

Machine Learning Transforms Reverse Osmosis Monitoring

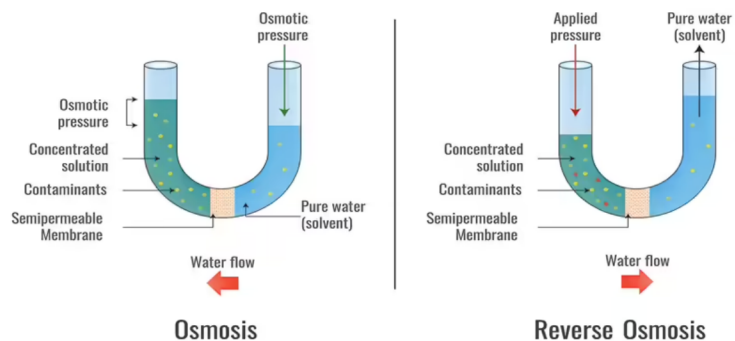


Reverse Osmosis (RO) technology is a key player in addressing global water scarcity, famed for transforming saline and contaminated water into drinkable water. Machine Learning and AI can address RO's essential aspects, efficiency, cost implications, and system performance.

These systems purify water efficiently and have applications in water use for manufacturing facilities. The RO system provides a steady flow of pure water, but the cost of the utilities to run the system can be high. Besides the space required on the plant floor and the energy costs of running the system's pumps, the RO process makes wastewater—as much wastewater as treated water.

RO employs a semi-permeable membrane to filter out undesirable substances by applying pressure to overcome osmotic pressure. This process is effective for purifying highly saline water for drinking and industrial use.

Osmosis and Reverse Osmosis



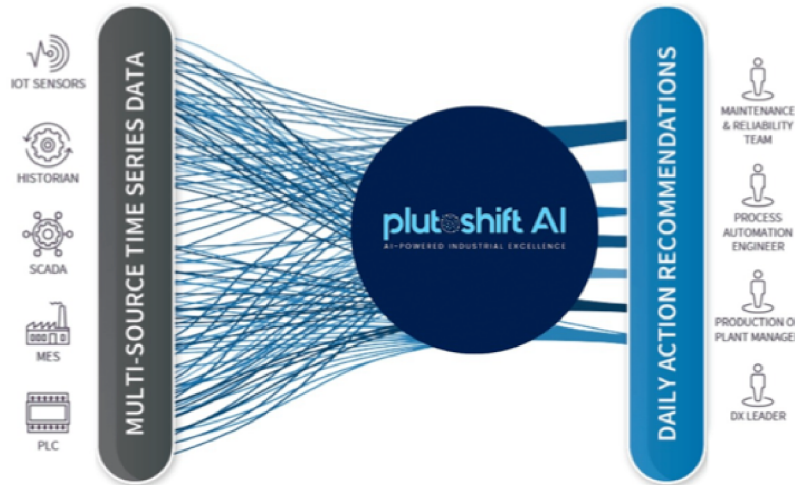
Cleaning the membranes in RO systems is a complex and critical process for industrial operators. High pressure differentials and variable water feed conditions in filtration systems inevitably lead to unpredictable maintenance and additional operating costs. Determining the optimal clean cycles for the membranes requires understanding past & current performance as well as the permeate conductivity.

Economic Considerations

RO system adoption involves both initial and ongoing expenses. Membrane lifespan typically shows a pattern of decline due to repeated fouling and cleaning, necessitating careful cost and efficiency management.



AI and automation significantly enhance RO system efficiency and adaptability, offering a sustainable approach to water purification. It transforms system management by using data analytics for predictive maintenance, optimizing cleaning schedules, and extending membrane lifespan, thereby reducing costs and downtime. It also eliminates manual guess work in defining what it would cost to push the water through a membrane (think power costs) vs the optimal time to clean and increase longevity of the membrane.





We take in:


- Frequency of cleans
- Electricity cost
- Percent water recovery
- Membrane fouling rate
- Labor Cost
- Effluent water quality
- Team time allocation

We provide:

A unique, modular machine learning model to deliver accurate membrane fouling & scaling rates and drive predictive cleaning recommendations and improvements.

 10% Energy reduction

 15% Cleans reduction

 10% Labor hours reduced

Considerable savings in the tune of potentially several million dollars can be attained, depending on the size and volume of these membranes in your industrial operation.

“Plutoshift AI has impressed us repeatedly with its flexibility, deep grasp of AI, and inexhaustible passion for water and how its use can be optimized. They are very pleasant to work with and always eager to adapt to our needs and requirements.”

Global Brewing Company

Contact us now to learn more and start your transformation journey.

sales@plutoshift.com