PLC/HMI Control System for Al-Shumaisi Wastewater Treatment Plant, Saudi Arabia

Utilities

Wastewater Treatment

STP Plant Control

Contact:

Prudent Solutions WLL
P. O. Box 11091,
Manama,
BAHRAIN
Phone: +973 1745 6180
Fax: +973 1745 6190
www.prudentsolutions.net

Founding year:
1999

Solution Partner: Prudent Solutions WLL

Customer: ACWA Emirates LLC

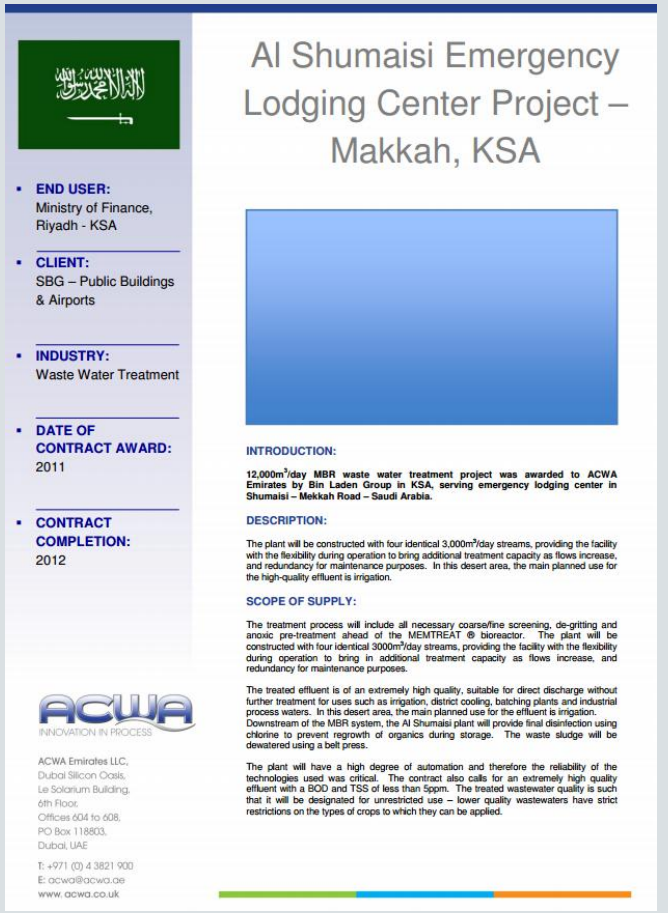
Segment: Waste Water Treatment

Requirements of the customer:

- M/s ACWA Emirates, is currently executing the contract to provide a state-of-the-art Membrane bioreactor wastewater treatment plant with 12,000m3/day capacity at Al-Shumaisi, in Saudi Arabia's western region. The scheme has a high degree of automation and therefore a highly reliable control system with a proven record is required. In this connection, M/s Prudent Solutions has been awarded the contract to supply & commission the new PLC based Control System. for the integrated monitoring and complete control of this plant including sequencing, interlocking, data acquisition, reporting & alarming.

Short description of the solution

S7-300 based Control System with local HMI & WinCC SCADA Station for monitoring the overall Plant operations.



Al Shumaisi Emergency Lodging Center Project – Makkah, KSA

- **END USER:** Ministry of Finance, Riyadh - KSA
- **CLIENT:** SBG – Public Buildings & Airports
- **INDUSTRY:** Waste Water Treatment
- **DATE OF CONTRACT AWARD:** 2011
- **CONTRACT COMPLETION:** 2012

INTRODUCTION:

12,000m³/day MBR waste water treatment project was awarded to ACWA Emirates by Bin Laden Group in KSA, serving emergency lodging center in Shumaisi – Mekkah Road – Saudi Arabia.

DESCRIPTION:

The plant will be constructed with four identical 3,000m³/day streams, providing the facility with the flexibility during operation to bring additional treatment capacity as flows increase, and redundancy for maintenance purposes. In this desert area, the main planned use for the high-quality effluent is irrigation.

SCOPE OF SUPPLY:

The treatment process will include all necessary coarse/fine screening, de-gritting and anoxic pre-treatment ahead of the MEMTREAT ® bioreactor. The plant will be constructed with four identical 3000m³/day streams, providing the facility with the flexibility during operation to bring in additional treatment capacity as flows increase, and redundancy for maintenance purposes.

The treated effluent is of an extremely high quality, suitable for direct discharge without further treatment for uses such as irrigation, district cooling, batching plants and industrial process waters. In this desert area, the main planned use for the effluent is irrigation. Downstream of the MBR system, the Al Shumaisi plant will provide final disinfection using chlorine to prevent regrowth of organics during storage. The waste sludge will be dewatered using a belt press.

The plant will have a high degree of automation and therefore the reliability of the technologies used was critical. The contract also calls for an extremely high quality effluent with a BOD and TSS of less than 5ppm. The treated wastewater quality is such that it will be designated for unrestricted use – lower quality wastewaters have strict restrictions on the types of crops to which they can be applied.

ACWA
INNOVATION IN PROCESS

ACWA Emirates LLC,
Dubai Silicon Oasis,
Le Solarium Building,
6th Floor,
Offices 604 to 608,
PO Box 118803,
Dubai, UAE

T: +971 (0) 4 3821 900
E: acwa@acwa.ae
www.acwa.co.uk

Solution Partner
SIEMENS
Automation

PLC/HMI Control System for Al-Shumaisi Wastewater Treatment Plant, Saudi Arabia

PRUDENT SOLUTIONS W.L.L

Contact:

Prudent Solutions WLL
P. O. Box 11091,
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Solution Partner
Automation
SIEMENS

Implementation by the Solution Partner:

- S7-315 Processor with S7-300 IO's on IM-360/361
- Interfacing with Building Management System on BACNET Protocol
- WinCC Standalone

Benefits for the customer:

- High reliable & flexible architecture
- Easily expandable
- Ease of Operations
- Alarming, Security, Data Logging & Archiving
- Automatic Reporting Facility