

# ATEC WATER TREATMENT SOLUTIONS

Membrane Filtration Systems for Industrial and  
Municipal Applications



## Applications

- Industrial process and wastewater treatment and recycling
- Drinking water treatment
- Sand filter backwash water treatment and reuse
- Pretreatment for RO desalination plants

Typical result of Atec filtration for industrial process and wastewater recycling

Left: raw water with content of oil, particles, bacteria,...

Center: filtrate with recovered chemicals for reuse

Right: concentrate for disposal or additional treatment



# TREATMENT OF INDUSTRIAL PROCESS WATER AND WASTEWATER

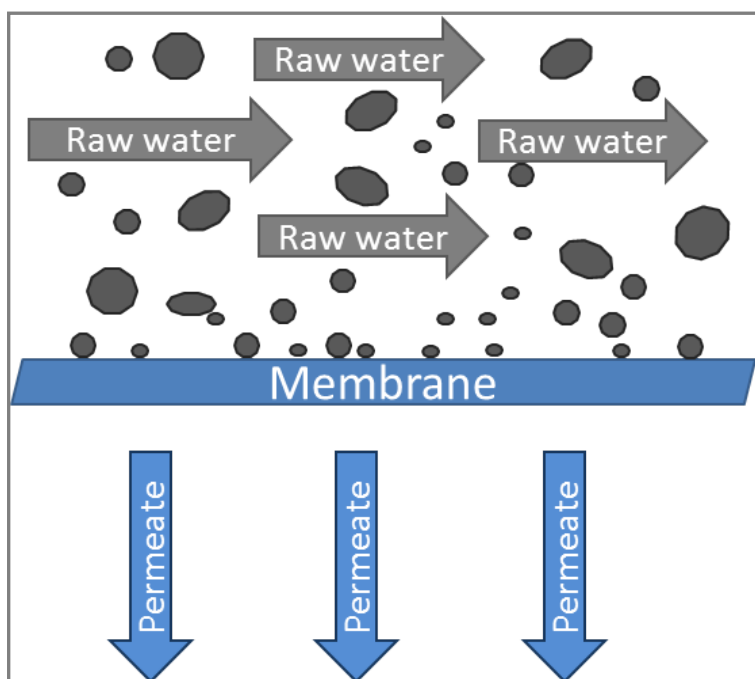
Sector	Application	Advantages
<b>Automotive manufacturers</b>	<b>Parts cleaning water reuse</b> <ul style="list-style-type: none"> <li>Degreasing baths</li> <li>Rinsing baths</li> </ul> <b>Oily and particle loaded wastewater</b>	<ul style="list-style-type: none"> <li>Reduced water, chemical and energy consumption</li> <li>Stable process quality</li> <li>Waste water reduction</li> </ul>
<b>Automotive suppliers</b>		
<b>Metalworking industry</b>		
<b>Oil / gas / petrochemical</b>	Oily and particle loaded wastewater	<ul style="list-style-type: none"> <li>High and steady removal rate</li> <li>Small footprint</li> </ul>
<b>Food &amp; beverage</b>	Process and wastewater with high content of fat/oil/grease, particles, starch, etc.	<ul style="list-style-type: none"> <li>Reuse / recycling of permeate</li> <li>Use of concentrate as a nutrient rich resource (e.g. for biogas production)</li> </ul>

## ATEC CROSS FLOW FILTRATION SYSTEMS

Pressurized raw water is in a constant tangential flow across the membrane surface. This prevents the formation of a thick dirt layer and allows for a continuous operation with constantly high permeate flow.

Atec developed **different kinds and sizes of cross flow filtration systems for industrial process and wastewater treatment**. The different systems can be equipped with different kinds of membranes for application as:

- **Microfiltration**
- **Ultrafiltration**
- **Nanofiltration**



**The cross flow filtration principle**

As a membrane filtration expert, Atec will help you select the right membrane type and pore size for your application.

# TREATMENT OF SMALL VOLUMES OF INDUSTRIAL PROCESS AND WASTEWATER

## ATEC BASIC MINITUBE CROSS FLOW FILTRATION SYSTEM

Atec developed the Basic Minitube filtration system, a very compact, economic and yet very flexible and fully automated solution **for small applications up to 300 l/h.**

### ADVANTAGES

- **Low investment cost**
- **Small footprint**
- **Easy start-up, operation and maintenance**
- Equipable with all kinds of tubular membranes:
  - **Ceramic / polymeric**
  - **Micro / ultra / nanofiltration**
  - **Rigid tubular, hollow fibre, spiral wound**



Typical installation of Atec Basic Minitube beside a parts cleaning system



Typical filtration result in steel and metalworking industry  
Left: concentrate, middle: raw water, right: filtrate



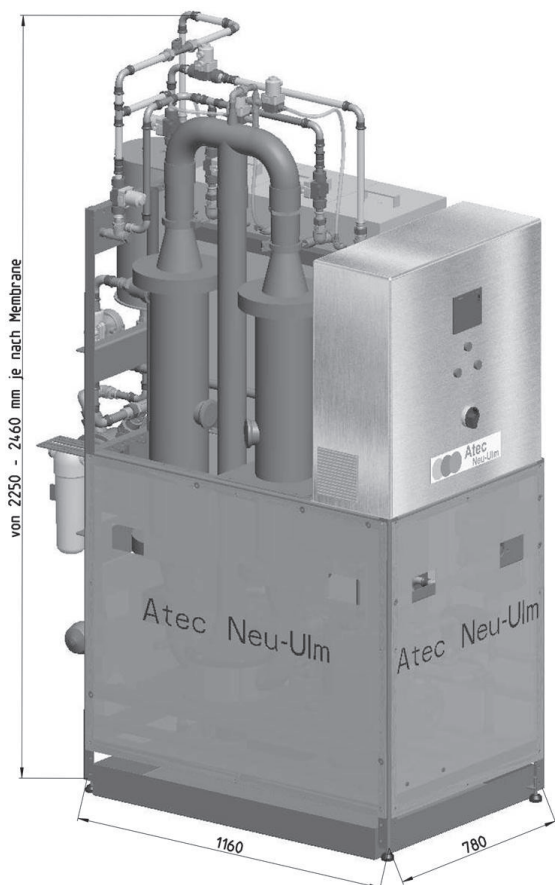
# TREATMENT OF MEDIUM VOLUMES OF INDUSTRIAL PROCESS AND WASTEWATER

## ATEC MIDITUBE CROSS FLOW FILTRATION SYSTEM

Atec developed the Midgetube **for medium size applications**. The filtration system applies the typical Atec high cross flow velocity, which allows to obtain good filtration results and high recovery rates even in difficult applications **for up to 3.000 l/h**.

### ADVANTAGES

- **Possibility to filter heavy loaded and "sticky" waste and process water**
- **High flux** (permeate flow per m<sup>2</sup> of membrane surface)
- **Easy start-up, operation and maintenance**
- Equipable with all kinds of tubular membranes:
  - **Ceramic / polymeric**
  - **Micro / ultra / nanofiltration**
  - **Rigid tubular, hollow fibre, spiral wound**



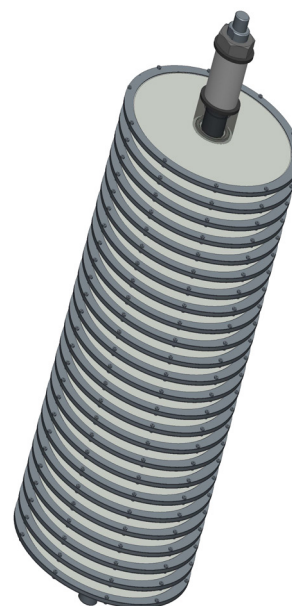
Typical filtration result in food industry  
Left: concentrate, middle: raw water, right: filtrate

# ATEC CARTRIDGE FILTER CROSS FLOW FILTRATION SYSTEM

Atec developed the Cartridge Filter for applications with **heavy loaded process and wastewater** which other membrane filtration systems can't handle. The special hydraulic design allows to filter even the concentrate from previous filtration steps at total capacities of **up to 2.000 l/h**.

## ADVANTAGES

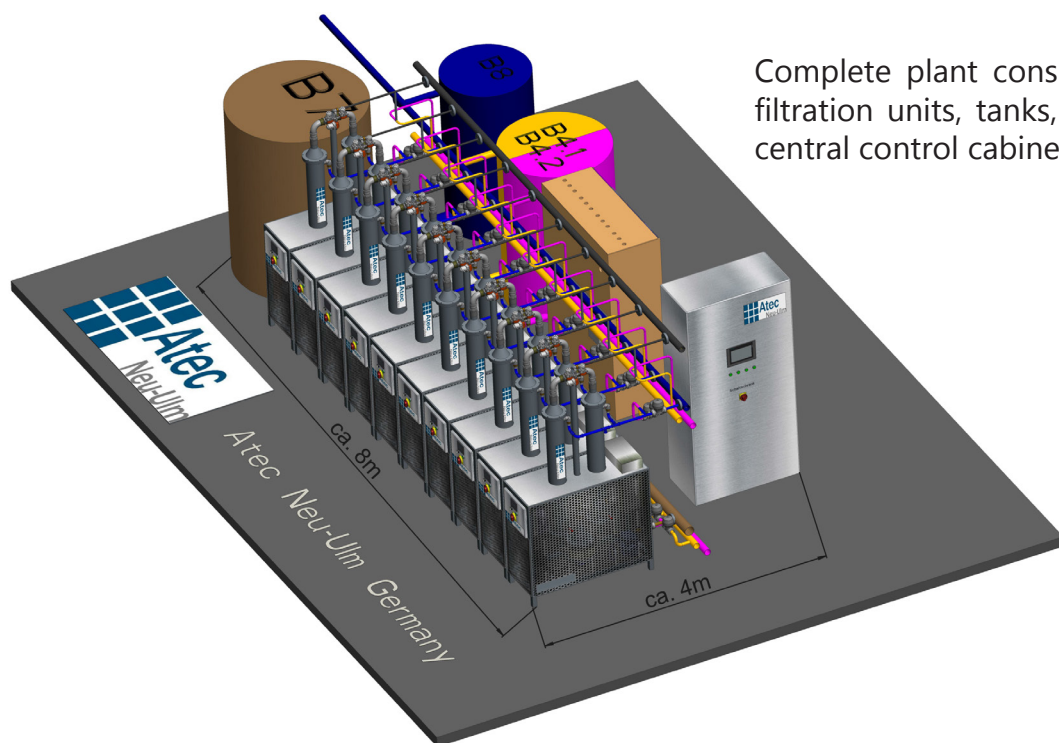
- **Sturdy cross flow filtration system for heavy duty applications (high viscosity, high solids content,...)**
- Equipable with different kinds of membranes:
  - **Ceramic / polymeric**
  - **Flat sheet and new "disc" membranes**



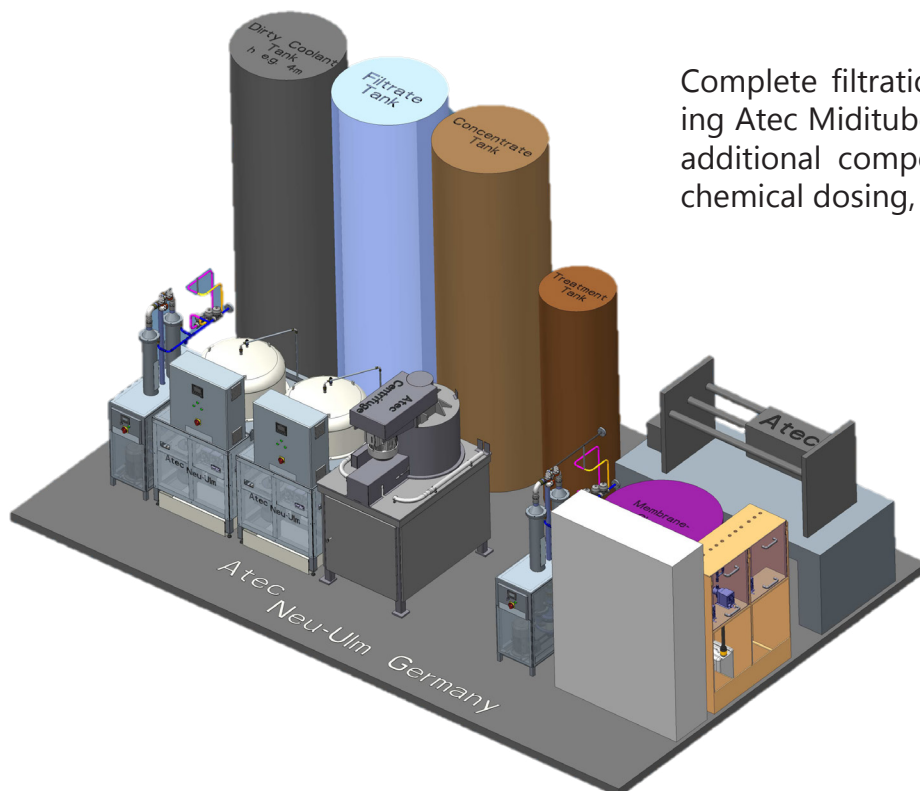
Stack of disc membrane cartridges

# COMPLETE PLANTS FOR LARGER VOLUMES AND/OR COMBINATION OF DIFFERENT FILTRATION STEPS

Atec designs and provides complete plants according to the requirements of the customer. We combine our membrane filtration systems with additional high quality components in order to provide the reliable and customized solution you are looking for.



Complete plant consisting of 10 Mditube filtration units, tanks, chemical dosing and central control cabinet.



Complete filtration plant concept combining Atec Mditube and Cartridge Filters and additional components: filter press, tanks, chemical dosing, control cabinet.



# SUBMERGED CERAMIC FLAT SHEET MEMBRANE FILTRATION SYSTEMS

## Drinking water treatment

### Ground water treatment

- Better and more reliable filtration results compared with sand filters
- Higher recovery rates than sand filters

### Reuse of backwash wastewater from sand filter systems

- Improvement of yield
- Reduction of water loss
- Reduction of produced wastewater

### Surface water treatment (river / lake) (probably pretreatment required)

- Reduced operational problems due to changing water quality compared with sand filters

### Pretreatment for seawater desalination

- Excellent pretreatment prior to RO
- Much longer useful life than polymeric flat sheet or hollow fibre membranes

## Wastewater treatment

### Membrane bioreactors (MBR)

- Optimization of existing plants
- New projects

- Higher capacity per m<sup>2</sup> of construction area compared to standard activated sludge systems
- Excellent permeate quality for direct reuse

## SUBMERGED CERAMIC FLAT SHEET MEMBRANE TECHNOLOGY

For drinking water treatment and MBR applications Atec designs filtration plants based on the ceramic flat sheet membrane technology.

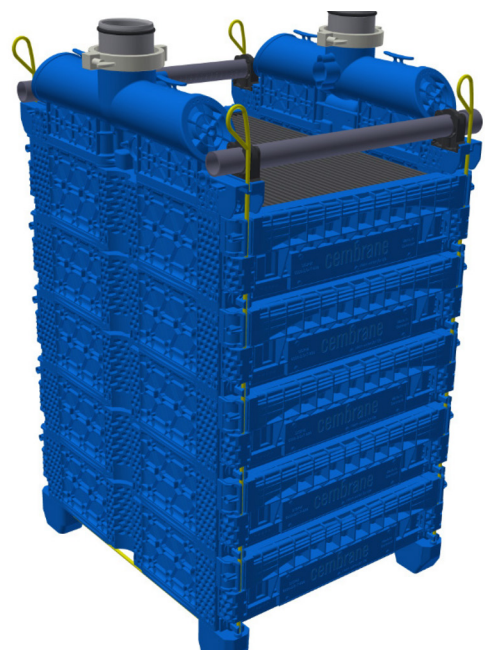
These membranes are **arranged in modules**, which are stacked as towers **to reach a large membrane surface area**.

Filtration systems can be small and medium **rack mounted units** as well as **large containerized plants** with **capacities up to 200 m<sup>3</sup>/h**

Membranes by:



Single ceramic flat sheet membrane



Membrane tower consisting of several membrane modules

Atec Neu-Ulm is a full-range supplier for water treatment solutions. Our core competency is water treatment by membrane filtration.

We can select from a wide range of filtration systems and will help you find the best solution for your particular application.

All water treatment solutions are designed and manufactured by our highly trained staff in our headquarters in Bavaria (Germany).

- **Design and engineering**
- **Manufacturing**
- **Automation**
- **Installation and commissioning**
- **After sales service**



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