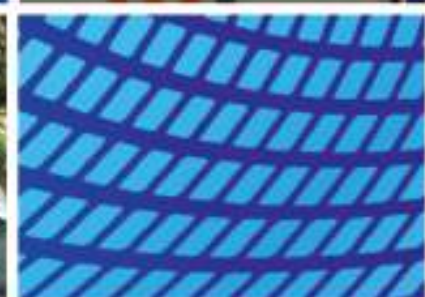


Membrane Technology Evolved

The LD Technology™



Hydranautics - The LD Technology™

Introduction

When high performance is required under demanding conditions, the LD (Low Differential) reverse osmosis / nanofiltration membrane elements from Hydranautics - A Nitto Group Company set a new standard for high performance with lower colloidal fouling.

Key Features

Enhanced Membrane Chemistry

- To increase chemical resistance and high pH tolerance
- Increase element life

Innovative Spacer Design

- To minimize trapping of small colloidal particles
- Reduce pressure losses
- Increase system efficiency

Patented Vented Seal Carrier

- Eliminates pressure shock damage during system startup

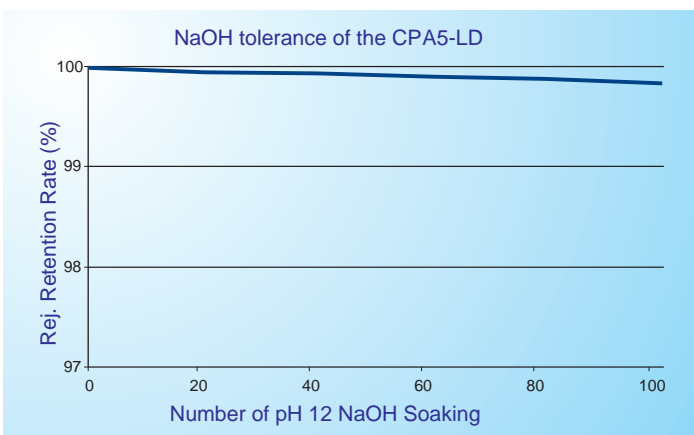
The LD Advantages

Lower Colloidal Fouling

- Innovative feed spacer design prevents trapping of small colloidal particles and reduces the colloidal fouling of RO/NF membranes.

Increased Membrane Durability

- Enhanced membrane chemistry provides increased chemical resistance to high pH operation.
- Patented seal carrier has air vents to allow quick passage of residual air between the membrane elements during the system start-up to prevent element damage due to pressure shock.



Increased chemical resistance to high pH operations

Enhanced Cleaning Performance

- The LD Technology™ offers a wide pH cleaning range so that effective cleaning can be performed without degrading performance.



Lower dP (Differential Pressure)

- Lower differential pressure reduces power consumption, saving energy costs and decreasing the carbon footprint of the system.

Improved Flux Distribution

- Lower differential pressure also improves flux distribution between lead and tail element further reducing membrane fouling.

Key Benefits

- Longer membrane life
- Reduced cleaning costs
- Increased productivity
- Improved permeate quality

Applications

- Surface water and waste water sources with high fouling potential
- Ultrapure water production for semiconductor and pharmaceuticals industries
- Boiler feed water for power generation and manufacturing industries
- Waste water reuse
- Brackish water RO for drinking water
- Seawater RO for drinking water

CPA7-LD

CPA7-LD is a high-flow, high-rejection RO membrane which supplies the best combination of high rejection and high flow capability in a brackish water RO element. CPA7-LD is useful in industries where high-purity water is critical.

Applications

- Boiler makeup water for power generation
- Industrial waste water recovery
- Zero Liquid Discharge (ZLD) / HERO process
- Ultrapure water for semi-conductor manufacturing
- Ultrapure water for pharmaceutical industries



LFC3-LD

The LFC3-LD membranes offer breakthrough technology by combining the attributes of a neutral surface charge with hydrophilicity to minimize organic fouling to maintain membrane performance in demanding applications.

Applications

- Municipal waste water treatment
- Industrial waste water treatment
- Waste water with high biological and organic fouling potential.



ESPA2-LD

The ESPA2-LD are high productivity, energy saving polyamide membrane elements. The ESPA2-LD offers significant cost savings due to the lower operating pressure requirements while providing optimal flow as well as high salt rejection.

Applications

- Municipal drinking water treatment
- Municipal waste water reuse
- Food and beverage industries
- Light industrial uses



SWC5-LD

The high productivity SWC5-LD offers the highest levels of salt rejection with a consistently pure end-product. The SWC5-LD offers the perfect combination of high flow superior salt and boron rejection with low operating pressures. The SWC5-LD has been designed to accommodate varying levels of seawater salinities using conventional mode of pretreatment or seawater having high turbidity/suspended solids.

Applications

- Sea water desalination
- Industrial waste water treatment
- Boron reduction





Nitto, Shiga – Japan



Hydranautics, Oceanside – USA



Nitto, Shanghai – China

Hydranautics – A Nitto Group Company is a global leader in research, development and manufacture of water filtration membranes including reverse osmosis, nanofiltration, ultrafiltration and microfiltration. Our membrane products (CPA, ESPA, LFC, SWC, HYDRAcap MAX and HYDRAsub) are used extensively in municipal and industrial water and waste water treatment.

Hydranautics and Nitto have 5 decades of experience in membrane technology. We remain committed to bringing innovative membrane technologies which provide clean water to a thirsty world.

Our global membrane division is headquartered in Oceanside, CA, USA. We have three state-of-the-art manufacturing sites located in Oceanside – CA, USA, Shiga – Japan and Shanghai – China with a combined manufacturing area in excess of 1,400,000 ft² (130,064 m²). Our worldwide sales and customer service offices are located throughout Asia, Europe, the Middle East, North America and South America.

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