



FILMTEC Membranes

Troubleshooting: Symptoms of Trouble, Causes and Corrective Measures

Troubleshooting Grid

Changes of the permeate flow, the salt passage and the differential pressure are symptoms which can be attached to specific causes in many cases. Although, the symptoms of different causes may over-lap in reality, and the symptoms are more or less pronounced in specific cases. An overview of symptoms, their possible causes and corrective measures are given in the troubleshooting grid of Table 8.1.

(An interactive troubleshooting guide with direct links to cleaning and remediation methods is available from the Dow Liquid Separations website under Technical Service Center -)
<http://www.lennotech.com/membrane-cleaning.htm>

Table 8.1 Symptoms, causes and corrective measures

Permeate flow	Salt passage	Differential pressure	Direct cause	Indirect cause	Corrective measure
↑	↑	→	Oxidation damage	Free chlorine, ozone, KMnO ₄	Replace element
↑	↑	→	Membrane leak	Permeate backpressure; abrasion	Replace element, improve cartridge filtration
↑	↑	→	O-ring leak	Improper installation	Replace o-ring
↑	↑	→	Leaking product tube	Damaged during element loading	Replace element
↓	↑	↑	Scaling	Insufficient scale control	Cleaning, scale control
↓	↑	↑	Colloidal fouling	Insufficient pretreatment	Cleaning, improve pretreatment
↓	→	↑	Biofouling	Contaminated raw water, insufficient pretreatment	Cleaning, disinfection, improve pretreatment
↓	→	→	Organic fouling	Oil; cationic polyelectrolytes water hammer	Cleaning, improve pretreatment
↓	↓	→	Compaction	Water hammer	Replace element or add elements

↑ Increasing ↓ Decreasing → Not changing ↑ Main symptom

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