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Geiger MultiDisc® Travelling Band Screens for Barka SWRO-Greenfield Desalination Plant, Oman

PROJECT-REPORT

As the largest seawater desalination plant in the Sultanate of Oman, the Barka Desalination Plant – Phase 4 has installed their Innovative Geiger® Cable-Operated Bar Screens and Geiger MultiDisc® Travelling Water Screens with a Spray Water System and the Geiger® Cathodic Protection System with Impressed Current.

Challenge

Supply of screens and associated cathodic protection system as part of the construction of the BARKA Independent Water Plant (IWP). The whole equipment had to meet the highest requirements for corrosion-resistant design and material quality.



Solution

For the first stage in the mechanical screening of seawater (coarse screening), the efficient and robust Geiger® Cable-Operated Bar Screen was implemented. For the second (fine screening/filtration) the innovative, compact and low-maintenance Geiger MultiDisc® in order to protect pumps and downstream processes has been installed.

All raw water cleaning machine parts in contact with the seawater were either made of DUPLEX stainless steel and resistant polyamide PA6 in order to achieve the highest possible corrosion resistance. Also screws, nuts and washers of the immersed parts were made of DUPLEX stainless steel. In addition, the whole equipment is protected by a Geiger® Cathodic Corrosion Protection System with impressed current.

Solution

The Geiger MultiDisc® Travelling Water Screens have also been redesigned at the plant among other things with panels made of glass fibre reinforced plastic. A significant advantage of the Geiger MultiDisc® compact solution has been the shortening of 3 intake channels (civil structure) by over 8 metres compared to a conventional band screening design.

Technical Data

- Number of Channels: 3 channels
- Channel width: 2.5 m
- Channel depth: 12.59 m
- Flow Rate per channel: 13,678 m³/h
- Water Source: Sea Water
- 3 Geiger® Straight Bar Screens with rake cleaning device and Duplex screws
- 3 through-flow, zero carry-over Geiger MultiDisc® 500 Travelling Water Screens with Duplex screws and a spray water system (tubes made of Super Duplex)
- Control cabinet for fully automatic operation and a Geiger® Impressed Current Cathodic Corrosion Protection System (ICCCP)

Key Features

Delivery year: 2017

Geiger MultiDisc® Screens in compact design

- 8 m shorter intake channels with a straight through-flow design and no backwalls (civil structure and footprint savings)
- Fast and simple plug-in installation
- Low operating costs: Only one maintenance-free side bar chain
- Easy maintenance; mesh panels can be changed at floor level (no need for channel dewatering)
- Lower head loss: water only passes through the screen once
- Intensive and efficient cleaning of the mesh panels
- Zero carryover of debris to the clean water side

Geiger® Cable-Operated Bar Screens with automated cleaning

- Safe collection and removal of bulky flotsam
- High load capacity of the cleaner carriage

Cathodic Protection System with Impressed Current

- Suppression of the electrochemical corrosion as a result of the in-feed of protective current (See picture below)



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