

Danfoss APP pump has produced fresh water for a decade without any maintenance



Watec was one of North America's early adapters of axial piston pump technology. They specified their first APP pump in 2005 for a private water plant on Lopez Island in the San Juan archipelago in Washington state and installed it in 2006. More than a decade later, the pump is still running without any maintenance whatsoever. The same plant now supplies a small community water system serving several adjacent properties.

The challenge: Design a low-maintenance plant for remote island location

When their client stressed the importance of low maintenance for a SWRO plant for a vacation property in a remote San Juan Island location, Watec's lead engineer, Andrew Evers, began looking for an alternative to the traditional reciprocating pumps he had relied on until then. "The vacation property is far from the beaten track on an island that is accessible from the mainland only by ferry," says Evers. "And since the owners intended to use the place intermittently, simple maintenance was essential". "Back in 2005 there weren't many high-pressure pumps made of Duplex or Super Duplex," recalls Evers. "The best that most suppliers were doing was marine-grade 316 stainless steel. Our research for the project led us to the Danfoss APP pumps, which were then relatively new to the market. Once we learned more about axial piston technology and its low energy use, we believed the new Danfoss pump would be an excellent fit for the project."

The solution: The first APP 7.2 sold in the northwest United States

Watec purchased its first Danfoss pump, an APP 7.2, in 2005. It completed the construction of the 12 gallon-per-minute plant in 2006. "It was our first APP plant," says Evers, "and it was a pioneering project back then – for us, the client and for the region. We designed and built everything on our own, and are happy to say the original design and components have stood the test of time quite well."



The results: Millions of gallons produced per year – for 11 years – without maintenance

Since the installation was completed in 2006 it has evolved from a single-property plant into a small community water system that supplies surrounding properties as well. "The plant has produced several million gallons a year for many years now, and we have not touched the pump once for maintenance," says Evers. "It looks and acts brand new. Unlike other pumps that have run that many hours, it still performs without any leakage or pressure drops." Evers credits the APP's low pulsation for reducing the maintenance of the rest of the plant. "The smoothness of this pump at different speeds is amazing," he says. "There is no hammering at all. Increasing and decreasing pressure gradually is a lot easier on the rest of the plant, too, and we expect to get 10-15 years out of our membranes. Low maintenance costs alongside very low energy costs have meant extremely competitive total costs of ownership for the plant."



About Watec

Based in San Juan County, Washington state near the Canadian border, Watec has specialized in small-scale reverse osmosis plants serving between 1-125 homes since 1997. Watec has designed, built, maintained and operated a wide variety of SWRO plants in the Northwest as well as in Hawaii. For more information, see <http://www.watecwater.com/>