



Seawater Desalination Plant Al Hidd, Bahrain

SIMATIC PCS 7 in the world's largest MED seawater desalination plant provides a secure drinking water supply in Bahrain

The requirements

The Kingdom of Bahrain, an archipelago in the Persian Gulf, is getting ready to jump with great leaps into the 21st century. Prerequisite for the further and rapid development is the safe and reliable drinking water supply for the 750,000 inhabitants.

To ensure the drinking water supply, Al Hidd Power Company (HPC) decided to expand the existing seawater desalination plant Al Hidd up to 60 MIGD* (273,000 m³/d) to 90 MIGD* (408,000m³/d).

Within the largest privatisation project realized in Bahrain, HPC also took over the operational management of the plant for 20 years. Since the commissioning of the new plant was to be carried out two years after the acquisition of the old plant, the capacity expansion had to be realized in the shortest time possible.

The solution

The contract for the plant expansion was given to SIDEM (Sté Internationale de Dessalement), an affiliate of Veolia Water Solutions & Technologies. SIDEM opted for multi effect distillation (MED), where drinking water is gained through the evaporation and the subsequent condensation of seawater. The complex process management of the MED process requires an efficient and reliable process control system.

Therefore, SIDEM chose SIMATIC PCS 7 from Siemens as automation system after an intensive evaluation.

SIDEM contracted the engineering to EKIUM (formerly Cira-Concept), a highly experienced SIMATIC PCS 7 system integrator from the Siemens Solution Partner Program.

Furthermore Siemens delivered 33 H-Compact motors with a capacity between 500-1250 kW. These powerful and economical motors start the so-called intake pumps, which transports the seawater into the plant.



^{*)} MIGD =million imperial gallons per day, 1 MIGD ~ 4,550 m³/d

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The operator

Hidd Power Company (HPC), a consortium of International Power, Suez Electrabel and Sumitomo, acquired the existing plant Al Hidd from the Ministry of Electricity and Power in January 2006.

The system integrator

EKIUM (formerly Cira-Concept): Siemens Solution Partner; specializes in control technology, instrumentation and power supply (www.ekium.eu)



The system in brief

Al Hidd, Phase III is in many regards a project of superlatives. Phase III is not only the largest plant ever working according to the MED process. It is also the largest privatization project in Bahrain.

- Extension from 30 MIGD to 90 MIGD (408,000 m³/d)
- Multi Effect Distillation (MED) with ten evaporator units
- Operating contract for 20 years

Products installed

- Process Control System SIMATIC PCS 7
- 9 redundant AS417-H controllers
- Redundant PROFIBUS with FO cabling
- 11 H-Compact high voltage motors (300 kW)
- 11 H-Compact high voltage motors (340 kW)
- 11 H-Compact Plus low voltage motors (642 kW)

Advantages at a glance

- A maximum supply security for ¾ of the inhabitants of Bahrain
- Extremely short project duration of less than 18 months from kick-off to completion
- High efficiency through centralized configuration of all actuators and sensors as well as facility-wide asset management
- Easy connection of existing systems through an open system architecture



The advantages

Since the on-schedule completion in 2008, Al Hidd covers approx. 75% of the drinking water demand of Bahrain. A significant deciding criterion for SIMATIC PCS 7 was the complete hard- and software redundancy that guarantees a maximum supply security.

Furthermore, the openness of SIMATIC PCS 7 allowed the uncomplicated connection of external third-party systems, for instance via PROFIBUS to the boiler management system (BMS) or via Secure OPC-DA to the accounting system of the plant which records the consumption data and forwards it automatically to the accounting department.

An important fact was the Plant Asset Management, integrated in SIMATIC PCS 7. It provides an automatic and consistent access to all information for the personnel. With this a high efficient plant availability is secured.

Products and systems from Siemens have not only proven themselves at Al Hidd, other desalination plants equipped with Siemens technology are, for example, Valdelentisco and Melilla in Spain as well as Perth in Australia.

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