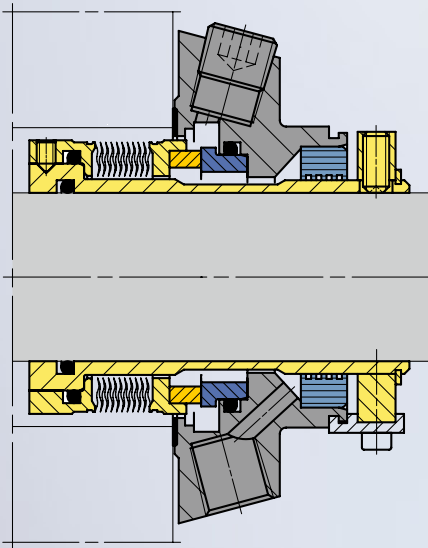


Mtex for sealing tall oil pump



The tall oil pump equipped with a Mtex cartridge seal
at UPM Pietarsaari



Mtex-TN single cartridge seal

UPM Pietarsaari pulp mill is located in the Gulf of Bothnia in western Finland and has two production lines. The site has a production capacity of 800,000 tonnes of pulp. Bleached chemical pulp is produced out of the raw materials soft- and hardwood from sustainably managed forests. Steam and electricity for the pulp mill is produced in the mill's own recovery boiler and surplus heat and electricity is used for paper production.

The process

Tall oil is a brown fluid with high viscosity which is a by-product of the kraft (sulfate) process. It contains rosin acids and fatty acids and is used in making soaps, lubricants and bio diesel. Tall oil is the third largest chemical by-product in a kraft mill after lignin and hemicellulose. At UPM Pietarsaari tall oil is transported to be burned. This burned tall oil is used for producing renewable power.

The challenge

As the pump to transport tall oil to the recovery boiler is located outside the plant the sealing solution has to work well at low and high temperatures. There are a lot of start/stop cycles which lead to problems especially at lower temperatures. The tall oil pump had frequent seal failures about every two months. The customer requested a complete solution to replace the failing seal and required a sealing solution that works without buffer fluid and has a longer MTBR.

The EagleBurgmann solution

EagleBurgmann offered the Mtex metal bellows cartridge seal as a perfect solution for high viscosity media from -40 °C ... 220 °C (-40 °F ... 428 °F). The cartridge seal is easy to install and the steam quench reduces the amount of tall oil build up on the outside of the seal.

The temperatures at the application outside increases due to the steam quench which results in longer lifetime and higher productivity of the pump. There is no need of an additional supply system and the customer received a complete installable package from EagleBurgmann.

The advantages of the seal solution at a glance

- Ideal seal for standardizations
- Universal applicable for packings conversions, retrofits or OEM
- Suitable for high temperature
- No dimensional modification of the seal chamber necessary, small radial installation height
- Trouble-free running due to bellows unit with vibration dampers (essential in case of dry-running)
- No dynamically loaded O-Ring
- Self-cleaning effect of the bellows
- Installation faults are avoided, cost-effective
- No damage caused by dirt entered during assembly
- Straightforward and easy installation due to pre-assembled unit (reduced down-times)
- Individual adaptation to pump design possible

Operation conditions

Medium: Tall oil
Machine type: APP23-40
Shaft diameter: 40 mm
(with sleeve: 45 mm)
Pressure: 3 ... 4 bar (43 ... 58 PSI)
(loading pump)
Temperature: 80 °C ... 100 °C
(176 °F ... 212 °F)
Rotational speed: 1,500 min⁻¹
Seal type: MTEX-TN/45-00
Seal material: Q12Q1KM6GG1/G