

Online Membrane Monitoring and Protection from Hach

Do you need to track the performance of your membrane system?

Do you want online measurements to help you optimise membrane maintenance and extend overall membrane life?

Discover how Hach® can help you monitor and protect your membrane system with our suite of online analysers and sensors:

Application	Parameter	Membrane	Why is it important?	Hach Solutions
Raw Water and Settled Water	Turbidity	All (MF-RO)	Turbidity readings enable you to monitor process control in feedwater. With real-time visibility to turbidity spikes you can act quickly to prevent early membrane fouling	**Surface Scatter 7sc**
Raw Water and Settled Water	TSS – Total Suspended Solids	All (MF-RO)	Monitor suspended solids in feedwater to control sludge levels and reduce membrane maintenance and downtime	**Solitax sc (Best) or TSS sc**
Filter Supply Water	ATP – Adenosine Triphosphate	NF-RO	ATP levels provide early warning to biofouling, helping to extend membrane life and improve efficiency performance	**EZ7300 Microbial Load ATP Analyser**
Filter Supply Water	pH/ORP	NF-RO	Many NF and RO membranes are sensitive to pH levels. Monitor pH to provide you early warning signs of potential scaling, forecasting membrane degradation, and efficiency loss.	**pH and ORP (combination or differential), analog or digital sensor**
Filter Supply Water	Hardness	NF-RO	Hardness can increase scaling potential, impacting membrane performance and longevity. Monitor the performance of your ion exchange process controlling hardness levels.	**EZ Series Hardness Analysers**

Membrane monitoring and protection portfolio continues next page.

Key:

MF – Microfiltration
UF – Ultrafiltration
NF – Nanofiltration
RO – Reverse Osmosis

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Online Membrane Monitoring and Protection

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Filter Supply Water And Filter Effluent	Alkalinity	NF-RO	Alkaline water increases scaling potential, impacting membrane performance and longevity. High alkalinity in the feedwater can cause membrane scaling and low alkalinity in the finished water can cause corrosion.	**EZ Series Alkalinity Analysers**
Filter Supply Water And Filter Effluent	Chlorine	NF-RO	Chlorine breakthroughs can adversely and irreversibly affect your process, product, or equipment. Monitor chlorine to understand the true impact of chlorine exposure, forecast membrane efficiency, and protect your assets.	**Ultra Low Range CL17sc**
Filter Supply Water And Filter Effluent	Chlorine Sulfite	NF-RO	Chlorine breakthroughs can adversely and irreversibly affect your process, product, or equipment. Monitor free and total chlorine to understand the true impact of chlorine exposure, forecast membrane efficiency and protect your assets. Use chlorine and sulfite measurements combined to refine your dechlorination process and save chemical costs and further reduce biofouling risks.	**DR1300 FL**
Filter Supply Water And Filter Effluent	Turbidity	MF-UF	Monitor performance of your membranes for compliance and performance. Compare turbidity measurements between filtration steps to monitor breakthrough potential and protect NF and RO systems downstream.	**TU5400sc (Best) or TU5300sc**
		NF-RO	Monitor turbidity before and after NF and RO to capture membrane performance and breakthrough potential. Use this information to adjust your process upstream to reduce maintenance and improve membrane longevity.	**TU5400sc**
Filter Supply Water And Filter Effluent	TOC/Organics	All (MF-RO)	Validate TOC removal in drinking water or use TOC as a surrogate for COD and BOD in wastewater and water reuse applications.	**Hach Biotector or UVAS**
Filter Supply Water And Filter Effluent	Conductivity	NF-RO	Total Dissolved Solids levels are a good indicator of membrane performance and potential filter breakthrough. Monitor conductivity in the feed and permeate water to calculate rejection and track membrane performance.	**3400 Contacting Conductivity Sensors (Drinking Water) or 3700 Inductive Conductivity Sensors (Wastewater and Desalination)**

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High-value membrane technology is everywhere

Because they deliver precise separations without the addition of heat or energy, membrane systems are vital to profitable operations in virtually every industry.

Membrane protection should be top-of-mind if your facility...



General

- Removes excess water to concentrate valuable components
- Reduces discharge prior to subsequent water treatment steps
- Adjusts concentration of influent or effluent streams
- Reclaims and reuses wastewater cleaning agents
- Treats waste using membrane bioreactors (MBR)
- Is advancing from other means of separation (e.g. earth, multimedia, centrifugation, extraction, rotary vacuum, evaporation, distillation)

Food, Beverage & Pharmaceutical

- Purifies water to uniform standards
- Uses cold sterilisation
- Removes fine particles for shelf stabilisation
- Requires consistent flavor and appearance

Industrial

- Clarifies biochemical processes
- Refines petroleum
- Recovers paint, adhesive or solvent
- Uses high-purity systems for semiconductors or boiler feeds
- Treats or recovers cooling tower blow down or other waste streams

Mining & Metal

- Reclaims waste from electroplating
- Recovers precious metal or uranium
- Reduces landfill leachate
- Has to meet strict waste discharge requirements

Are you overspending on membrane maintenance?

The cost of cleaning membranes in a properly maintained system could be 0.22€ per cubic meter.

Your facility might spend as much as 1€ per cubic meter if not properly maintained.

Typical approximate chemical costs include:

- **Antiscalants: Antiscalants: 0.01 to 0.03 / m^3**
- **Filter cartridges: 0.01 to 0.03 / m^3**
- **Membrane cleaning with a proper operating system: 0.1 to 0.22€ / m^3 for a good operating system**
- **Membrane cleaning with an improper operating system: as high as 0,9€ / m^3**

When membranes foul, the costs are substantially more. Operations could increase up by 50% to as much as 100%, and for a typical plant that runs somewhere around 1 to 3 € per cubic meter, this could add another 3€ per cubic meter to your cost.

If you're pumping 320'000 cubic meters a year, that equals an additional 10'000€ for operating with fouled membranes, which can also damage other equipment as a result.

Source: https://www.samcotech.com/cost-to-properly-maintain-membrane-filtration-systems/

Want to reduce your dechlorination and biofouling costs?

Contact Hach to find out how the Ultra Low Range CL17sc can help you take control of your dechlorination process.



DOC063.52.30694.Oct21

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