

Oil and Grease Monitoring in SWRO Intake Water System



To handle the increasing water needs, oil refineries are moving towards sea water desalination or SWRO plants. With advancements in membrane chemistry, and lower capital and operating costs, SWRO is the viable option where an alternative water source is not available. Many large-scale SWRO plants are being installed near the coastline of India.

Monitoring and control of certain analytical parameters which are essential for the safe running of RO plants and also to protect the heart of process the membranes is essential. Any drop in, or excess of, these crucial parameters can result in partial or permanent damage to the membranes.

- One of the most important aspects in the implementation of seawater desalination projects is deciding the locations of seawater intake point and reject outfall.
- The quantity and quality of the sea water entering the desalination plant is greatly dependent upon the type and location of the sea water intake.
- Sea water quality varies depending on the time of day, or day of the week, or month of the year.
- Location of intake point is important from consideration of seawater composition, elimination of some contaminants such as oil (found in the vicinity of shipping traffic), suspended solids, turbidity, and contamination by municipal sewage and industrial effluents.
- The intake point can either be at the seashore, or little into the sea or several meters deep.

All these aspects are well considered prior to the design and deciding the location of the plant, but dynamic situations like oil spills may change the quality of water at SWRO intake.



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For the SWRO plant to function well, it is essential that all parameters are monitored and controlled within specified limits prior to actual RO.

Turbidity	< 1 NTU (0.3)*
SDI	< 5.0 (3.0)*
Temperature	< 40° C
Oil & grease	Absent
Free chlorine	Absent
ORP	< +300 mV
Organics	Free of harmful organics
pН	6 – 9
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[* with media filter / ultra filtration pre-treatment]

RO membrane manufacturers usually specify the limits and these should be adhered to for efficient and safe working of the plant.

While all of the above parameters are important, the oil and grease can damage the costly membranes beyond repair and cause huge loss to the plant.

It is therefore essential that an online monitoring and control of this parameter be implemented to ensure the raw water can be bypassed before entering the RO membranes.

The Forbes Marshall Solution

The oil and grease in water analyser offered by Forbes Marshall is based on UV fluorescence methods for faster, reliable and low cost measurements to detect oil content in raw sea water, it gives an alarm which can divert the water instead of passing to the RO.

This online monitoring system can handle samples in the range of 0.1 ppm to as high as 1000 ppm.

It can handle the higher salt content of raw sea water which may be difficult with other monitoring systems, such as the TOC analyser. The UV measuring principle eliminates the need to costly chemicals and reagents, thus reducing the cost of ownership and downtime of the analyser.

The analyser also has state-of-the-art features like auto cleaning mechanism, auto zero offset correction and completely non metallic wetted MOC to handle high salts and chlorides.





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