KLAUS UNION NO VISCO® BEARINGS

FOR SCREW PUMPS, CENTRIFUGAL PUMPS, SIDE CHANNEL PUMPS AND AXIAL FLOW (PROPELLER) PUMPS

THE GAME CHANGER FOR JOURNAL BEARINGS

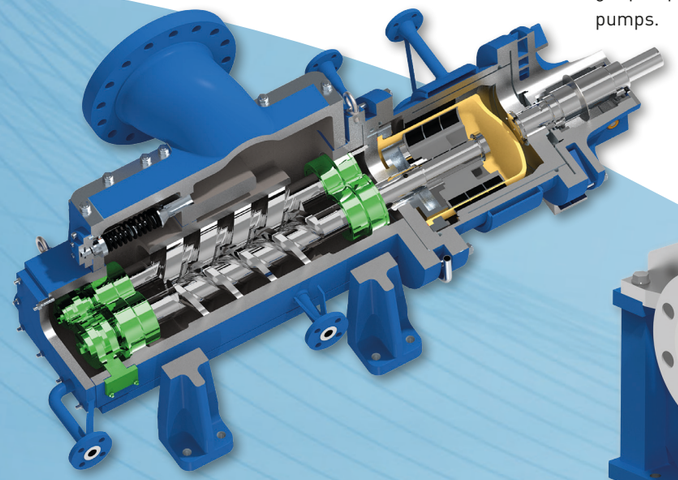
For many years the commonly accepted wisdom in regards to magnetic driven pumps used to be that they were challenged when handling either high amounts of abrasive solids, or extremely low viscosity products. The new Klaus Union NoVisco® bearings finally put a rest to this – previously often true – claim.

The robust bearing material can handle extreme solid loads, which was unthinkable so far with traditional journal bearings and require no hydrodynamic lubrication film and thus does not require any minimum viscosity whatsoever. This enables Klaus Union pumps to handle applications reliably and without the use of any utilities so far unthinkable for these types of pumps.

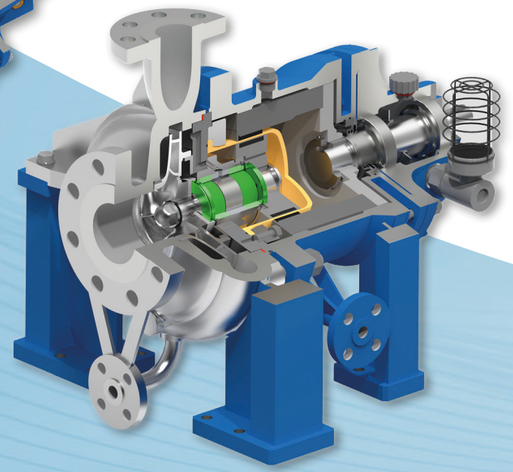
The bearings are made of highly robust material on a full stainless-steel carrier as a minimum standard, and have no coating that could be worn off over time.

Klaus Union has demonstrated this with operations using high amounts of silica sand – operating the pumps with it until a centrifugal pump impeller has been completely worn out, with the bearing and containment shell not showing the slightest indication of wear. In another test the same bearings have been operated using liquid nitrogen at vapor conditions for several hours, again without any sign of wear or degradation.

The bearings are available for the complete operating range of Klaus Union pumps – from -200 (-328 °F) to far above 400 °C (752 °F) and for all types of screw pumps, centrifugal pumps, side channel pumps and axial flow (propeller) pumps.



Single-volute twin screw pump with magnetic drive



Single stage centrifugal pump with magnetic drive

THE GAME CHANGER FOR JOURNAL BEARINGS

THE PRACTICAL APPLICATION

Putting these developments to practical use it enables Klaus Union to solve the critical problem of a customer. A thermal oil pump starts up "cold" at ambient temperature and thus high viscosity. When the application is to nominal temperature (280 °C (536 °F)) however the viscosity drops to below 0,4 cP. At the same time the pump required a fairly stable curve as of course the resistance in the pipe work is higher when the liquid is cold, than when it is hot. This, together with the requirement for a self-priming pump, means that the ideal solution was a positive displacement pump.

In the past this would have had to be a pump with timing gears and extremely expensive and maintenance extensive double acting mechanical seals – from pure safety considerations, for the customer a single acting mechanical seal was out of the question.

The ideal solution to the customer was the Klaus Union single volute twin screw pump with magnetic coupling combined with the new Klaus Union NoVisco® bearings.

Single-volute twin screw pump with magnetic drive

Equipped with a magnetic coupling and the new bearings the pump is ready to handle anything – from low to high viscosity, all while requiring no utilities to supply or support the bearings and while still being perfectly tight thanks to the Klaus Union magnetic coupling.

The non-metallic containment shell ensures further energy efficiency and robustness in all operating cases. The pump was proved on the test field both with oil to simulate high viscosity cases as well with water to simulate low viscosity cases. It was tested at the full design differential pressure of the pump (16 bar (232 psi)) with water as the pumped liquid a feat that would have overloaded traditional journal bearings by factor of 4.

This allows the customer to operate the pump at a before unthinkable range of products and temperatures, eliminating one more potential wear part – and giving the customer the most important benefit: The piece of mind of having a trouble free and maintenance free pump.

ADVANTAGES AT A GLANCE

- Highly robust against abrasive and erosive wear
- No hydrodynamic lubrication film required
- No minimum viscosity of the pumped liquid
- Retrofittable into existing Klaus Union pumps

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