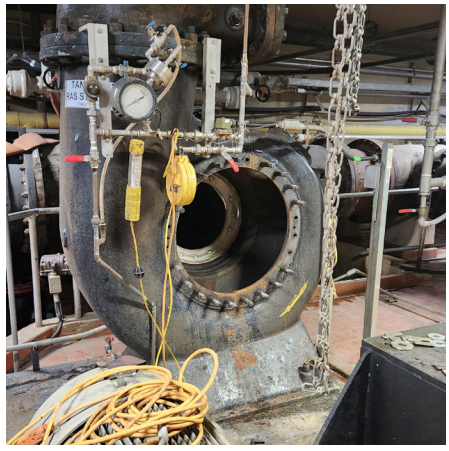
THORDON
THORDON BEARINGS INC.

Return Activated Sludge Horizontal Pump Wear Ring

Industry: Sewage & Wastewater
End User: Large Wastewater Treatment Facility, Ontario, Canada
Application: RAS (Return Activated Sludge) – Horizontal Pump Wear Ring
Thordon Grade: SXL
Date of Original Installation: Early 2023

About:

This wastewater treatment plant began operations over 100 years ago, and now services approximately 1.4 million residents. It is one of Canada's largest wastewater treatment plants, with a processing capacity of 800 million litres (211.3 million gallons) of wastewater, per day!



Challenge:

The steel wear rings originally installed in the horizontal pump at the wastewater treatment plant were facing issues with premature deterioration due to the abrasive and corrosive nature of the fluids being pumped. Although the steel wear rings did not prevent the pump from operating as they wear, the increase in clearance between the impeller and the ID of the wear ring caused a gradual loss of pumping efficiency. For a plant which utilizes dozens of these pumps that move huge volumes of liquid, the long-term efficiency loss meant increased electricity consumption and a corresponding increase in operating expenses.

Solution:

Thordon's local distributor, Millstream Engineering, was in regular contact with this customer and have done other upgrades to equipment using the Thordon materials with good success. When the customer asked if Millstream could help with proposing a long-lasting wear ring solution, they recommended Thordon's SXL material, primarily due to the excellent resistance to abrasive wear. As the medium being pumped in this application was not clean water, a tough and durable material like Thordon SXL was required. A softer rubber-type material would not have sufficient mechanical strength to be bolted in place into the housing as a direct fit replacement for the original wear ring, and a stiffer plastic material would not provide the resilience to survive this severe duty application.

Result:

In early 2023, Millstream designed and supplied a direct fit replacement wear ring machined from Thordon SXL. The customer reported improved pump efficiency from the tighter running clearance that was achieved, as well as greatly improved durability. The first wear rings have been in service for just over 1 year, and monitoring of performance on multiple pumps is on-going.

Based on the successful use of the Thordon SXL elastomer around the world in similar abrasive duty pump bearing and wear rings, it is reasonable to expect to see at least 5 years of service life from these upgraded wear rings. It is clear that improved pump efficiency (and the corresponding reduction in electricity consumption) will have a positive impact on the customer's operational costs.