



Reverse osmosis seawater desalination: Qatar experience and vision

Nasser Alnuaimi, Syed Javaid Zaidi

Center for Advanced Materials, Qatar University, email: anasser@qu.edu.qa

Keywords: Reverse osmosis; Thermal desalination; Seawater desalination; Water problems; Qatar National Vision 2030; New desalination plants

Water desalination and clean water has been identified as one of the grand challenges in Qatar National Vision 2030. As Qatar economy is based on seawater desalination to overcome the water shortages, reduce the carbon footprint, preparation for FIFA 2022 World cup while achieving the goal of vision 2030 Qatar is shifting from the energy-intensive conventional thermal desalination process to a much cleaner membrane based reverse osmosis (RO) process for seawater desalination. Two major RO desalination projects are underway in Qatar. The Ras Abu Fontas project built at a cost of QR1.75 billion will have a capacity to provide 36 MIGD (164,000 m³/d) of desalinated water daily to meet the needs of about 1 million people in the country. Umm Al Houl will produce 284,000 m³/d and will reach 614,000 m³

per day after the start-up of the new facility. This is the first time that reverse osmosis technology has been implemented on a large-scale production plant in Qatar. Previous implementation of RO in Qatar has been limited and on small scale, such as the trial in Dukhan, where 750 m³/d of high salinity water was treated for boiler feed water. This presentation focusses on the RO desalination plants implementation in Qatar and its challenges such as turbidity issues, membrane fouling and pretreatment. Qatari waters are very complex with high salinity in the GCC region and high level of colloids and organic matter. Qatar University is also in the process of establishing a Water Center/Unit to support the water desalination industry in Qatar and provide futuristic benefits.