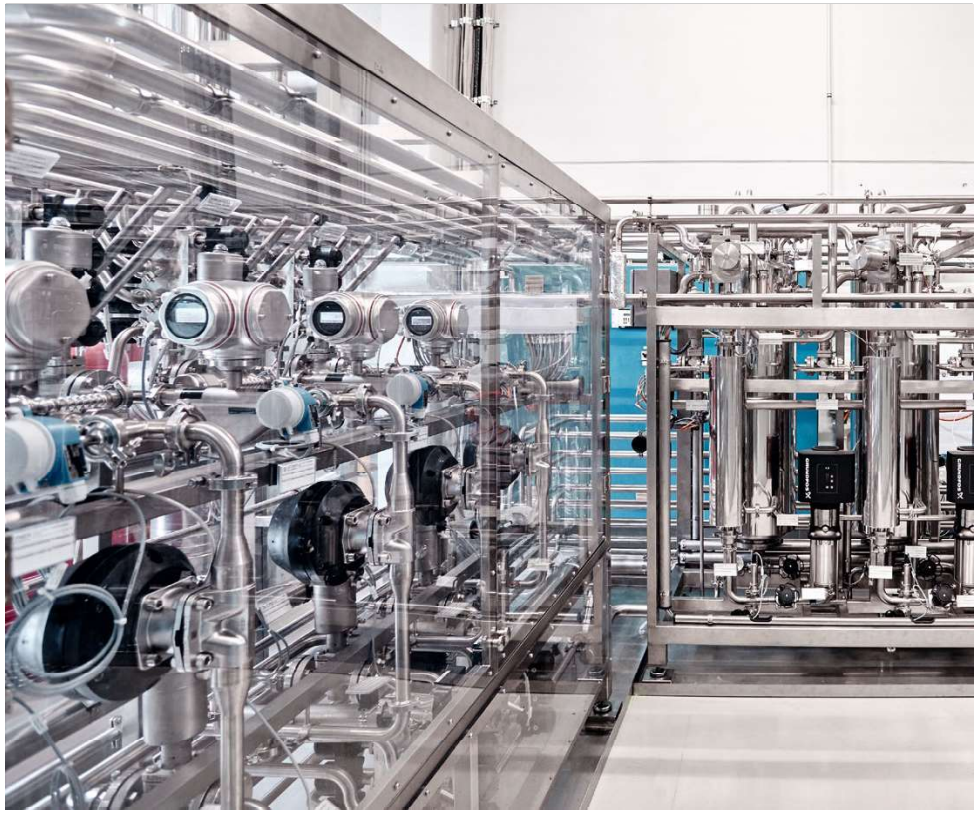

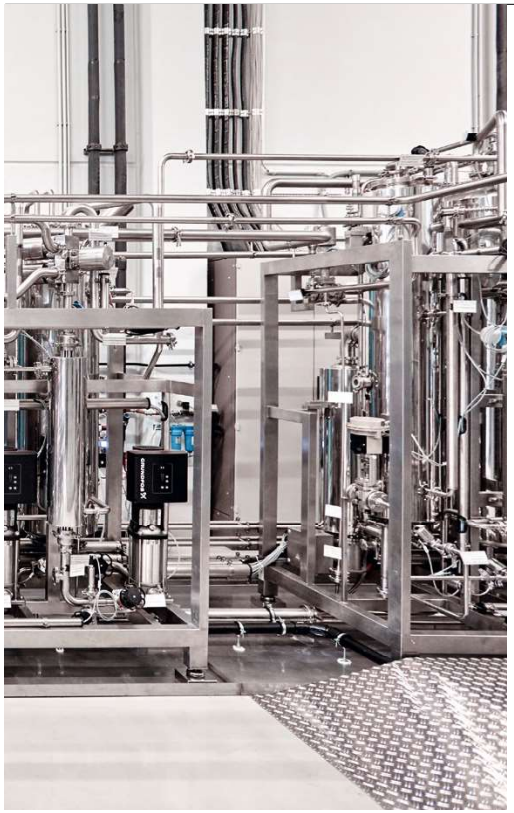

The new test bench at SED Flow Control laboratory for diaphragm valves (left, behind protective glass).

SED Flow Control GmbH
Center of Competence Pharma and Biotech
With 120 highly qualified employees SED develops and manufactures diaphragm valves with individual solutions for aseptic applications as well as metal and plastic diaphragm and angle seat valves for industrial applications. Furthermore, the range also includes positioners, components for valve monitoring and control, solenoid valves and flowmeters.
SED is characterized by flexibility, customer proximity and innovative power. Being part of SAMSON means that SED now has a worldwide sales and service network at its disposal.

Testing as close to the process as possible

SED is specialized in the development and manufacturing of diaphragm valves for applications in the pharmaceutical industry. With a new test bench the requirements of the ASME BPE standard are fulfilled and the reliability of the valves is increased. Mr. Uwe Rutsch, Head of Development and Product Management at SED Flow Control explains the details in this interview.

“For our valve test bench we needed reliable measuring technology with high measuring performance and particularly fast response times in the process. Endress+Hauser were able to fulfill these requirements perfectly.”
Uwe Rutsch, Head of Development and Product Management, SED Flow Control

Mr. Rutsch, why did you decide to purchase a new test bench for hygienic diaphragm valves from SED?
Rutsch: With the new test bench we have the possibility to ideally reproduce the process conditions of our customers in the pharmaceutical industry. The reliability of the elastomer diaphragm is particularly important for valves. The ASME BPE “American Society of Mechanical Engineers”, established its standard for valves for Bioprocessing Equipment a few years ago (Chapter 4 “Process Components”, Part SG “Sealing Components”). Industrial operators are also interested in the preferably objective comparison of different suppliers. This is possible if we as manufacturer produce and test our diaphragm valves according to the ASME BPE specifications. The standard was developed in the USA, but is now gaining considerable importance in Europe. There is no other comparably detailed set of rules worldwide.

Which validations are now possible and what does this mean for the customers who use your diaphragm valves?
Rutsch: In the past there were already similar test benches for diaphragm valves. However, we were only able to simulate steam sterilization. In practice, the process related loads for the valves are much more complex. With the new system we are now able to simulate steam sterilization as well as CIP cleaning with cold and hot purified water, alkaline solutions and acids or other detergents as well. This is how the ASME BPE recommends it. The test bench now enables us to carry out many fully automatical and recipe controlled cycles. This increases our confidence in the quality and availability of our components, as the test conditions come very close to the real process conditions. With the new test stand, up to 32 valves can be tested simultaneously, depending on the nominal pipe diameter. It will also enable us to carry out comparative tests of new elastomer materials in the future.

What role does the built-in technique of measurement play in your new test stand?
Rutsch: We need to be able to simulate the necessary process conditions very accurately on the test bench, and this with relatively fast product changes. In this context, measurement technology is all about maximum accuracy, shortest response times and maximum repeatability which means we need very high measurement performance. This is given by the Endress+Hauser instruments in use. Before the actual test bench there are units for pure water and superheated steam as well as the feed for the CIP media. In total, a wide range of measurement parameters up to analytical parameters such as pH and conductivity are used. Pressure, temperature and flow rate are the most important parameters for the perfect operation of the test bench. All instruments are designed in a way that they are especially able to detect fast changes of the process conditions.

Are there any specials you would like to mention during your cooperation with the supplier of the entire system, the company Letzner Pharmawasseraufbereitung GmbH and Endress+Hauser?
Rutsch: The cooperation with all participants worked very well. Letzner supplied a clear system concept.

Uwe Rutsch, Head of Development and Product Management from SED Flow Control, in front of the test bench for diaphragm valves.

Measurement technology in the test bench: in front fast responding temperature sensors of type iTHERM TM411 with QuickSens technology, in the background mass flow meters of type Promass E 300 and pressure transmitters of type Cerabar M PMP55.

Daniel Tschunko, employee at SED Flow Control, installs the actuator of the diaphragm valve on the test bench.

It can be seen that they can rely on many years of experience. At Endress+Hauser, the most important aspect in this context was to design hygienic measuring technology with the best measuring performance. Factors such as the installation situation also played an important role. Here again, cooperation and advice on site can only be praised.

Where do you see the focus in the further development of the valve business in the future? For example, will digitalization play a role?
Rutsch: Today, we are already able to randomly test material batches. In the future, it would be conceivable to actually enable individual tests for the valves; similar to what is already being done today in measurement technology with final factory calibrations. The operator would then receive test certificates for his specific valve in use. Customers sometimes ask us about this. In the long term we also have the goal of creating the so-called "Digital Twin".

This data set would then also contain the results of the individual tests. This would make it possible to detect material defects earlier, using statistical methods or to draw more precise conclusions about the maximum service life of a valve in the process. However, it will take some time before the market fully demands and wants to implement this.

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