



Butterfly valve triples life in cement application

Gemü Valves Africa offers a flexible range of rugged customised solutions that are fine-tuned to best suit customer applications and to maximise reliability and valve life. *MechChem Africa* talks to Francois van der Merwe about the company's soft-seated butterfly valves and a successful application at an AfriSam blending and packing plant.

According to Van der Merwe, Gemü has a long history of making valves that last longer, particularly when used in the harshest applications. "Our valves are different in that each one is specially designed and then adapted so that it will perform reliably for much longer," he begins.

"Before we supply a valve, we go into the details. Starting with failure analysis, we identify problems and resolve them to ensure that our valves last longer, particularly when conveying wet slurries or for the pneumatic conveying of dry powders, which are often used for transporting highly abrasive media," he says, adding that "every valve we produce needs to help clients towards lower operating costs, better uptime and more profitability."

Gemü is a family owned business from Germany with some 52 years of experience in the design and manufacture of valves and valve solutions. "We are the world market leader for the pharmaceutical, food and biotech industries and we also offer a highly competitive industrial product range," he says.

As well as valves, Gemü also produces control, measurement and instrumentation equipment to allow the valves to be managed to best suit the demands of the applications. "We also offer a full range of actuators, including manual, pneumatic or electric options," he adds.

"Our valve solutions are supported by over 400 000 combinations of different products.

Each valve can be supplied in all the common sizes with different connection options, different disc sizes and pressure classes. Because of our product variety, we have the flexibility to define a best-fit solution for any application," he notes.

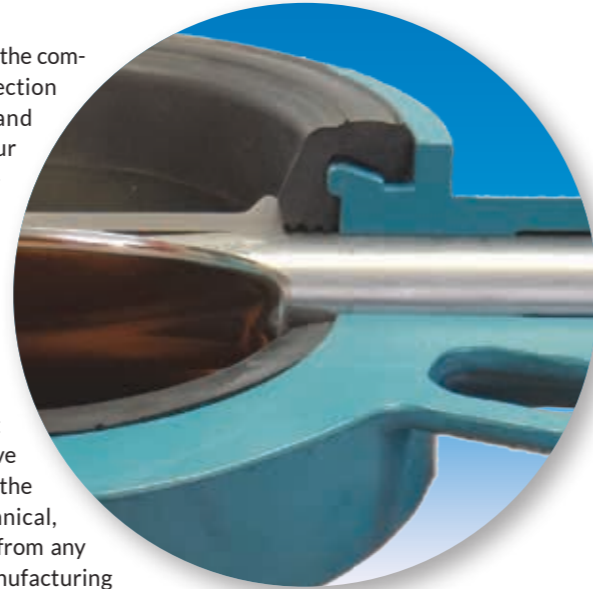
From a production and distribution perspective, Gemü has six manufacturing facilities worldwide and 28 sales subsidiaries. "Globally, we are active in more than 50 different markets worldwide and we have the capacity to network inside the group: from Germany for technical, design and admin support and from any of our production sites for manufacturing and logistics".

Van der Merwe goes on to highlight Gemü Valves' local presence. "We are a service oriented company. Our strong local presence enables us to offer customised solutions for our clients' applications, which, to prove the benefits, we will often develop, install and test prior to finalising the contract.

"In addition, the local office enables us to better control delivery times, technical and contractual aspects and to develop better understanding of our customer's needs," he says.

Industrial solutions and the AfriSam solution

Strong products on the industrial side in South



These Gemü butterfly valves incorporate three anchoring points for the rubber liner to keep it from moving in any direction.

Africa include the Gemü diaphragm and butterfly valve ranges, which are routinely used for controlling wet slurries or dry powders, respectively.

"Every conveying application is different. We can support the conveying of coal, cement, clay, flour and hundreds of other materials and powders. Some are sticky, some are abrasive and some might even be explosive. At the end of the day, the valve used needs to be well adapted to the application.

"In the industrial space, we focus more

on abrasive powders rather than the sticky powders. When our valves last two months instead of the usual two weeks, it helps operators to save costs. This also offers huge advantages with respect to the safety of the operation and protection of the environment, which are currently increasingly important focus points for industry," Van der Merwe tells *MechChem Africa*.

Ultimately, however, the use of high quality, well-designed valves that are finely tuned to suit the systems in which they operate results in massive cost savings for the operation.

"Industrial plants are wasting money hand over fist because they are using the wrong technology and they are not willing to adopt more modern solutions," he argues. "Cheaply made, low quality valves that use the wrong materials are often being used. These wear out and break down very rapidly, because the construction simply cannot cope with the abrasive wear inherent in the application. In some cases, butterfly valves are being changed every three months or sooner," he notes.

Describing a recent success at AfriSam, Van der Merwe says that Gemü Valves Africa was trialling its four-inch soft-seated butterfly valve at one of AfriSam's cement blending and packaging plants.

"We have been trialling a test valve on the pressurised offloading system, where dry cement powder is offloaded from trucks and trains into the cement silo of the blending plant," Van der Merwe tells *MechChem Africa*.

"This is a pressurised system that supports three loading bays where trucks offload their 30 to 34 t payloads. With 20-25 trucks offloading per day, 600-850 t per day of cement is being passed through these butterfly valves," says Van der Merwe.

"The pressurised line gets up to a temperature of 60 °C, but the valve sits in the middle of the line and its disc temperature is significantly higher due to the abrasive action of the cement being conveyed past it at pressures of between 1.5-2.5 bar," Van der Merwe continues.

The butterfly valves used have to seal perfectly when closed in order to shut off the airflow. "When used in the blending side of the silo, any leaks will compromise the blending accuracy and the whole plant may have to be shut down," he says.

The trial valve was first used on the blending side of the operation, where it was trouble free for three months of operation. "It was then moved to the offloading line for the remainder of the trial. The previous valves were lasting no more than three months in this application, and when ours was removed for examination after six months and compared to its worn competitor, the difference was remarkable," he says, showing comparative

photographs of the Gemü valve and that of a worn equivalent from a competitor. The bottom half of the disc of the non-Gemü valve is seriously worn, to the point where neither sealing nor shut-off are possible.

The Gemü butterfly valve, on the other hand, shows very little wear on the disc and only slight wear on the outside edge of the EPDM-rubber lining, neither of which are at the point of compromising operational effectiveness. The valve was re-installed and has now been operating for nine months in this application.

The disc and the rubber lining, according to Van der Merwe, are the two elements of any butterfly valve that wear most quickly. So what has Gemü done to extend the wear life of these components?

"First, to prevent damage to the rubber liner, it needs to be held firmly in place. These Gemü butterfly valves incorporate three anchoring points for the liner to keep it from moving in any direction. This holds the rubber firmly in place while the disc opens and shuts. Each time the disc is closed, it exerts pressure on the liner and, unless well anchored, it will shift every time disc opens or closes. Cheaply made valves do not have additional anchoring points, so the liner will move and wear much faster," Van der Merwe explains.

On the discs of these valves, as well as carefully selecting the most appropriate material to use, Gemü also optimises the size of each of its discs to better match the applications pressure requirements. "There is no reason to install a valve capable of holding 16 bar pressure for a 2.0 or 3.0 bar application. By adapting the disc size diameter to suit a lower system pressure, the power requirements and costs of the actuator can be reduced and the wear life of the liner can be increased," he explains. In addition, the discs all have polished edges, which lowers the contact fric-



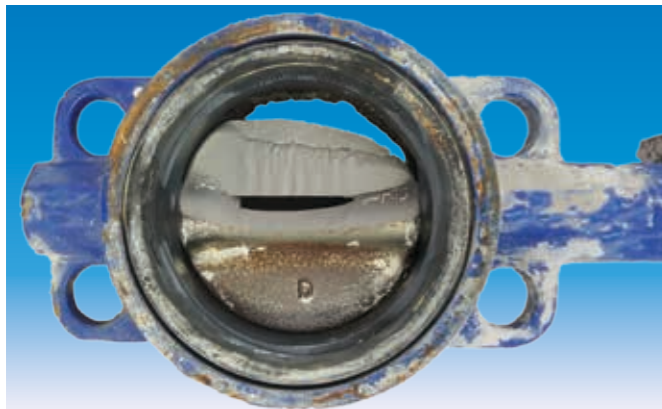
According to Peter Nemutamvuni, blending and packing plant manager, the performance of the Gemü butterfly valve on the offloading system exceeded AfriSam's best expectations.

tion against the rubber, reducing wear rates."

From an installation perspective, he notes that butterfly valves should always be installed with the shaft horizontal, to prevent particulate from building up and grinding down the shaft journal below. "The valve must also be installed the right way around so that it always opens in the direction of flow," he adds.

For these and for many other reasons, the Gemü butterfly valve installed at AfriSam's blending and packaging plant has now been running for over nine months, while its predecessor only lasted three months before being completely destroyed.

"And the cost of more cheaply made valves are not necessarily lower either. We can comfortably compete on price against products of significantly lower quality and durability," Van der Merwe concludes. □



Compared to the previously installed valve (left), which was lasting no more than three months, the Gemü butterfly valve (right) was still usable after nine months of service.



Gemü Valves Africa's four-inch soft-seated butterfly valve at one of AfriSam's cement blending and packaging plants.