



Closed circuit desalination series no-6: conventional RO compared with the conceptually different new closed circuit desalination technology

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ABSTRACT

Since first reported on October 2010 (EuroMed 2010, “Desalination for clean water and energy”, 3–7 October, Tel Aviv, Israel), the large volume of diverse experimental results recently published on closed circuit desalination (CCD) technology reveal new state-of-the-art technology of high recovery; low reverse osmosis (RO) energy in the absence of energy recovery; reduced scaling and fouling with a wide range of operational flux without exceeding membranes’ test condition specifications and flexible online control of all principle parameters in desalination processes independent of each other; of unmatched performance characteristics compared with the widely practised conventional plug flow desalination methods. In order to realize the scope and prospects of the new CCD technology on the basis of its performance characteristics which appears to presently meet most, if not all, long-term (20 years) targets of the growing worldwide desalination industry with high cost effectiveness, the present document provides an updated summary of all available results together with a critical evaluation in comparison with conventional Plug Flow technology. The results of this critical comparative study reported herein provide the desalination industry with a new technology ready for immediate application, which addresses essentially all beneficial aspects of RO.

Keywords: Closed circuit desalination; High recovery; High flux; Low energy; Reduced fouling; Seawater; Brackish water; Commercial unit performance

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