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SEALING TECHNOLOGY



NEWSLETTER 07-23



Trapez-Pack®63 Papermaster HS

Hybrid braid in W-Profile made of heat conductive ePTFE Yarn with Meta-Aramid fiber reinforcement and Silicone Run In Lubricant

- Clean packing with ultimate heat conductivity for abrasive products in pumps and other rotating equipment.
- Recommended shaft surface hardness: HRC 35
- Porosity filling coating increases density and protects the packing in crystallizing mediums.
- W-Profile Reinforcement reduces shaft wear

QUESTIONS & ANSWERS ABOUT GLAND PACKING

QUESTION: HOW MUCH WATER SHOULD FLOW THROUGH A LANTERN RING POSITIONED IN THE STUFFING BOX BOTTOM ON THE PRODUCT SIDE?

This depends on whether there is a drain hole in the stuffing box and, if so, whether it is open or closed. It also depends on the pressure level between the product pressure at the inlet to the stuffing box and the supply pressure of the sealing/flushing medium. If there is no drain outlet or if the outlet is closed, only the pressure level counts. If the product pressure is higher than the pressure of the sealing/flushing medium, no water will flow through the lantern ring. On the contrary, product could even enter the supply line via the lantern ring and clog it. A non-return valve near the stuffing box is advisable here. If the supply line pressure is higher than the product pressure and there is no drain outlet or the outlet is closed, there will be a positive flow towards the product, and this is referred to as barrier pressure. How much sealing water flows towards the product, and thus dilutes and cools the product, depends on the effective pressure difference. With a 50 mm shaft and a pressure difference >1.5 bar and a gap between shaft and stuffing box throat of 0.5 mm, the sealing flow may be 7 l/min. If there is a drain next to the lantern ring and it is open the flow rate of the flushing water again depends on the pressure difference but also on the cross-section of the drain hole and the gap at the bottom of the stuffing box. If the cross-sectional area of the drain hole is smaller than the gap ring area at the bottom of the stuffing box and the inlet pressure is higher than the product pressure, a flow towards the product can occur again, i.e. the stuffing box is blocked against solids. If the inlet pressure is lower, the lantern ring will be flushed, and solids will be discharged through the drain. Depending on the bore cross-section, this may be 11 l/min or more.

QUESTION: WHAT INFLUENCE DOES THE CORRECT INSTALLATION OF A PUMP PACKING HAVE ON SERVICE LIFE?

In fact, at least as much as the correct selection and quality of the packing. Even the best packing will not provide a good service life if it is poorly installed, and the start-up process is inadequate. In addition to the correct cut length with a shrinkage adder, it is important to compact at least the 2 rings individually on the product side. This ensures that the product pressure does not get under the product-side ring and lift it off the stuffing box base. As the product pressure seeks the easiest way to the atmosphere, this would inevitably lead to leakage through the outer diameter of the packing set. The resulting external leakage is usually greater than the shaft leakage. If the stuffing box gland is simply readjusted here without taking a closer look, this can quickly lead to overheating as a result of heavily throttled shaft leakage. The external leakage will continue to be predominantly unregulated. Pre-compressed ring sets help to avoid errors during installation.

QUESTION: HOW PRECISELY DO CUTTING BOARD AND LENGTH CALCULATORS WORK WHEN CUTTING A PUMP PACKING TO SIZE?

Both are basically only used as a guide for cutting. The exact adjustment is made as soon as the first ring segment has been installed in the stuffing box. Depending on the bending behavior of a packing type and its dimension, it may be necessary to adjust the determined cut length. The aim is to compensate for any shrinkage with a slight length adder and to ensure a snug fit on the stuffing box bore, i.e. on the outer diameter of the packing ring. The advantage of the cutting gauge is that as soon as it is correctly adjusted after the first ring has been fitted, it repeatedly delivers correct ring sections. Here too, pre-compressed ring sets help to avoid errors during installation.

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