Sealing solution for chest agitators

EagleBurgmann®
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HGH210
split mechanical seal

Information **EN07041**

The HGH seal with EagleBurgmann WSU water supply unit (system shown installed).

In the paper and pulp industry, stock chests are used for intermediate storage of the various products at various treatment stages and raw material processing stages. Afterwards the products are then fed to the paper machine for final processing. In order to prevent the finished material suspension from separating or becoming deposited in the stock chest, the material needs to be moved with an agitator. These so-called chest agitators are primarily used in side or bottom drives.

Requirements on modern chest agitators include optimum access to the seal, being able to replace the seal when the stock chest is full, and easy replacement of bearings. The type of seal which is used most commonly on chest propellers is a stuffing box packing, which in some cases can suffer from very high rates of leakage, which in turn means a significant loss of product. However, the advantage of packings is that the packing rings can be replaced without dismantling the chest agitator.

The problem: significant loss of product

Paper manufacturer Sappi of Lanaken / Belgium uses chest agitators manufactured by Beloit (since 2000 – Metso, Finland), which were previously equipped with packings. The significant resulting levels of leakage accumulated outside the stock chest, where they caused severe soiling and contamination of the surroundings (refer to the picture below, which shows a similar case). The consequences were reduced safety in the workplace and the additional effort and expense associated with regular cleaning and disposal of the accumulated material which could not be reused.

The packings which were used had a service life of up to one year, but after that it was also necessary to replace the shaft sleeve. In addition to this service life target, the requirements placed by the operator on a new sealing solution included the facility for easy installation and disassembly with a concurrent reduction in leakage rates and a lengthening of service intervals.

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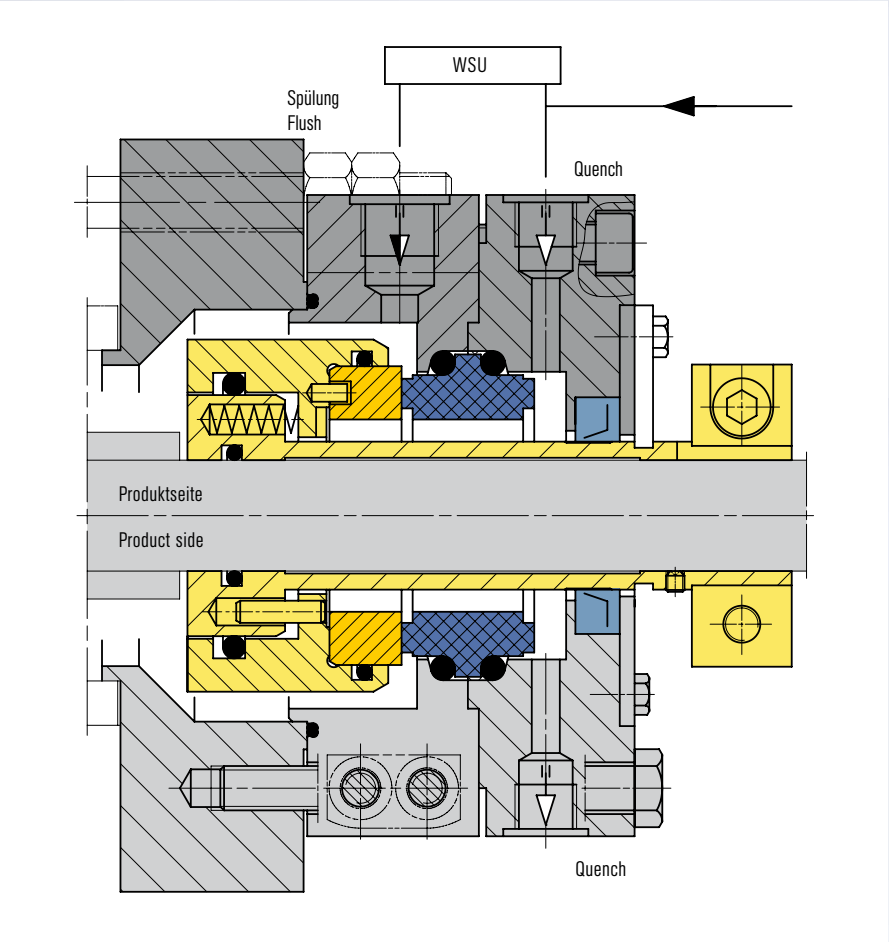

EagleBurgmann HGH

The solution: split seals

The sealing solution provided by EagleBurgmann is a semi-split mechanical seal of type EagleBurgmann HGH, in which only the seal face and the O-ring are split. A non-split version of the seal is used on first installation. As the conversion necessitated an overhaul of the agitator, free access was available to the installation space and to the shaft.

The split variants of the seal are not required until preventative maintenance or repairs are needed. Here, the seal can be opened without the need to disassemble the chest agitator. This means a significant reduction in terms of the otherwise lengthy standstill and assembly periods, together with the associated costs. In addition, the seals are largely free of leakage, making uncontrolled loss of product a thing of the past.

The seal has been in operation at Sappi Lanaken without problems since conversion of the system in January 2002. Due to this success, the company has decided to convert further chest agitators to the EagleBurgmann HGH210 seal.

Soiling and product loss: Accumulated leakage at a side-driven chest agitator sealed with a packing.

Operating conditions

Medium: Pulp, c = 5 %, water, possibly various additives
Operating temperature: 20 ... 40 °C
Maximum temperature: 70 °C
Operating pressure Approx. 0.5 bar (approx. 5 m ESH)
Speed: 300 min^{-1}
Drive type: Side drive
Seal: Semi-split, balanced, single mechanical seal HGH210/110-E6, independent of direction of rotation, cartridge design with a quench seal on the atmosphere side and a flushing connection on the product side

Installation position: Horizontal
Material combination: Q2Q2EGG1 (1.4462)
Permissible axial movement: +/- 2 mm
Shaft offset: +/- 0.5 mm
Supply system: EagleBurgmann WSU 1025/108-D0 water supply unit
Quench media: Water, max. flow of 3 l/h
Flushing medium: Water
Flushing pressure: Approx. 1 bar
Flushing quantity: 8 l/min
Operating period: Continuous (24h/24h)