

RELY ON EXCELLENCE

Reliable and versatile – use of SeccoLip in the pharmaceutical industry

SeccoLip for a fermenter agitator

In the production of pharmaceutical excipients, where sealing fluids must be kept out of the production process and handling of the seal on the agitator shaft should be simple, it is worth switching to a dry-running sealing system.

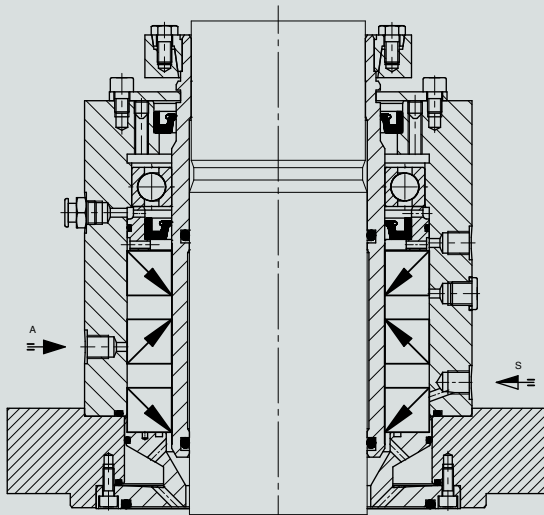
An international chemical and pharmaceutical company was one of the first manufacturers to switch to the dry-running SeccoLip seal from EagleBurgmann, which was first presented in 2018.

The fermenter for the production of enzymes and pharmaceutical excipients was previously equipped with a liquid-lubricated seal. This did function to the satisfaction of the operator, but the newly developed SeccoLip promised greater convenience for handling and maintenance over the long term, thanks to the superior tolerance for shaft movements and the dry-running concept.

The strict safety requirements called for a barred seal design with three sealing lips. The seal is barred and flushed with nitrogen. The main advantage: The required supply system is easy to operate and monitor. Any potential contamination of the product with nitrogen is harmless – in contrast to liquid sealing media.

The seal was designed as a cartridge and installed at the top entry drive. The first sealing lip faces toward the product, the second faces outwards, and the third also faces the product.

The monitoring instruments of the GSS4010 supply system are properly arranged. The flushing gas instruments are on the left and the barrier gas instruments on the right.



Section view of SeccoLip481L-3_100-E1

S = Flushing

A = Barrier fluid



Fermenter upgrade to the dry-running agitator seal SeccoLip from EagleBurgmann

This arrangement permits the connection of a flushing and barrier system. Nitrogen is flushed into the fermenter through the first lip. The barrier chamber between the second and the third lip is created with a connecting bore and prevents product constituents from reaching the atmosphere.

Continuous flushing with nitrogen is required because sticky foam can form around the seal, which would impair the proper sealing function. With the specially designed cleaning flange, the area in front of the seal can be regularly cleaned with steam.

The GSS4010-type combined barrier gas and flushing gas system from EagleBurgmann is installed in a stainless steel housing. The high-quality individual components are also made of stainless steel and are suitable for use in explosive environments classified as ATEX zone 1 and 2.

The seal is based on the patented SeccoLip technology. One special feature is the combination of two elements – the PTFE sealing lip and rolling bearing – in a single component. The rolling bearing adapts the entire sealing element to the shaft movements.

Because the lip and the rolling bearing are contained in a single element, the seal gap between the rotating shaft and the sealing lip remains nearly constant. Radial deflections of the agitator shaft are compensated directly and reliably. No compensation elements such as O-rings, expansion discs, or metal bellows are required for reliable functioning. The PTFE material satisfies the requirements of the FDA (U.S. Food and Drug Administration).

With this dry-running sealing solution, the fermenter has been upgraded to the state of the art. SeccoLip has been in use for several years now without any problems. Nitrogen leakage is minimal, and the time spent on inspecting and servicing the sealing system has decreased considerably.



Operating conditions

- Shaft diameter: $d = 100 \text{ mm}$ (3.94")
- Pressure: $-1 \dots 3.0 \text{ bar(g)}$ ($-14.5 \dots 43.5 \text{ PSIG}$)
- Temperature: $t = 10 \dots 120 \text{ }^\circ\text{C}$ ($50 \text{ }^\circ\text{F} \dots 248 \text{ }^\circ\text{F}$)
- Speed: $n = 77 \text{ rpm}$
- Medium: Aqueous cell cultures, sodium hydroxide (NaOH), some toxic products

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