


Case story | TSG

# TSG retrofits SWRO train with APP pump to boost efficiency and reliability

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TSG generates most of its revenues from the operation and maintenance of SWRO and other water treatment plants around the Caribbean. That is why the Florida-based company has a vested interest in protecting its profit margins with relentless focus on component reliability and efficiency – and has made Danfoss APP pumps its go-to solution for high-pressure pumps.

So it was no surprise that TSG selected the APP 53 for a Bahamian client's fifth SWRO train as part of a planned capacity boost. What engineers hadn't expected, however, was that the new pump would be called into duty for an emergency retrofit.

## **The challenge: Keep the water flowing at a high-end resort even when a catastrophic pump failure reduces plant capacity by 25%**

TSG's client, a Bahamas resort with a growing number of luxury villas strung around a stunning golf course, was running low on water and there was little or no redundancy. So the client had already ordered a fifth 984 CMD (260,000 GPD) train from TSG to bolster its 4,164 CMD (1.1 MGD) facility's four existing trains.

"We specified a Danfoss APP for the new train," explains Chip Harris, TSG's vice president and general manager, "because we have an extremely high degree of confidence in them, and now consider them to be our standard, go-to high-pressure pump

for SWRO applications because of their energy efficiency, simple maintenance and reliability."

But shortly after the new pump had been delivered to the island, one of the massive old plunger pumps began showing signs of distress. Within days, bad went to worse. When pump bearings seized up and resulted in a cracked case, the catastrophic failure cost the plant 25% of its capacity in an instant.

## **The solution: Retrofit the new APP 53 into the existing train**

The client, who is responsible for capital investments and improvements, quickly agreed to the unexpected retrofit.

Resort managers had already understood the value of the APP for its new plant. The manufacturer of the old plunger pump had lead times of 16 weeks for anything major. Furthermore, TSG had designed the plant's four existing trains in 2008, so it knew its construction perfectly and still had all original drawings. It had also planned the new, fifth train around the Danfoss APP 53, so the simpler fittings required for this were similarly well understood.

"Sometimes you just get lucky," smiles Harris, "even in the middle of what could have been a real mess for the client. Our engineers knew the old as well as the new train intimately. We have our own full-service manufacturing facility so we could move some

jobs around and quickly do all the stainless steel piping ourselves. And we just happened to have a brand new APP 53 sitting on the island, waiting for the construction guys to finish the building for the fifth train.”

**The results: The old train was up and running in less than 48 hours. Another APP 53 is on order. And three more are being considered for upcoming retrofits.**

In total, the emergency retrofit took less than two days, and the client did not experience any significant difficulties. Harris is convinced that the old plunger pump’s failure was a blessing in disguise.

“By virtue of their design and robust construction, the Danfoss APP is the best pump we could possibly use for our operations and those of others,” he says.

“As the APPs get bigger and bigger, they are increasingly relevant for retrofits. Our client will probably retrofit the other three trains already next year. What used to be the most efficient pumps of their capacity back in 2008 can now be favorably replaced with APP 53.”



APP 53-86

*About TSG: Based in Gainesville, Florida, TSG is a water and wastewater treatment plant specialist with extensive experience in meeting the challenges of coastal and island environments. Operating in seven countries throughout the Caribbean, TSG builds turnkey plants, upgrades existing plants, and operates and maintains a wide variety of plants through its full-responsibility programs. Learn more at <http://www.tsgwater.com/>*

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