



**EconoPure™**  
**Water Systems**

**An EconoPure™ White Paper**

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# Membrane Fouling

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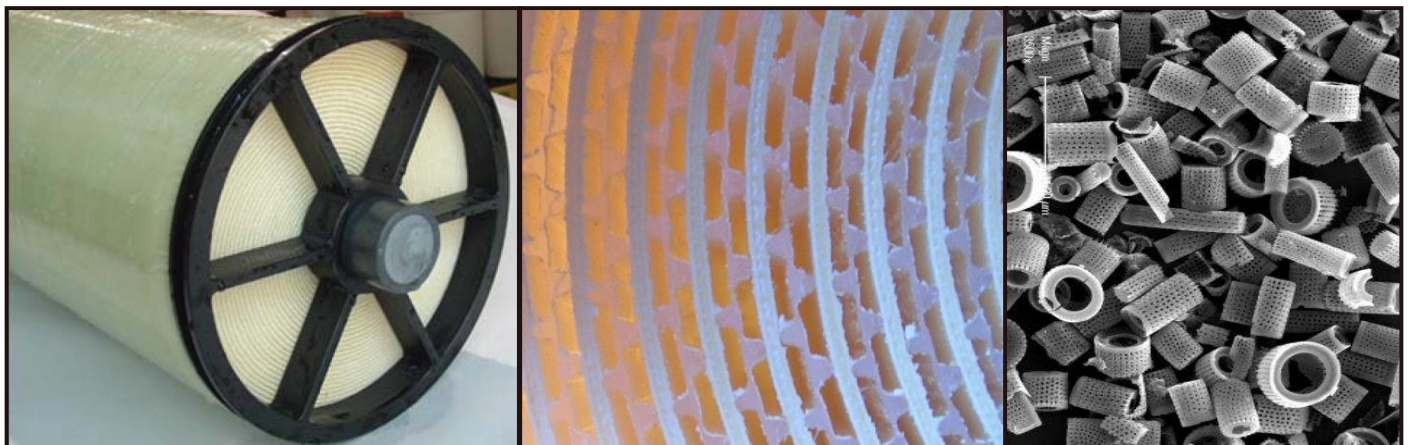
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## The Problem:

Membrane water treatment is costly and complex due to the systems required to mitigate membrane fouling. Membranes have, therefore, been relegated to high value applications such as desalination and ultra-pure water needs. The systems used to mitigate fouling have a history of underperformance and high cost.

## EconoPure™ Solution:

EconoPure™ has developed a low-fouling nanofiltration (LFNano™) membrane system that can avoid the effects of fouling for very long intervals. Where some membrane systems require backwashing as frequently as every 20 minutes, the EconoPure™ system has demonstrated several months of maintenance free operation. The LFNano™ uses no chemicals and is a low energy solution. The LFNano™ membrane elements differ significantly from traditional elements with an open configuration feed channel. This unique element is combined with the injection of a high surface area particle mimicking a media pre-treatment in the single system. The figure below shows the unique membrane element (left), a close up of the cross section of the element with the unique feed spacer (middle) and a microscopic view of diatomaceous earth (right), a particulate choice to be injected into the feed water in the LFNano™.



**Applications:** The LFNano™ is the simplest, lowest cost membrane system on the market today eliminating complex pre-treatment systems. The use of NF membrane provides the highest quality water in one step. It can be used in many high solids applications including RO pre-treatment, industrial water reuse (i.e. food processing, paper & pulp, mining, etc.), hydraulic fracturing flowback water treatment, produced water treatment. The system will favorably compete with traditional treatment techniques as well as other membrane systems.

**Other Benefits:** Membrane systems by their very nature are compact compared to traditional treatment methods. Chemical consumption is virtually eliminated with the system reducing the environmental impact considerably. The system's simplicity and the physical barrier allow a far more consistent operation than competing systems.

**Simplicity:** The LFNano™ will simplify water treatment systems and improve water quality while eliminating cost. The LFNano™ was developed by a veteran water treatment chemical engineer who has 40 years of practical experience in the industry.

