The new dedicated controls have "improved the efficiency in terms of the performance of the pump and the energy consumption. And it means the pumps are actually living longer, which is reducing the cost for maintenance, as well as the downtime of the assets," says Walid Abdelrahman.

Ras Al Khaimah saves 20% energy and 12% OPEX in wastewater pumping system

Ras Al Khaimah – known as RAK – is the northernmost of the seven emirates in United Arab Emirates (UAE). It has a population of about 350,000 people. It is known for its biodiversity with beaches and mountains.

RAKWA is the RAK wastewater agency responsible for designing, building, operating and maintaining all the public wastewater systems.

Walid Abdelrahman, RAKWA's O&M Department Manager.

The situation

RAKWA was challenged on several fronts and wanted to remedy them. Some of these were:

- Most maintenance activities were reaction-based, due to a lack of condition monitoring and data analysis-based system
- High repair costs
- Late response to system failures, causing sewage overflows and customer dissatisfaction
- High energy consumption, due to the pumps' fixed speed operating system
- High transportation and manpower cost of the physical monitoring system
- Difficulty in managing the network and pumping system in abnormal conditions e.g. foggy weather.

"Given how young an organisation we are, we've obviously had our teething problems," says Abdul Qadir Malik, Head of Capital Project Delivery, RAKWA. "One of them was the poor execution of the way the systems were put in. It has resulted in our systems being misaligned, which has led to outside water infiltrating into our systems. This leads to higher electricity costs, higher operational costs, and this leads to a more strained tariff." Because the system was operated manually, all 13 pumping and lifting stations had to be visited at least once every four hours, says Walid Abdelrahman, RAKWA's O&M Department Manager. Something had to change.

GRUNDFOS

Possibility in every drop

The remote management system from Grundfos allowed RAKWA to monitor its remote stations through tablets, smartphones and desktops, limiting the need to do physical visits.

The solution

After analysing the problems faced by the customer, it was clearly understood that the reasons for most of the issues were outdated pump controls and lack of real-time monitoring. Based on the study, Grundfos technical team has proposed dedicated controls and a digital solution for remote monitoring, alert handling and control.

"When we started working with Grundfos to find some better solutions, there was a great remote monitoring technology presented to us," says RAKWA's Executive Director Mark Bruno. The remote monitoring and control system is all cloud-based. It also sends email/text notifications to operators' phones when there is an alarm in the system.

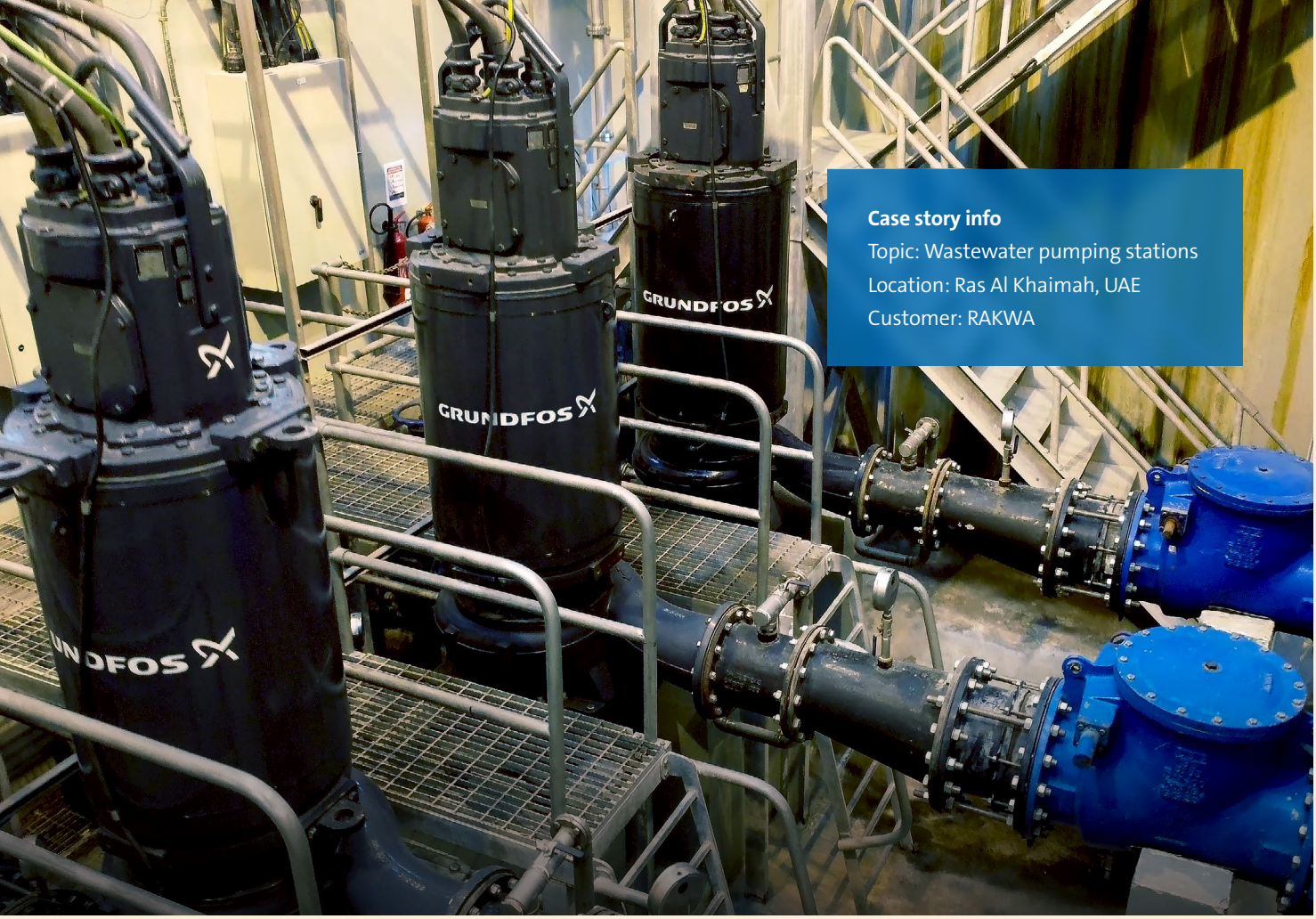
RAKWA upgraded three main pump stations in the first phase with motor control centres including Grundfos CUE variable speed drives with dedicated controls and remote management technology from Grundfos.

"With the new remote management system we can monitor all our remote stations through mobile phones or tablets or even our desktops," says Walid Abdelrahman. "This limited the need for doing physical visits to the stations, and it has significantly reduced fuel consumption that used to be burned to do these visits."

The system also enabled a wide range of data analysis, which helped the RAKWA maintenance team to shift from reactive maintenance to predictive maintenance.

"The digital solution also included installation of the VFD controls, which allowed us to control the speed of the pumps to match with the pump flow," Walid Abdelrahman says. "In total it's improved the efficiency in terms of the performance of the pump and the energy consumption. And it means the pumps are actually living longer, which is reducing the cost for maintenance, as well as the downtime of the assets."

With dedicated controls and a remote management system from Grundfos, RAKWA saved 20% energy and 12% in total operational costs with a pump system upgrade on its wastewater system.



Case story info
Topic: Wastewater pumping stations
Location: Ras Al Khaimah, UAE
Customer: RAKWA

Grundfos S pumps at one of RAKWA's pumping stations in Ras Al Khaimah, UAE.

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The outcome
RAKWA's Mark Bruno says that "With Grundfos and the solutions that we've worked through with them, we've made savings of over 20% of the energy investment that we need to run the system, and 12% reduction in total operational costs."

Deputy General Manager of the RAK Public Service Department Easa Al Shamsi says, "This will lead us to achieve the vision to build the green economy for the UAE under the slogan of 'Green economy for sustainable development."

Mark Bruno says, "There is a grand vision here in Ras Al Khaimah to keep developing this emirate, attract the business, attract the tourism and keep the population happy. Working with partners such as Grundfos to help find the best solutions is a critical part of everything that we do."

Grundfos supplied
For RAKWA's wastewater pumping station upgrades, Grundfos supplied S pumps, Dedicated Controls, CUE variable speed drives, a remote management system and Hydro MPC-E boosting systems.

"With Grundfos, we've made savings of over 20% of the energy investment that we need to run the system, and a 12% reduction in total operational costs"

Mark Bruno, Executive Director, RAKWA (RAK wastewater agency)

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