

## SEAHERO R&D program and key strategies for the scale-up of a seawater reverse osmosis (SWRO) system

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### Abstract

The Center for Seawater Desalination Plant (CSDP), which was established in December 2006, launched its R&D project [seawater engineering and architecture of high efficiency reverse osmosis (SEAHERO)] in the middle of 2007 and aimed to get world top-level seawater reverse osmosis (SWRO) plant technologies. SEAHERO will accomplish its technical objectives with a fund of US \$165 million for 5 years. One of the most important technical targets of SEAHERO is the scale-up of the SWRO system for economies-of-scale. Through a rigorous technical review of the scale-up strategies, CSDP selected two key strategies for the scale-up. One is the scale-up of RO unit trains by assembling RO modules and the other is the scale-up of RO module size. An SWRO plant test-bed of 10 MIGD ( $\approx 45,000$  m<sup>3</sup>/d) in capacity will consist of two different RO unit trains of 6 MIGD ( $\approx 27,000$  m<sup>3</sup>/d) and 4 MIGD ( $\approx 18,000$  m<sup>3</sup>/d). The 6 MIGD train targets the largest RO unit train in the world. The 4 MIGD train will adapt RO modules 16" in diameter, which are twice as large as modules in current RO markets. The two different RO trains divide the risk of the new technology to increase the probability of success. With the two scale-up strategies, SEAHERO is expected to achieve the leading SWRO plant technology in the world.

**Keywords:** Center for Seawater Desalination Plant (CSDP); SEAHERO; Scale-up of SWRO system; Economies-of-scale

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