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Paper Title : Computational Modeling and Energy Optimization of Reverse Osmosis Desalination under Fouling Effects and Variable Operating Conditions

Bio :

Jawaher Hajaji is a Master of Science candidate in Mechanical Engineering at King Fahd University of Petroleum and Minerals (KFUPM). She holds a prior Master's degree in Integrated Water Resources Management from the Higher Institute of Water Sciences and Techniques of Gabes, Tunisia, underpinning her strong commitment to addressing global water challenges.

Her current research focuses on the computational modeling and energy optimization of reverse osmosis (RO) desalination processes. In her work, she develops compact models for spiral-wound RO systems to analyze the critical impacts of membrane fouling and variable operating conditions on key performance indicators such as permeate flow, recovery ratio, and specific energy consumption (SEC). Her research validates these models against industry-standard software and provides actionable insights for optimizing RO system operation, particularly for integration with intermittent renewable energy sources. She has also presented research on the dynamic modeling of solar-driven desalination at international conferences.

With a solid academic foundation and practical experience in water treatment and desalination from internships in the industry, Ms. Hajaji's research interests lie at the intersection of sustainable desalination, energy efficiency, and computational fluid dynamics.