

# Upgrades at Al-Shamal PTP Site

## Client

Public Works Authority (ASHGHAL)

## Scope of Work

Construction supervision

## Location

Qatar

## Types of Activities

Civil works  
Electrical  
Instrumentation  
Mechanical

The existing Al-Shamal Package Treatment Plant (PTP) has two Sequencing Batch Reactor (SBR) streams; each designed for 75 m<sup>3</sup>/day (out of ECG scope). There is no preliminary treatment in the existing PTP, the process is based only on a biological treatment followed by a secondary treatment.

The existing treatment process used in the PTP is as follows:

- The inlet flows gravitate directly to the inlet pumping station; which has two hopper impeller submersible pumps arranged in duty/standby configuration.
- The raw sewage is dumped directly into an inlet chamber via a crude array of removable coarse screen panels fitted to the opening located on roof slab. The screenings/debris retained by coarse screen panels are removed manually and transported off site.
- Flows are then pumped into a circular distribution chamber (fabricated mild steel); the flows are directed

to each SBR stream via two V-notch weirs. The SBR tanks are elevated precast concrete tanks of 6 m diameter equipped with process units based on 3 floating arms (at 1200 mm) and surface aerator.

- There is no tertiary treatment on site; the secondary Treated Sewage Effluent (TSE) is not disinfected. Hence, green algae growth is visible in the settlement lagoon. The two irrigation booster pumps (on duty/standby configuration) are located in a small building adjacent to the settlement lagoon, draw TSE from the lagoon and feed directly to a sprinkler system located within the compound perimeter.
- Settled sludge from SBR basins is drawn-off from the bottom of each tank and distributed to adjacent five drying beds via an arrangement of pipework and discharge valves. Overflows from SBR tanks are also directed to the drying beds on either side (No. 1 and No. 5) and the supernatant is re-circulated back to the





- sump by gravity.
- The PTP is fully automated and monitored by Programmable Logic Controller (PLC). Process Thermo-wells (TWLs) are controlled and monitored via ultrasonic/float sensors and linked to a local desktop Supervisory Control and Data Acquisition (SCADA) station via the PLC. The plant is run by electric main supply beside a standby generator located on site.

- Provision of three skid mounted package treatment plants; each 200 m<sup>3</sup> / day.
- Sludge Holding Tank (-1week storage).
- Gravity pipe to overflow the lagoon.
- Covered Treated Sewage Effluent (TSE) storage tanks to the whole PTP.
- Provision of TSE Pumps to discharge the TSE in 24 hours in the vicinity of the treatment plant.

ECG scope of work involves the upgrade of Al-Shamal Package Sewage Treatment Plant (PTP) in Qatar, with specified extension capacity to treat sewage flows of 600 m<sup>3</sup> /day. The mechanism will be carried out in the form of a single turnkey package.

The new extension of Al-Shamal plant is completely an independent process using Moving Bed Biofilm Reactor (MBBR); a treatment technology applied for the first time in Qatar. The new extension of the PTP includes the following:

- Replacement of sewage reception facility with sixteen tankers, then the sewage will be transferred through a gravity main from the tanker reception to the lift station.
- A lift station to transfer the wastewater to the PTP and associated works with pipes.