Nitto
Innovation for Customers

HYDRANAUTICS

# HYDRAsub™ MBR

## Membranes Bioreactor (MBR) Solutions for Treatment of Various Types of Wastewater

Membrane Bio Reactor (MBR) MBR is a hybrid wastewater treatment technology that combines biological treatment by activated sludge and physical treatment by membrane filtration. Compared to conventional activated sludge treatment, MBR and particularly HYDRAsub™ produces high quality permeate water suitable for RO treatment and reduces the footprint drastically by elimination of sedimentation tank and operation at higher Mixed Liquor Suspended Solids (MLSS).

## Key HYDRAsub™ Applications:

- **Domestic waste water**
  - Municipalities
  - Hotels, apartment complexes
  - Grey waters
- **Industrial waste water**
  - Food and Beverage Industry – Beer, Dairy, etc.
  - Automobile Industry
  - Oil Refineries
  - Chemical industry



## Key Features and Benefits:

- **High operating flux:** Minimized membrane area which lowers the CAPEX and OPEX
- **Lower footprint:** Compact systems with reduced height which minimizes the energy consumption by 60%. The air scouring requirement is also reduced by 40%
- **Simple operating process:** No backwash, membrane cleaned with air scouring
- **Durable construction:** Supported PVDF hollow fiber, highly resistant to chlorine

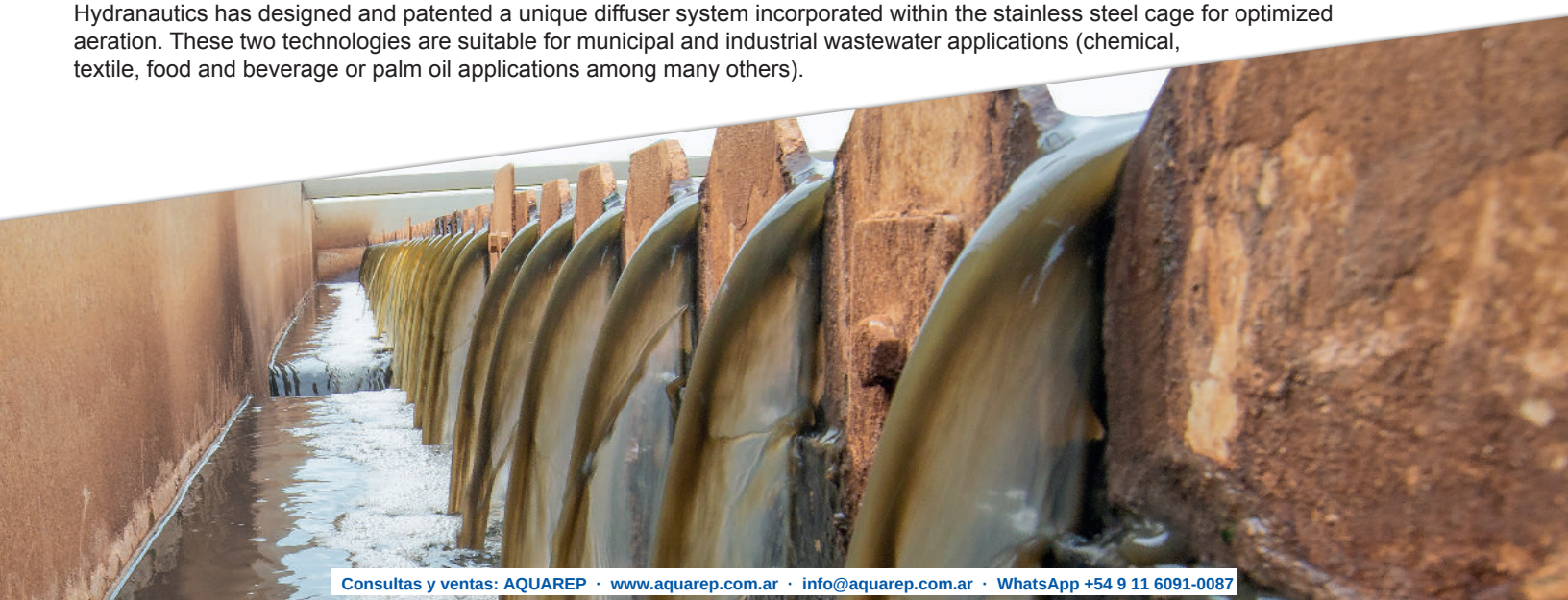
## HYDRAsub™ Product Offerings:

HYDRAsub™ modules are comprised of PVDF hollow fiber elements, permeate adaptors, stainless steel cages (SS304 or SS316) and a unique patented air diffuser design. The modules are available in a wide range of sizes from 25 to 2400 $m^2$ membrane area, covering all ranges of flow. Two types of technologies are available:

**HYDRAsub™ technology** uses a microfiltration fiber with a pore size of 0.4 µm. Modules size proposed are ranging from 25 to 1500 $m^2$

**HYDRAsub™ MAX technology** uses an ultrafiltration fiber with a pore size of 0.05 µm. Modules size proposed are ranging from 40 to 2400 $m^2$.

Hydranautics has designed and patented a unique diffuser system incorporated within the stainless steel cage for optimized aeration. These two technologies are suitable for municipal and industrial wastewater applications (chemical, textile, food and beverage or palm oil applications among many others).



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## Module portfolio with HYDRAsub™ and HYDRAsub™ MAX elements:

| Module | Element | Technology | Membrane area *($m^2$)* | Typical flow – Sewage *($m^3$/day)* | Typical flow – Industrial *($m^3$/day)* |
|---|---|---|---|---|---|
| **HSM25-ES to HSM1500-ES** | HSE25 | HYDRAsub™ | 25 to 1500 | 20 to 1200 | 10 to 750 |
| **HSMM40-ES to HSMM2400-ES** | HSME40 | HYDRAsub™ MAX | 40 to 2400 | 32 to 1920 | 20 to 1200 |



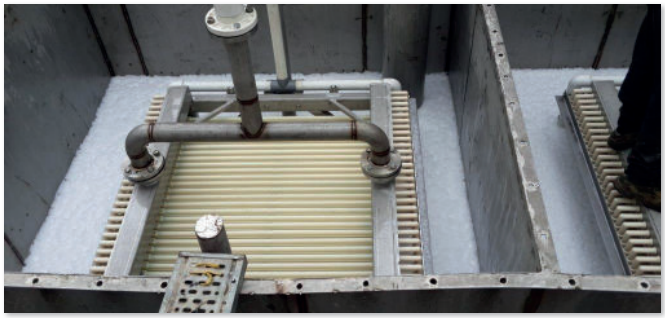
HYDRAsub™ modules are available in following sizes: HSM25-ES, HSM50-ES, HSM75-ES, HSM100-ES, HSM125-ES, HSM250-ES, HSM375-ES, HSM500-ES, HSM750-ES, HSM1000-ES and HSM1500-ES

HYDRAsub™ MAX modules are available in following sizes: HSMM40-ES, HSMM80-ES, HSMM120-ES, HSMM160-ES, HSMM200-ES, HSMM400-ES, HSMM600-ES, HSMM800-ES, HSMM1200-ES, HSMM1600-ES and HSMM2400-ES.

For containerized compact systems, shorter elements HSE15 are also available.

| Module | Technology | Membrane area *($m^2$)* | Typical flow – Sewage *($m^3$/day)* | Typical flow – Industrial *($m^3$/day)* | Module height *(mm)* | Module width *(mm)* | Module length *(mm)* |
|---|---|---|---|---|---|---|---|
| **HSM15-ES-HSE15** to **HSM75-ES-HSE15** | HYDRAsub™ | 15 to 75 | 12 to 60 | 5 to 40 | 1716 | 461 | 1473 |
| **HSM300-ES-HSE15** | HYDRAsub™ | 300 | 240 | 150 | 1760 | 1242.2 | 1561.9 |







*MBR feed (L) and permeate (R)*

## Solutions You Need.
## Technologies You Trust!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