

Engineering design of Qingdao seawater desalination plant

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ABSTRACT

With a production capacity of 100,000 m³/d, Qingdao seawater desalination plant (SWDP) will be located in the eastern part of China (Shandong Province) and it is being developed under a 25-year DBOO contract in order to supply drinking water to this city. The Qingdao SWDP is situated near to a seawater lagoon shared with other already existing factory and the raw water is withdrawn to it from the shallow waters of the bay by means of a submerged pipe when the tide is high. Therefore, the raw water has a high suspended solids values and a high level of pollutants. The desalination technology selected has been reverse osmosis (RO) with a previous and specific pretreatment which has been designed to get optimal seawater previously to RO membranes. This pre-treatment consists on: self-cleaning travelling screen, dissolved air flotation (DAF), 100 mm filtration, ultrafiltration (UF). Nowadays, to determine the feasibility and efficiency of the process, it is performing some experimental tests by means of different pilot studies. Therefore, this paper shows the engineering design of a high efficiency SWDP that will significantly increase the water resources of the region.

Keywords: Desalination; Reverse osmosis; Seawater; Design; Engineering

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