

## Comparison of different pretreatments for seawater desalination

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### ABSTRACT

The performance of different processes applicable for seawater desalination pretreatment was evaluated in this study. These processes include dual media filter (DMF), pore controllable filter (PCF) and filter adsorber (FA). The particle removal performance was evaluated by turbidity, particle number ( $> 2 \mu\text{m}$ ), SDI of the filtrate. The organic reduction performance was evaluated by COD, UV-254 and molecular weight distribution (MWD) of the filtrate. According to this study, PCF showed the best performance in the particle removal, while FA showed the best performance in the organic reduction. There were three peaks for raw seawater (180, 800, 28,000 Da) and the highest peak was recorded at 180 Da. All processes successfully reduced organic fraction of large MW (28,000 Da). FA reduced small fractions (180, 800 Da) better than DMF and PCF. FA was also good in the particle removal. The particle removal performance of FA was comparable to that of DMF. Both FA and DMF showed the similar behavior of initial breakthrough.

*Keywords:* Seawater desalination; Pretreatment; Media filtration; Filter adsorber; Fiber filtration; Molecular weight distribution

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