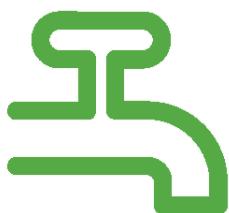


Managing Scarce Water

Integrated use of new technologies helps Abu Dhabi Water and Electricity Authority (ADWEA) manage water resources much more efficient.



SOLUTION:

Aquis

SYSTEM INTEGRATOR:

Niras

DATA (Al Ain):

- Population: ~ 570,000
- Daily supply: ~ > 750,000 m³/day
- Energy consumed: 4 kWh/m³
- Direct savings: 1,600,000 m³/year
6.5 GWh/year
- Total area of network: 825 km²
- Consumer points in model: 41,760
- Main pipes: 2,287 km
- Service pipes: 880 km
- Maximum pipe diameter: 800 mm
- Distributed water annually:
160,000,000 m³
- Max daily capacity: 670,000 m³
- Non Revenue Water: ~ 30 %



If anywhere, water is definitely scarce in Abu Dhabi. Precious drinking water is made from seawater, and the demand is rapidly growing.

However, until recently, a third of the water was lost in distribution.

The Challenge

The purpose of the Abu Dhabi project is to reduce water leakages to below 10 percent and to implement an online system for improved management of the activities.

Danish water management has a good reputation. Most of the world's water companies produce much more water than is actually paid for. People lift their eyebrows when they hear that the best performing utilities in Denmark have water leakages measuring only 2-6 percent", says Project Director Klavs Høgh.



"To our satisfaction, we were able to convince our customer by discovering a major leak only a couple of days after the first loggers were installed. 200,000 cubic meters of water a year was leaking at a location with loosely compacted sand, and nobody had noticed it."

Klavs Høgh, Project Director, Niras

The Solution

"The water distribution system was analysed and a real-time computer model of the daily flow of water in the entire network was installed. Such a real-time hydraulic model is a powerful tool for leak detection, network maintenance, operations and strategic rehabilitation planning", explains Klavs Høgh.

The model has additionally been integrated with an automated meter reading system, an automated remote noise logger based leak detection system and online water quality instruments.



Green growth in the desert, close to the pipes and the wells, is evidence that water has been leaking for years.

Thus; the integrated system consisting of Aquis, noice loggers and remote and automated meter readers, is capable of calculating water balances, optimizing chlorination, identify new bursts and prioritize the work on reducing the background leakage.

"It is important to evaluate and consolidate the data", says Klavs Høgh. "Thorough work at the desktop can reduce hard work in the field". No need to search for leaks and dig in vain if the problem actually is unregistered service connections, unauthorised consumption, or defect meters.

"A key to the system succes is that Aquis interfaces seamlessly towards other systems", says Klavs Høgh. "This has simplified the implementation process".

The Result

The first results show that, provided that the procedures are followed, it is possible to reduce the level of lost water to 10 % within 12 months. Tools for further reductions have been identified for the future.

The model is also useful for saving energy by optimising the pump operations and for calculating which parts of the system are most in need of maintenance, repair, and replacement.