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RELY ON EXCELLENCE

A reliable component in the production of metformin

Solution – Retrofit of agitators with AGSZ seals

Vistin Pharma is a Norwegian pharmaceutical company headquartered in Oslo. The company produces metformin hydrochloride as an active pharmaceutical ingredient (API) and as direct compressible granulate. The mixing of the product is a critical part of the production process. The agitator shafts must be properly sealed to ensure a process flow without interruption.

Thanks to precisely manufactured grooves, the seat and seal face lift off reliably even at low speeds. The sliding faces run continuously without contact, there is no wear abrasion.

At the manufacturing facility in Sannidal, Norway, Vistin Pharma uses glass-lined vessels with a capacity ranging from 12,5 m^3 to 35 m^3 for dissolving, mixing, reaction, separation and distillation of the solvents. Since 2014, some shafts of the top-mounted agitators have been equipped with AGSZ double seals from EagleBurgmann.

From oil to nitrogen lubrication

Product quality and operating cost largely depend on smooth-running processes. Until the retrofit, Vistin Pharma used oil-lubricated seals from a competitor. These seals not only required a high level of maintenance on a regular basis, but also the risk of contaminating the product with barrier fluid and wear particles. That is why Vistin Pharma wanted to stop using oil as barrier fluid. The manufacturer decided to order the gas-lubricated AGSZ seals from EagleBurgmann.

Because these seals are pressurized, they prevent contamination of the product from outside and contamination of the atmosphere with the product from inside. The seals also make sure the required pressure in the vessel can be maintained.

High reliability

The seals operate without contact, hence there is no abrasion. Geometry and treatment of the sliding surfaces ensure a continuous and consistent stable layer of gas. Due to extremely precisely manufactured grooves, seat and seal face reliably lift off even at low speeds. As the seal is operated at a pressure higher than the pressure inside the vessel, the product cannot penetrate the sealing gap. At Vistin Pharma the AGSZ seals are supplied with nitrogen from the network in the production facility. A gas supply system from EagleBurgmann regulates the required gas flow. It is specifically designed for dry running and gas-lubricated mechanical seals.

When the process medium in the production of metformin may not be contaminated with sealing medium under any circumstances, gas-lubricated seals for agitator shafts are the first choice. The Norwegian company Vistin Pharma took a daring step away from oil-lubricated to nitrogen overlayed seals.

The clamping ring torque transmission allows the shaft to axially move ±2 mm (0,07"), while the integrated bearing protects the seal from large radial forces. Even if the vessel with a capacity of 30 m^3 is fully loaded, the user can rely on the safe operation of the seal.

Accordance with strict regulations
Because the seal is pressurized, it cannot be contaminated by the product and it is not necessary to clean the seal. To prevent damage while cleaning the vessel with hot steam, the pressure inside the seal must be higher than the pressure of the steam.

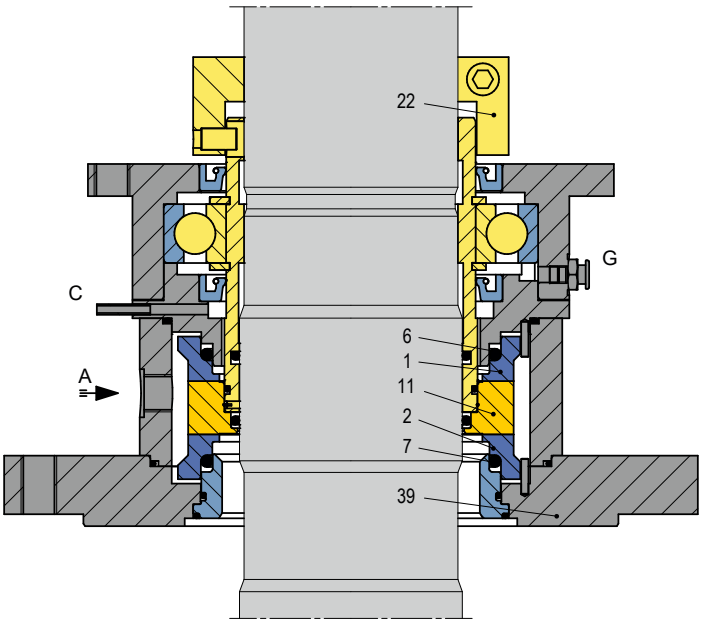
Seal faces and seats made of silicon carbide and O-rings with product contact comply with FDA regulation. The seal also complies with the ATEX directive, Zone 0. These characteristics highlight the compliance of the seals with strict international standards and regulations.

One of the agitator vessels

External view of the Vistin Pharma production plant in Sannidal

So far, the seals at Vistin Pharma are proving to be very stable during operation and have been running smoothly. This has reduced maintenance expenditures. In addition, the seals support an optimized energy management in the production process due to their non-contacting operation. No contact means no friction in the seals faces. Therefore, no heat at the seal must be dissipated.

A scheduled downtime in early 2019 was used to check one of the seals. As the AGSZ is a ready-to-fit and factory-tested unit, it could have been repaired easily but its condition turned out to be as good as new. The seal only required normal maintenance to ensure it continues to function.



1 = Seal face, atmosphere side
2 = Seal face, product side
6 = O-Ring
7 = O-Ring
11 = Seat
22 = Clamping ring
39 = Flange
A = Barrier gas IN
C = Leakage
G = Grease

Yellow areas:
rotating parts of the seal
Blue areas:
stationary parts of the seal
Gray areas:
Shaft and housing parts

Operating conditions

- Shaft diameter: d_1 = 125 ... 140 mm (4,92" ... 5,51")
- Pressure: p_1 = Vacuum ... 2.5 bar (36.3 PSIG)
- Temperature: t = 110 °C ... 145 °C (230 °F ... 293 °F)
- Sliding velocity: v_g = 0.3 ... 0.6 m/s (0.98 ... 1.97 ft/s)
- Agitator velocity: 50 ... 90 rpm

EagleBurgmann – at the leading edge of industrial sealing technology

Our products are used wherever safety and reliability count: in the industries of oil & gas, refineries, petrochemicals, chemicals, pharmaceuticals, food, power, water and many more. About 6,000 employees contribute their ideas, solutions and dedication every day to ensure that customers around the globe can rely on our seals. With our modular TotalSealCare Service, we emphasize our strong customer orientation and offer custom-tailored services for every need. **Rely on excellence.**

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