

The Most Promising Desalination Technology Invented and Developed by Surrey Engineers

Professor Adel Sharif and his Team at the University of Surrey's Centre for Osmosis Research and Applications (CORA) at the Faculty of Engineering and Physical Sciences and in collaboration with Modern Water plc, have invented and developed the most promising desalination technology worldwide. In an independent study by the Global Water Intelligence and reported at the Water Desalination Report (Volume 44, November 2010), the Manipulated/Forward Osmosis (MO) desalination technology scored 8.9 which is the highest of all new technologies in the sector, as shown in Table 1. where the scores for all new technologies are given.



The MO process which was invented by Prof. Sharif and Mr Al-Mayahi at the University of Surrey in 2003 has been developed from concept to large scale application and brought to the market in collaboration with Modern Water plc. Currently Modern Water has three plants using the MO desalination technology; one in Gibraltar and two in Oman. The MO technology which combines Forward Osmosis with Reverse Osmosis has recently completed more than a year of operation in a commercial plant in Al-Khuluf, south of Muscat in Oman, with performance exceedingly expectations of significant energy saving, high water quality as well as minimal chemical usage and, hence lower environmental impacts.

The MO plant in Oman with a capacity of 100 m³/day operates in the harshest conditions for a seawater membrane based desalination process in terms of the water intake quality and salinity level; yet it is producing the highest quality desalinated water with salinity level <120 (mg/l TDS) coupled with more than 30% energy saving and minimal chemical usage as well as membrane cleaning.

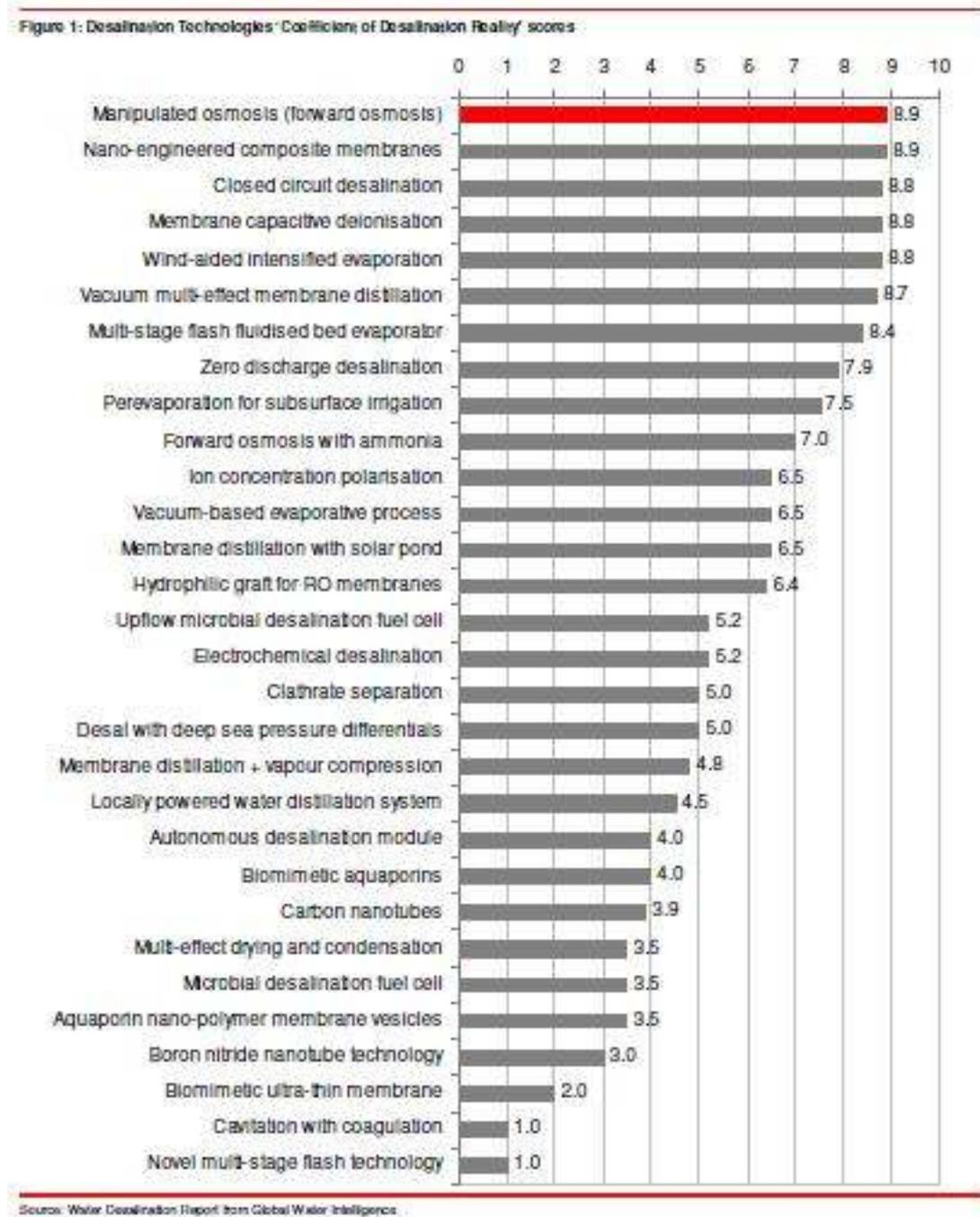
Commentating on the MO technology and the Al-Khuluf experience, the chairman of the Public Authority for Electricity and Water in Oman, Mr Mohammed al Mahrouqi, in an interview with the Water Desalination Report's Editor, Tom Bankratz, said that the al-Khuluf site was chosen because of its hard-to-treat seawater. "We knew that this was difficult seawater to treat, but it is important that we provide a safe, reliable water supply for the local residents. We thought that this would be a good test for Modern Water and its technology; if it is successful at Khaluf, it should work almost anywhere,".

Modern Water has also recently won its first commercial plant on competitive base. The contract to build and operate the world's first fully commercial forward osmosis plant with a capacity of 200 m³/day and worth £500,000 has been awarded by Oman's Public Authority for Electricity and Water. You can read the full story here: <http://www.desalination.biz/news/news.asp?id=5980>

Additionally, the MO technology has been recently highly commended in the Water Management and Supply award by the UK Institute of the Chemical Engineers 2010 Innovation and Excellence Awards. Professor Sharif was also awarded the British Royal Society Brian Mercer award for

innovation in Science and Technology and the first pan-European Academic Enterprise (ACES) Award as well as the AIM sustainability award which was awarded to Modern Water.

Table 1 : Desalination Technologies ‘Coefficient of Desalination Reality’ scores



Source: Water Desalination Report, 44, November, 2010 (from Global Water Intelligence)