



REDRAVEN™

INDUSTRY INSIGHTS

Improving Desalination Equipment Reliability While Reducing Costs

IoT Solutions for Seals

Keeping up with ever-increasing water needs

Demand for drinking water as well as water for agricultural and industrial uses will be significantly higher than the available supply in some regions by 2030¹. This means operators of desalination plants are challenged to ensure consistently reliable operation while also increasing output and reducing energy consumption.

Significant challenge: Avoiding downtime costs

Every day in desalination facilities around the world, pumps, valves, seals and energy recovery products help to bring fresh potable and industrial water to billions of people. Seawater reverse osmosis (SWRO) plant operators must minimize unplanned downtime to produce the clean water needed by individual households and municipalities as well as businesses of all sizes.

High-pressure membrane feed pumps feature optimized hydraulics and advanced material technologies to keep operating costs low and plants running continuously. Equipment needs maintenance and can and does sometimes fail, however; this leads to disruptions in the supply of clean water while also adding costs for repairs and lost production.

Ensuring that all the infrastructure operates continuously will require advanced technology that monitors pump, valve and seal conditions — without desalination operators analyzing all the data. You need solutions for condition monitoring and predictive analytics to help anticipate equipment failures, enabling your employees to take preventive maintenance actions and avoid unnecessary disruptions.



Source: World Economic Forum, "We're helping to close the gap between global water demand and supply," June 18, 2021, <https://www.weforum.org/impact/closing-the-water-gap> (accessed May 4, 2022).





Industry Insights

Early warning of impending equipment failure

You don't want to be surprised about process equipment availability or the reliability of stand-by pumps and seals — or lack thereof. Instead, you need early warning of seal-related changes that can lead to leakage of salty water that can corrode baseplates and make plant floors hazardous for workers. These can be avoided with reliable data about seal conditions in addition to an understanding of what the real-time data means.

While condition monitoring is widely utilized for pumps and valves, operators across industries which include desalination have not applied the technology to mechanical seals — even though conditions inside seal chambers and reservoirs can provide early indicators of overall system health. That makes condition monitoring of mechanical seals the best tool to help you improve reliability in centrifugal pumps for desalination processes.

Discover the best operating point for long system life

Desalination plant operators and technicians need reliable data about equipment conditions at valid measuring points. That's the only way you can be certain about the root causes of seal and/or equipment failure. By partnering with Flowserve, you benefit from our extensive data set and analysis of reverse osmosis (RO) processes gleaned from an ever-growing install base around the world.

Meeting water production targets and staying within budget are critical factors in RO plants. However, the lack of condition monitoring can cause operators to spend time and money on the maintenance of equipment that does not need it when those resources could be better directed toward equipment and processes that are near failure. Having the ability to discover conditions inside mechanical seals enables you to understand the best operating point for the longest system life.

Optimize your desalination operations

Condition monitoring of mechanical seals is one of the best ways to improve the reliability of pump systems. RedRaven internet of things (IoT) solutions enable plant operators and technicians to discover and understand conditions in order to:

- Monitor temperatures, pressures, levels and flows in the seal chamber and support system in near real time
- Analyze and predict seal performance, enabling operators to avoid unplanned downtime, proactively plan maintenance, and optimize processes
- Alert you when a mechanical seal deviates from normal operating conditions

RedRaven securely collects data from equipment sensors and transmits it via an encrypted network. It then begins analysis with technology designed specifically for seals in addition to pumps and valves in your desalination processes. As a result, you can better understand how to increase the efficiency, productivity and reliability of the equipment you use every day.

Benefit from a comprehensive look at seal conditions

RedRaven works with your existing mechanical seals for a comprehensive view of pump system health, often without the need to add new sensors. The IoT solution can be used with mechanical seals from Flowserve as well as equipment supplied by other manufacturers.

And, by partnering with Flowserve, you have the option to seek additional insights about seal conditions from our experienced RedRaven specialists. Trend reports provide deep understanding into equipment performance over time, while emails and alerts inform you when a seal experiences a problem so you can take immediate action to address it.

RedRaven from Flowserve: Your complete IoT solution

RedRaven from Flowserve is a comprehensive IoT solution for seals in addition to pumps and valves. You can expand your knowledge and options about how to avoid equipment failure or what to fix when it occurs. You can improve root cause analysis (RCA) because RedRaven monitors equipment conditions at previously unavailable points.

You'll also save time and money by avoiding unnecessary equipment maintenance while directing resources to troubled assets, equipment and processes that require attention.