Superior Sealing Technology Adds Efficiency to Refurbished Hydro Turbine

Hydropower Industry
Chesterton 442 and 14K Restrictor Bushing
Mechanical Seal and Polymer Seal Case Study

Challenge

Background
The original 89MW Francis hydro turbine was installed in 1987 at the end of a 23-mile water tunnel that delivers water across the Continental Divide.

In 2020, the unit was completely rehabilitated. The customer was not happy with how much leakage was occurring in the original packing box design.

Solution

Product
The **Chesterton® 442 Split Mechanical Seal** provided the right solution. **442 seals** are designed to seal without external leakage, reduce the need of fine filtration, and extend seal life and reliability.

Chesterton 14K Restrictor Bushings were used to reduce flush requirements and to help prevent suspended abrasive particles from entering the stuffing box area.

Results

Reduced Leakage
The installation of the adapter plate, **14K bushings**, and **442 seal** took only four hours.

Date Installed: August 2021

The customer tested the updated seal configuration in December 2021 and was happy with the comparatively extremely low leakage versus the original design. Due to low water supply, the unit did not begin running at full capacity until April 2022 and has been in operation since.

Original packing box was leaking.

The 442 Split Seal was adapted to fit the stuffing box.

Installed equipment is running effectively.

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