FILMTEC Membranes

System Design: System Design Considerations to Control Microbiological Activity

System Design Considerations to Control Microbiological Activity

Biofouling is one of the most common and most severe problems in the operation of RO systems. It is particularly important to control microbiological activity in plants using surface water or bacteria-contaminated water as a feed source. A properly designed system is a prerequisite for success:

- If intermediate open basins or tanks are used, provisions should be made to allow for proper sanitization at that open source and the part of the system downstream from it.
- If intermediate sealed tanks are used, their air breathing or ventilation systems should be equipped with bacteria-retaining devices (e.g. HEPA filters).
- Blind, long pieces of piping should be avoided by design, and when unavoidable, should be periodically sanitized.
- The components of the pretreatment system such as pipes, manifolds, filters and retention tanks should be opaque to sunlight to avoid enhancing the biological growth.
- Stand-by devices with large surfaces, like sand or cartridge filters, should be avoided. If they are not avoidable, drains should be installed to allow discharge of the sanitization chemicals after the devices have been sanitized, and before connecting them to the active system.
- It should be made possible to physically isolate the RO/NF section from the pretreatment by using a flange. This allows to use chlorine for sanitizing the pretreatment section while the membranes are protected from chlorine contact. A drain valve should be installed at the lowest point close to the flange, to allow complete drainage of the chlorine solution.
- Membrane selection: FilmTec offers membranes with a special surface that makes them more resistant against biofouling. These so-called BW30FR elements are typically selected for surface waters and tertiary effluent treatment. Other special element types are made with a full-fit configuration for applications requiring sanitary grade membrane elements. The full-fit configuration minimizes stagnant areas and complies with FDA standards. See also *Element Characteristics (Section 1.8)*, and the relevant Product Information Sheets.

FILMTEC™ Membranes
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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.

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Form No. 609-02067-1004