APPLICATIONS

Overview

The Ultrafiltration membranes bring today new solutions to the water specialists, according to the type of application. Indeed, the membranes allow reduction of dye in terms of stages and permit to make reliable the treatment in term of quality but especially to improve the effectiveness.

Degrémont Technologies-Aquasource, a French major and historic actor in Ultrafiltration, since 1984, offers its products and services to OEMs and water treatment companies in both municipal and industrial spheres.

Municipal Market

Increasing stringent standards, increasing volumes of water to be treated, increasing pollution of resources, etc. People involved in drinking water production are counting on research to provide new, effective techniques. Ultrafiltration is clearly a major step forward for all players in the sector who are concerned about:

- **Offering water of constant and irreproachable quality**, regardless of the characteristics and turbidity variations of the water to be treated. Aquasource Ultrafiltration membranes, with a 0.01 µm cut off value, retain all micro-organisms (bacteria and viruses) and suspended solids,

- **Contributing to the respect of the environmental equilibrium.** As a purely mechanical process, Ultrafiltration reduces the use of chemicals and the production of treatment wastes, while maintaining the mineral balance of water.

Industrial Market

Food, pharmaceutical, cosmetic, semi-conductor and beverage industries need higher quality water for their processes, Degrémont Technologies-Aquasource satisfies this requirement. Our systems are designed to provide the best available pretreatment technology (prior to demineralisation or reverse osmosis) and to ensure the best removal rate of particles, micro-organisms and SDI.

Water recycling

Water recycling is safe, environmentally sustainable and cost effective for any municipality or industry who cares about environment resources. The water recycling can be used safely for many non-potable applications; for example: watering and urban uses, industrial process water, irrigation, etc.

Ultrafiltration membranes are providing a reliable and sustainable source of new water.
**Technical Data:**

**Action/Theory**

Since 1989, Degrémont Technologies-Aquasource has been designing and building Ultrafiltration membranes and units. Ultrafiltration is simply a physical process, where both stages of clarification and micro-organism removal are carried out simultaneously. Ultrafiltration is a low pressure process. The wall acts as a filter for all particles larger than 0.01 micron: pollen, algae, parasites, bacteria, viruses, germ and large organic molecules. The result is: perfectly pure water.

**How Does it Work?**

Degrémont Technologies-Aquasource membranes are hollow fibres, filtering from the inside to the outside. The fibres are assembled in bundles and then placed inside a composite tube. The bundles are held together using resin, providing perfect and permanent sealing of the module, allowing a very high efficiency with respect to virus retention.

We have developed two membrane range materials adapted to large water characteristics. First, the cellulose triacetate range for drinking and process water, and the hydrophilic polysulfone range for water recycling. These membranes are available in a wide range of modules, from 1 to 140 m² of filtration area per module.

Degrémont Technologies-Aquasource has also the know-how in design and conception of Ultrafiltration units. Our packaged units can produce from 1 to 200 m³/hour per unit and are fully equipped. Degrémont Technologies-Aquasource treatment units can be used as part of a treatment chain or as stand alone equipment.

**Product Focus/Performances**

- **Constant water quality regardless of raw water variations**
  - Turbidity < 0.1 NFU
- **Bacteria and cysts removal > 7 Log**
- **Viruses removal > 6 Log**
- **Low energy consumption**
- **20 years of experience in packaged units**

More than 250 references worldwide, 1,400,000 m³ of water treated daily by Degrémont Technologies-Aquasource membranes.
**Compact & Upgradable**

Ultrasource® is a compact and self-contained unit using Ultrafiltration membrane. It is designed to produce from 1.5 to 13 m³/h per unit. It's flexibility allows to adapt the unit to the resource by adding easily modules.

The Ultrasource® is equipped with all elements necessary for its functioning. The unit uses an exclusive process by “dead-end filtration”, with a special backwash mode to avoid the use of a backwash tank.

**Applications**

The Ultrasource® is designed for small drinking water utilities such as small villages, holidays resorts, hotels, etc. And also for process water in hospitals, industries, pharmaceuticals, cosmetics, etc. The Ultrasource® guarantees a clear water with a turbidity < 0.1 NFU and an elimination of 7 log for bacteria and cysts and 6 log for viruses.

**Plug & Play**

The compactness of Ultrasource®, its easiness of commissioning (1 day) as its design allows it perfect and immediate integration in any environment. The Ultrasource® is completely automatic so maintenance and operation costs are reduced.

**References**

More than 120 references worldwide, see all references on our website www.degremont-technologies.com
PRODUCT FOCUS: ECOSKID™

Optimized Performances
Ecoskid™ is the latest generation of compact unit of water treatment equipped with cellulose triacetate Ultrafiltration membranes. It is developed to provide a more economical alternative to the conventional Ultrafiltration units on the market.

Cost Effective
The Ecoskid™ main feature is to work by an exclusive dead-end process without backwash pump, which allows huge reduction of energy consumption and OPEX. This patented process does not require backwash tank, therefore reducing the CAPEX.

Applications
The Ecoskid™ is designed for municipal and industrial applications. It's high performance process can treat high turbidity water (< 200 NFU). It production varies from 30 to 200 m³/h per unit. Degrémont Technologies-Aquasource Ecoskid™ units can be installed alone or incorporated in a more complex treatment process.

References
Korea - 2005
2 Ecoskid™ 5 modules
1,000 m³/day
Surface water

France - 2006
2 Ecoskid™ 18 modules
3,600 m³/day
Ground water

Madagascar - 2006
1 Ecoskid™ 8 modules
800 m³/day
Process water

More references on our website www.degremont-technologies.com
Innovative Technology

Re-Source™ is a compact unit equipped with polysulfone Ultrafiltration membranes, specially designed for water reuse. Re-Source is the latest innovation of Degrémont Technologies-Aquasource R&D. Its production varies from 6 to 90 m³/hour per unit.

Applications

Re-Source™ is especially designed for tertiary wastewater treatment for municipalities and industrials. The main applications of wastewater recycling are:
- Watering and urban uses
- Industrial reuse
- Agricultural Irrigation
- Ground water recharge

Efficient Process

Re-Source™ Unit is equipped with all elements required for its functioning. The operation of Re-Source™ is secured and simplified due to innovative and patented processes combining dead-end, microcoagulation and air backwash. This specific process contributes to make this unit one of the most efficient Ultrafiltration unit for wastewater reuse.

Easy Implementation

- Easy integration in an existing wastewater treatment plant
- Small footprint
- Reduced civil work
- Packaged unit
- Easily upgradeable

Re-Source™ units can be installed alone or incorporated in a more complex treatment process.
**PRODUCT RANGE**

**Range overview**

<table>
<thead>
<tr>
<th>Aquakiosk®</th>
<th>Ultrasource®</th>
<th>Skid</th>
<th>Ecoskid™</th>
<th>Re-Source™</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Production in m³/h at 20°C</strong></td>
<td>Up to 20 m³/day</td>
<td>From 3 to 13 m³/h</td>
<td>From 10 to 180 m³/h</td>
<td>From 30 to 215 m³/h</td>
</tr>
<tr>
<td><strong>Membrane material</strong></td>
<td>Cellulose triacetate</td>
<td>Cellulose triacetate</td>
<td>Cellulose triacetate</td>
<td>Cellulose triacetate</td>
</tr>
<tr>
<td><strong>Type of membrane</strong></td>
<td>LIFEA™ or INEA™</td>
<td>LIFEA™ or INEA™</td>
<td>LIFEA™ or INEA™</td>
<td>LIFEA™ or INEA™</td>
</tr>
<tr>
<td><strong>Backwash tank needed</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>Dead end</td>
<td>Exclusive</td>
<td>Dead end and dead end</td>
<td>Exclusive</td>
</tr>
<tr>
<td><strong>Pores diameter</strong></td>
<td>0.01 µm</td>
<td>0.01 µm</td>
<td>0.01 µm</td>
<td>0.01 µm</td>
</tr>
<tr>
<td><strong>Turbidity</strong></td>
<td>&lt; 0.1 NFU</td>
<td>&lt; 0.1 NFU</td>
<td>&lt; 0.1 NFU</td>
<td>&lt; 0.1 NFU</td>
</tr>
<tr>
<td><strong>Micro-organism removal</strong></td>
<td>&gt; 7 log</td>
<td>&gt; 7 log</td>
<td>&gt; 7 log</td>
<td>&gt; 7 log</td>
</tr>
<tr>
<td><strong>Viruses removal</strong></td>
<td>&gt; 6 log</td>
<td>&gt; 6 log</td>
<td>&gt; 6 log</td>
<td>&gt; 6 log</td>
</tr>
</tbody>
</table>

**MAIN APPLICATIONS**

| Underground water | x | x | x | x |
| Low load surface water | x | x | x | x | x |
| High load surface water | x | x | x |
| Reverse osmosis pretreatment | x | x | x | x | x |
| Wastewater reuse | x |

**Sanitary Safety**

**Reliability**

**Membrane**

**Environmentally Friendly**
MEMBRANES

TREATMENT LINE

GROUND WATER TREATMENT FOR DRINKING WATER OR PROCESS WATER

SURFACE WATER TREATMENT FOR DRINKING OR PROCESS WATER

WATER RECYCLING

REVERSE OSMOSIS PRE-TREATMENT
INNOVATIVE TECHNOLOGY AND EXPERT TEAM

The benefit of 20 years of experience

In an international environment, our Research center develops technologies and products, which constantly improve and optimize the performance of water treatment plants. Innovation and new technologies are the center of our activity therefore Degrémont Technologies-Aquasource invests heavily in research and development every year. In order to accompany our clients in the research of adapted and new products, Degrémont Technologies-Aquasource has a broad park of pilot units and ensure treatment unit set up and conduct pilot trials.

INDUSTRIALIZATION

Degrémont Technologies-Aquasource chose to serve municipal, collective and industrial clients by offering the best possible membrane materials for each Ultrafiltration application. Thanks to its versatile industrial tool, Degrémont Technologies-Aquasource can either produce cellulose triacetate or hydrophilic polysulfone fibers.

QUALITY

Our objective is to anticipate or accompany the water market changes by providing our clients with technologies and products adapted to their needs and with very high standards in terms of reliability, quality and competitiveness. Therefore, all our activities are in a compliance with the ISO 9001 standard and the regulations in force related to our activity. Compliance with these requirements is an commitment for transparency, thus ensuring our clients with a renown level of quality control.