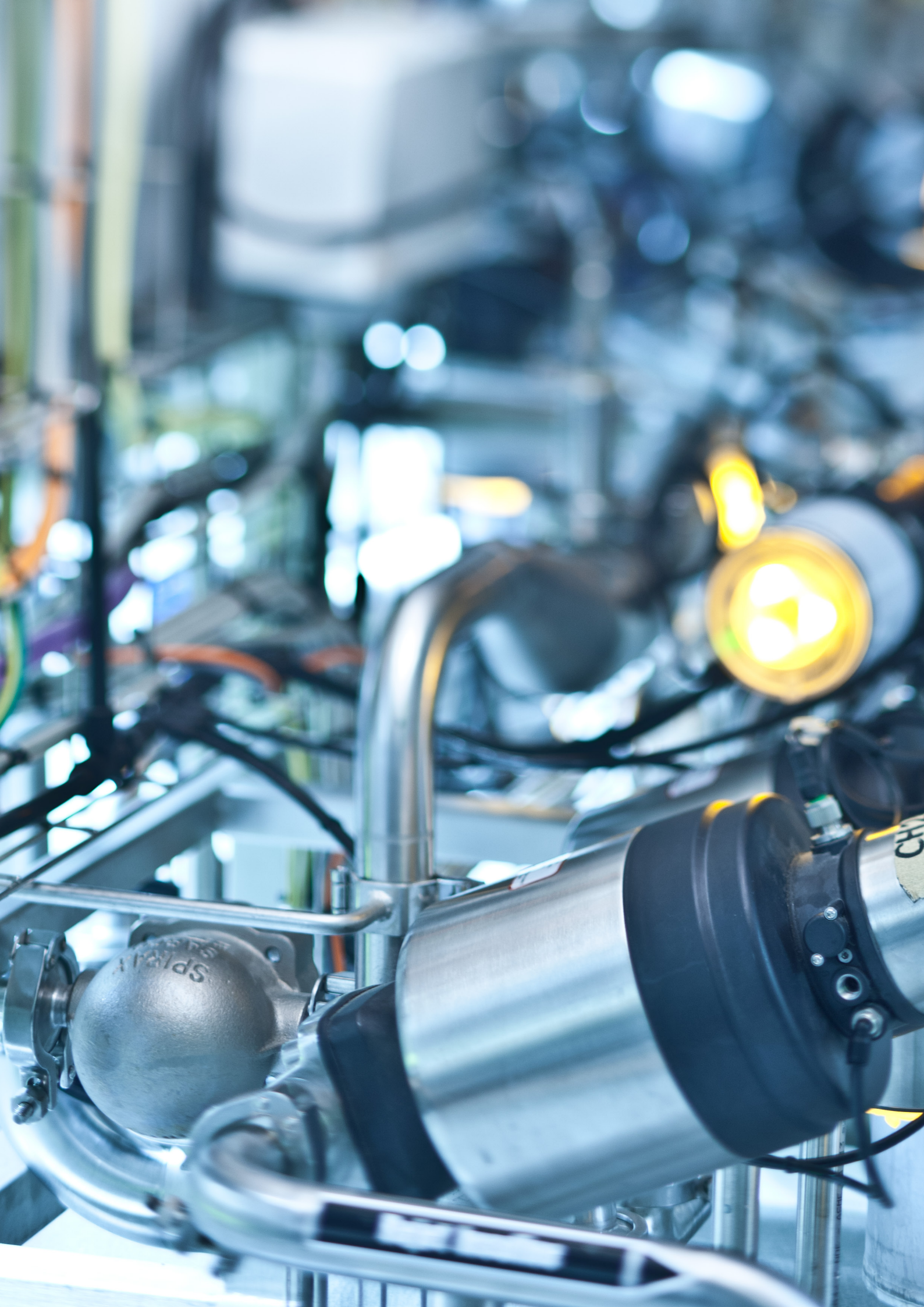
Formulation tank


### Decentralised automation concept

Decentralized automation is a groundbreaking idea where the intelligence is mounted directly on the valve. The control head integrates features such as the pilot valves for pneumatic control, position feedback and bus communications – all onboard.

In a traditional centralised automation design, this type of information and intelligence is typically located remotely in a control cabinet. Individual runs for both electrical and pneumatic connections are then made to each valve. By contrast, decentralised automation employs a single pneumatic connection and a single bus connection into the field. The ASI gateway is connected to a central PLC and can send the information further onto a SCADA system.

As this intelligence is placed directly in the process environment, it needs to perform in high humidity, high temperature ambient conditions. The ELEMENT range has been designed in accordance with EHEDG guidelines, featuring stainless steel and thermoplastic construction, to offer the highest level of chemical resistance. The control head type 8691 has been developed for our ELEMENT valve range – however by employing a simple adapter, designed in our Systemhaus, the control head can be installed onto every type of valve used in pharmaceutical plants today.





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Olivier Gilles (Technical Project Manager, Novo Nordisk)

You can find out more about this project at:  
[www.buerkert.com](http://www.buerkert.com)

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