

Pump Overhaul Helps Water Provider Meet Growing Demand in Sultanate of Oman

Challenge

A power and water provider in the Sultanate of Oman discovered one of its Flowserve LNN pumps was not operating at peak efficiency. The pump's declining performance increased operational costs and threatened the country's ability to deliver potable water to its citizens, farmers and companies.

Solution

Flowserve engineers diagnosed the problem and overhauled the pump. Repairs included removing corrosion, replacing worn parts, and treating internal components with a highly polished finish to increase efficiency. The enhancements increased pump capacity and efficiency and reduced operating costs by \$72 000.

Aging Pump Threatens Potable Water Delivery

The utility company that regulates water and electricity services in the Sultanate of Oman, relies on a variety of rotating equipment to distribute potable water for human consumption as well as agricultural and industrial needs.

After conducting an on-site performance test, the company discovered a Flowserve 300-LNN-750 pump, which had performed reliably for more than a decade, was slowing down, creating a chain reaction of challenges.

- Due to its loss of hydraulic efficiency, the pump required more energy to operate.
- Degraded performance reduced the capacity of potable water the pump could move through the system.
- The failing pump put increased pressure on the supply network to meet a larger demand for potable water as it grew to connect more remote villages and towns to the national water infrastructure.

The company knew that even a minor loss in the pump's efficiency could have a significant impact on the pumping station's ability to deliver water, so it decided to take action before the problem escalated.

Restored to Like-new Operating Condition

The pump was removed from service and sent to a local Flowserve facility for detailed inspection to identify the root cause of the performance degradation.

Flowserve operates one of the largest repair and maintenance organizations in the industry. Its highly qualified engineers and technicians and the company's local service centers throughout the world means they can get equipment up and running quickly, minimizing downtime.

It didn't take long for Flowserve engineers to identify the problem. They discovered minor corrosion of the casing material and a deteriorating volute surface, a result of pumping raw water for years.

Flowserve service technicians performed the following measures to restore the pump to near-original condition:

- Grit-blasted the inside of the pump casing to remove existing corrosion
- Treated the pump casing with an epoxy-based coating and applied two coats of a highly polished finish
- Replaced seal chamber inserts, including a suction guide vane, to improve suction flow to the impeller eye
- Replaced worn components to re-establish clearances between stationary and rotating parts and recover losses in volumetric efficiency



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Repairs Generate More Than \$72 000 in Savings

The utility company experienced several benefits by engaging Flowserve to repair its LNN pump, including:

↑ 48%
increase in pumping capacity

Before Flowserve overhauled the pump, it delivered a capacity of 1285 m³/hour. After reconditioning, the pump moved a capacity of 1899 m³/hour, an increase of almost 48%.

↑ 2%
increase in overall pump efficiency

Aside from restoring the pump's original capacity, the improved surface finish also increased overall pump efficiency by 1.8%.

↓ \$32K
reduction in annual energy costs

By increasing the LNN pump's efficiency, Flowserve has reduced its energy consumption by 14 kWh. This reduction saves the company more than \$32 000 per year in energy costs.

↓ \$40K
replacement cost savings

While a less experienced service provider might have suggested purchasing a new pump casing, Flowserve was able to repair the unit, saving the company approximately \$40 000 in replacement costs.

To learn more about our market-leading engineering services and repair capabilities, contact your local Flowserve representative.

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