

Desalination plant - Photo credit: Gregory Bull/AP Lensia.com

Nxo Engineering provides compact, automated and reliable solutions for the **Desalination industry** with its innovating accelerated flotation technology. Nxo's solutions are conceived to:

- (1) meet our clients specific quality requirements with the minimal operation costs.
- (2) ensure operational safety in the facilities.
- (3) respect environmental regulations.

Nxo's engagement philosophy has resulted in an unique know-how build-up during the last 8 years on the field.

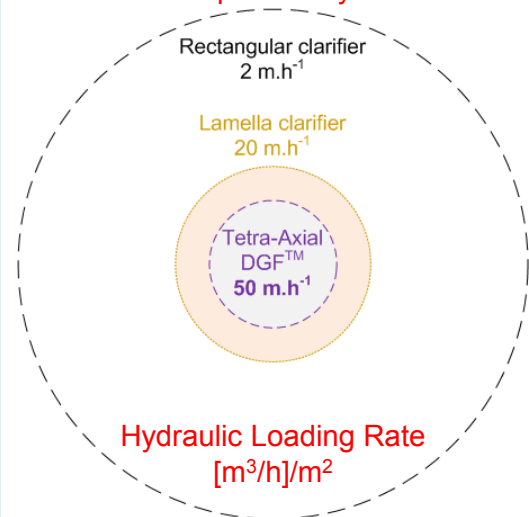
Seawater pretreatment

Reverse osmosis (RO) semipermeable membranes remove ions and molecules from seawater (SW). They are at the core of most desalination facilities and their lifetime and performance (fluxes and recovery percentage) rely on the efficiency of eliminating larger contaminants through pretreatment stages.

Suspended solids (SS), colloidal matter, bacteria and algae clog pores either by a direct obstruction or by promoting biofouling. The Tetra-Axial DGF™ outperforms conventional pretreatment stages (sand filtration and ultrafiltration) by offering 7 major advantages:

- Plug-and-play devices
- Reduced energy consumption
- No clogging issues
- Low maintenance costs
- Low footprint requirement
- Wide range of algae and solids removal
- Improved water loss control (<1%)

Footprint analysis



Biofouling control

Biofouling is a major concern in RO technologies. The Tetra-Axial DGF™, a no-clog flotation reactor that removes biological particles and SS, is a key element to conceive an effective biofouling control strategy. It improves profitability and will protect RO membranes, on routine and during any unexpected event (algae blooms or climate), as it:

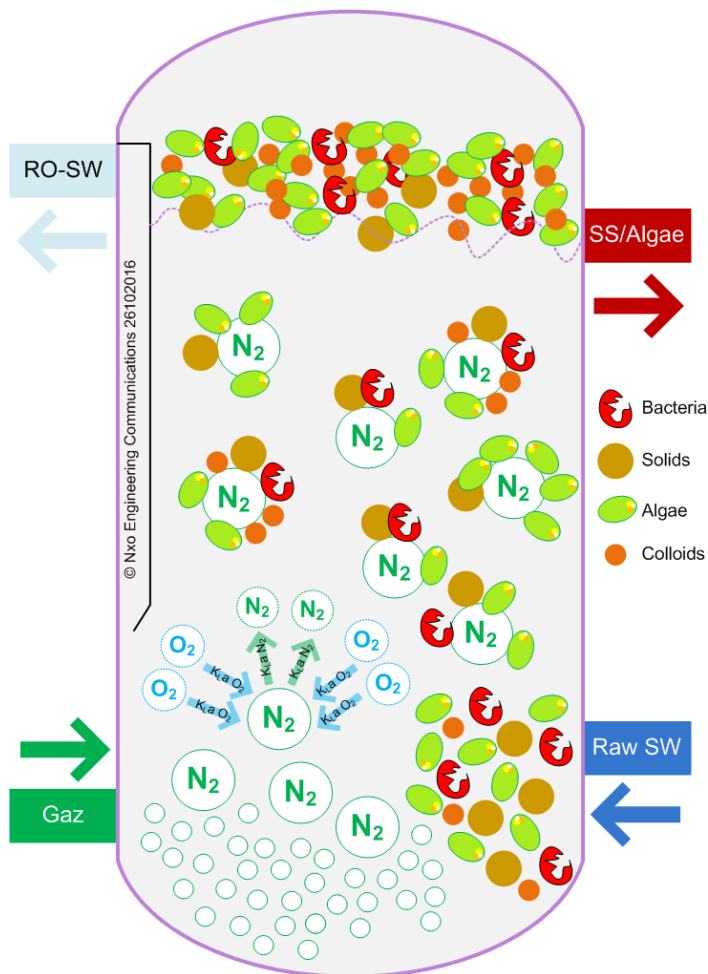
- Generates higher fluxes
- Reduces backwash procedures
- Increases the recovery percentage
- Limits chemical cleaning
- Removes O₂ (N₂ biocide carrier)
- Reduces corrosion issues
- Extracts algae and bacteria
- Removes SS and colloids (10nm)
- Extends membranes lifetime

Energy efficiency

At industrial scale, RO desalination plants place huge emphasis on energy efficiency. During operations, flux decline results in an increment of the trans-membrane pressure to maintain the desired permeate flux (higher energy demand).

Injecting roughly pre-treated seawater into the RO membranes with an unacceptable level of biologic and solids loading is expensive. The Tetra-Axial DGF™ positions as a single SW pre-treatment unit that has no internal moving parts (robust and reliable) and easily retrofits existing resources in the facility to improve their return on investment (ROI). It will:

- Reduce energy consumption
- Cutoff expenses in chemicals
- Reduce maintenance costs
- Preserve economic fluxes
- Be similarly efficient in brine or SW.



Tetra-Axial DGF™

In a nutshell:

- SDI immediate decline from 18 to 3
- Less than 0.04 kW-h per m³ treated
- No clogging issues
- Higher HLR → up to 50 m³.h⁻¹ per m²
- Gas-form biocide action (N₂)
- Mineral scale constraint action (CO₂)
- Fully automated device

Contact us to study your project and to recommend you an asset that will primary cutoff your expenses and target a reasonable ROI. Determining the ROI indicator, which is totally free, will consider techno-economical factors and capital/operational expenses [CAPEX and OPEX]. Nxo's transparency policy remains at its core value, along with our commitment of supporting our clients to reach their financial goals.

Oil & Gas



Desalination



Biomass



Agro-industry



Electronics



Mining



Pharmaceutical



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#invisiblefactor

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