

**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

LENNTECH

info@lennotech.com Tel. +31-152-610-900

www.lennotech.com Fax. +31-152-616-289

Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

Notice: No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

