



Sliding Gate Valves improve Chemistry Park Steam Filter Station

Drastically reduced operating costs thanks to a minimised control air construction

An application report by Kurt Hellemans, Berdien Uytterhaegen and Tristan Lejeune

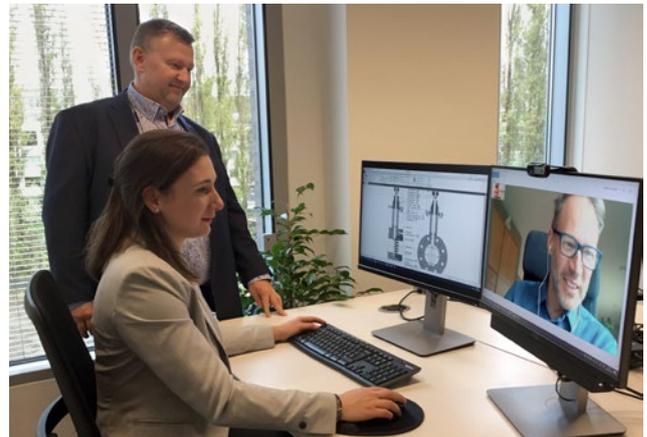
The Japanese chemicals group Kuraray has considerably expanded the production capacity for ethylene vinyl alcohol copolymers (EVOH) at its European subsidiary EVAL Europe N.V. Its production plant is located in a chemicals park in Antwerp Port. EVAL™ EVOH resins are used for adding a superior barrier to efficient multilayer food packaging for example. The steam needed in the production process is supplied by a central steam generator. The first size DN250 series sliding gate valves from Schubert & Salzer are already in use at what is referred to as a steam filter station. Kurt Hellemans, Senior E&I engineer at EVAL Europe, had a major role to play in the conversion to the sliding gate valves. He has drawn up a summary of more than six years of experience that have been gained with sliding gate valves.

Kuraray is one of the world's leading suppliers of ethylene/vinyl alcohol copolymers (EVOH). There is an increasing demand for multilayer films with a barrier layer of EVOH in the food packaging industry. This superior barrier is only a few microns thick and helps preserve the flavour of food as well as the quality and safety by locking volatile fragrances and ingredients inside the packaging and keeping oxygen and harmful substances out. This is the reason why the company has considerably expanded the production capacity of the plants in the chemistry park in Antwerp.

EVAL Europe obtains the steam it requires for this from a central supply unit that also supplies steam to six other companies. The steam pressure and steam quantity are adapted to the requirements of the diverse plants and processes. "At the utilities intake we reduce the steam pressure from the local steam supplier to the required steam pressure for our plant. Existing pressure reducing globe valve Cv had to be modified for flow and controllability. We took this opportunity to replace the valve by a Schubert & Salzer valve so controllability was improved and Cv was reduced.", says Hellemans.

Gained experience secures investment decision

Kurt Hellemans, the instruments specialist at EVAL Europe, has already been installing sliding gate valves from Schubert & Salzer in various plants since the early 2000s. He was enthusiastic



Kurt Hellemans (r), Berdien Uytterhaegen and Tristan Lejeune talking about the application of the sliding gate valves at EVAL Europe.



about the simple and compact design, as two slotting discs that slide against each other, overlap, and thereby seal against each other are at the heart of all the sliding gate valves. This principle provides system-related benefits: Sliding gate valves are easy to handle, are compact, lightweight, and highly precise. They control fluid, steam, and gaseous media with precision, fast and economically.

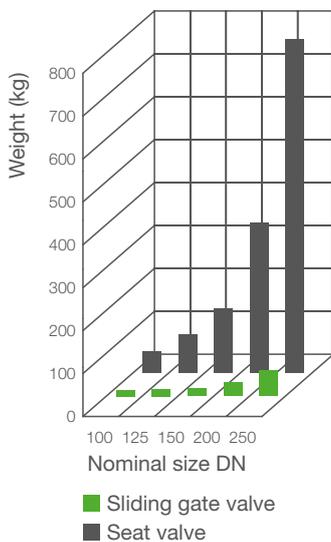
Kurt Hellemans' positive experience with this valve technology resulted in the company deciding to also install these in the steam filter station. This was made possible by the series having recently been expanded with the nominal width 250. This showed that the system-related benefits provided by the sliding gate valves played an ever-increasing role, the larger the valve. Hellemans concerning the facts: "In the scope of the major plant inspection, the steam filter station was also improved and equipped with DN250 sliding gate valves. Each of the 10 inch predecessors weighed about 350 kg. The sliding gate valve that met the same

function to a greatly improved extent, merely weighs 50 kg. The low weight obviously made a difference during installation, but it also had a highly positive effect on maintenance. At the same time, the costs were noticeably reduced.

80% reduction to the control air consumption results in a rapid reduction to the operating costs

In retrospect, Hellemans sees the low air consumption as being one of the decisive reasons for the unconditional recommendation to replace valves; “The sliding gate valves that are now installed in the steam supply system have a substantially greater compactness and require considerably less actuating power and that with the same nominal width. The valve actuator is also considerably smaller with the same function. This results in us saving more than 80 percent of the control air we required in the past. As far as I am concerned, this is not only an excellent plus for this valve technology in addition to the considerably reduced weight and the resulting benefits for the maintenance work. “

Not only is control air saved, but also energy, as when compared with the classic seat-ball fittings, they require only a tenth of the positioning and closing force. This is due to the sealing discs acting transverse to the direction of flow. This means that the actuator does not have to work against the flow of the media as is the case with a seat-ball construction. Not only does this result in a noticeable reduction to the operating costs – the smaller and substantially more economical valve actuators make themselves noticed both in terms of weight and budget.



Size comparison between a normal seat valve and a Schubert & Salzer sliding gate valve. In the example, the nominal size of both valves is identical.

Adaptations and maintenance work are easy and quickly carried out internally

“An additional plus provided by the Schubert & Salzer sliding gate valves is that we can carry out valve adaptations and the maintenance of the fittings ourselves. “, says Hellemans. “Plant modifications can result in changes being made to the KVS value. In such cases, we can install new sealing discs with a modified slot contour and thereby adapt the control valve to the new process requirements ourselves. With all the other valve types, we had to send the fitting to the manufacturer to make the modification. These optimizations are not frequently required but if it should be the case, they are quickly and easily carried out ourselves. “



Before and after – Sliding gate valve DN250 in operation in the steam filter station at EVAL Europe N.V. in Antwerp.

Furthermore, the sliding gate valve has very advantageous flow-related characteristics and an excellent positioning ratio. The short stroke of just 9 mm supports the switching times that, with a complete open-close procedure only requiring less than a second, are at a world record level. Positioning times of 2-3 seconds can be achieved in control operation mode, resulting in a high dynamization of the control loop. Not forgetting the extremely low leakage rates, minimal wear, an insensitivity to cavitation and a reduced noise emission.

All in all, the sliding gate valves from Schubert & Salzer Control Systems not only provide benefits for the process, but also a potential for additional immense savings due to their exceptionally low lifecycle costs.

Summary of a Specialist after a Practical Test that Lasted Six Years

“After the installation, the sliding gate valves were adapted to the high temperature requirements in the company, together with the Schubert & Salzer specialists Berdien Uytterhaegen and Tristan Lejeune. They also provide us with advice and assistance when it comes to process modifications and when the valves need to be adapted. They always find a solution to any problems we have, “says Hellemans. “We have been using sliding gate valves for the past six years. The experiences we have gained in terms of controlling precision, leakages, maintenance, operating costs and adaptability have all been positive and that is the reason why we are using this valve technology.”

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