

Recovery of cooling tower blowdown water through reverse osmosis (RO): review of water parameters affecting membrane fouling and pretreatment schemes

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Received 2 August 2019; Accepted 6 February 2020

ABSTRACT

Desalination through reverse osmosis (RO) of cooling tower blowdown water streams has been increasing over the years. Recycling of cooling tower blowdown streams using RO has specific challenges in view of the fouling characteristics associated with water in open recirculating cooling systems. These include the propensity for algal blooms and microbiological growth, fouling potential of the chemicals used for treating the systems for scaling, corrosion, biofouling control, and cooling towers' ability to take in atmospheric debris, among other industry and location-specific challenges. Different pretreatment processes have been considered and implemented both in research and practical applications worldwide. This paper provides a review of different pretreatment technologies to address the specific challenges in recycling cooling tower blowdown.

Keywords: Cooling-tower blowdown; Reverse osmosis; Recycling; Membrane fouling; Pretreatment

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