

# High Rate Softening Solutions

*for industry*



 **VEOLIA**  
WATER

Solutions & Technologies

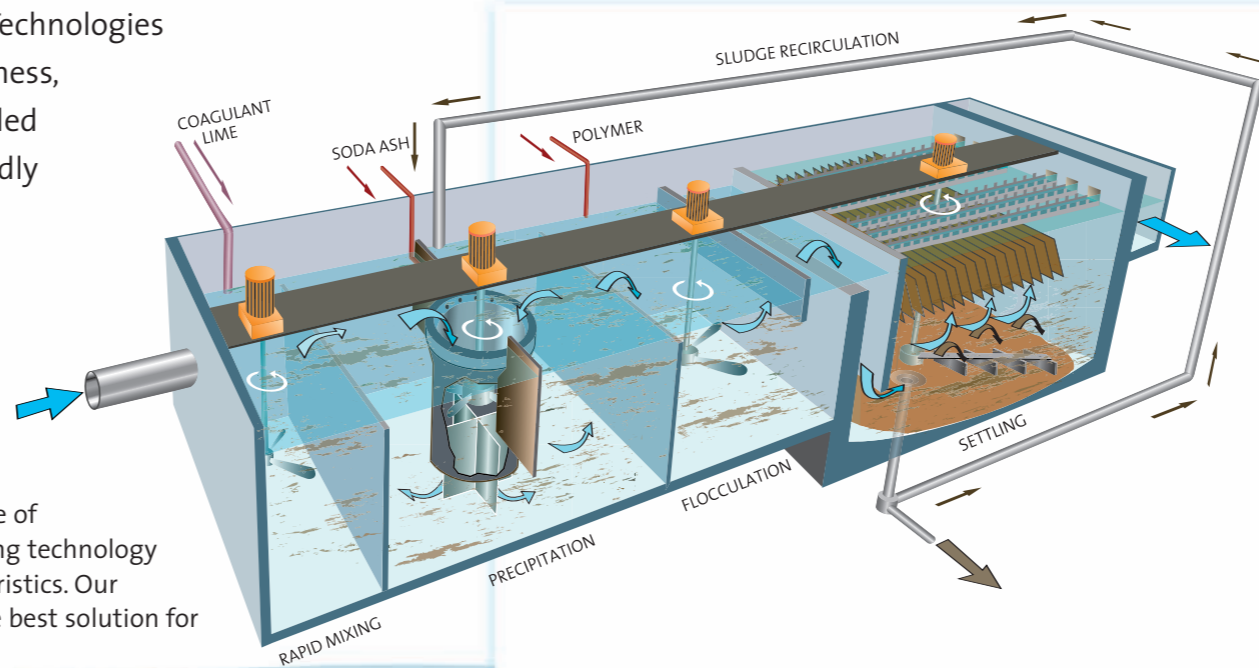


# MULTIFLO™ and ACTIFLO® Softening technologies provide high rate softening in a compact design for industrial applications

These two premier clarification processes from Veolia Water Solutions & Technologies are combined with a unique softening draft-tube reactor to reduce hardness, alkalinity, silica and heavy metals. The addition of chemicals and controlled sludge recirculation enhance the formation of crystalline compounds that rapidly settle in a lamella clarifier, resulting in a very small footprint.

## Major Benefits of our Softening Solutions

- **Compact:** The footprint of the high rate softening technologies is 10 to 20 times less than that of a conventional precipitation softening system.
- **Plant-wide automation:** The process can be fully automated and integrated into the plant SCADA for easy remote control.
- **Application expertise:** The choice of MULTIFLO™ or ACTIFLO® softening technology depends on your water characteristics. Our process expertise will ensure the best solution for your application.
- **Flexible and robust:** The hydraulic design of the sections within the treatment unit promotes optimum flow distribution and consistent operation, achieving high water quality.
- **Sludge treatability:** The produced sludge can be easily thickened and dewatered.



## MULTIFLO™ for Softening

The MULTIFLO™ technology incorporates chemical precipitation with sludge thickening, producing a highly concentrated sludge that can be easily dewatered. MULTIFLO™ is suitable for treating water with an average to high suspended and precipitated solids content.

Veolia provides Prefabricated Package Plants up to 700 gpm or custom-engineered solutions for higher flow rates, depending on the application.

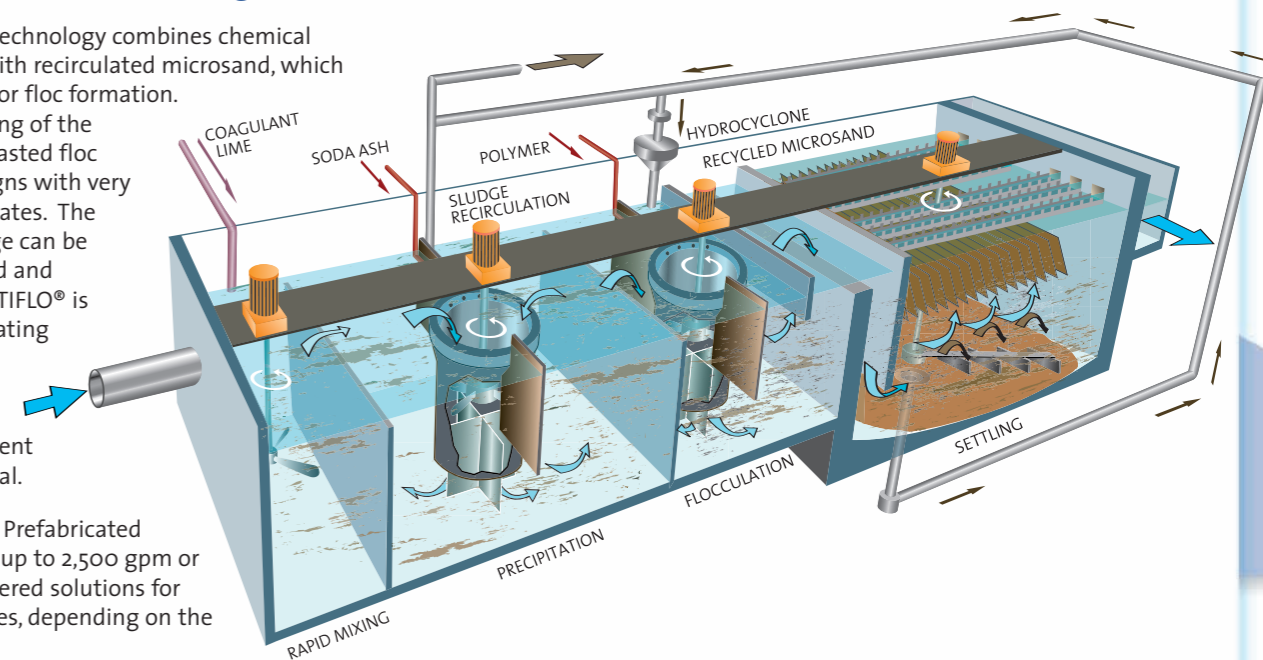
## On-site Demonstration

Our trailer-mounted pilot treatment unit is available for on-site demonstration of the MULTIFLO™ and ACTIFLO® Softening technologies to confirm process performance for your water or wastewater stream.

## ACTIFLO® for Softening

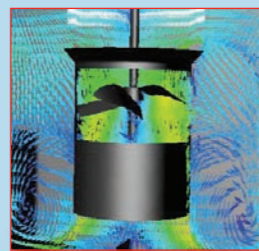
The ACTIFLO® technology combines chemical precipitation with recirculated microsand, which acts as a seed for floc formation. The rapid settling of the microsand-ballasted floc allows for designs with very high overflow rates. The produced sludge can be easily thickened and dewatered. ACTIFLO® is suitable for treating water with average solids content, and is especially efficient for silica removal.

Veolia provides Prefabricated Package Plants up to 2,500 gpm or custom-engineered solutions for higher flow rates, depending on the application.



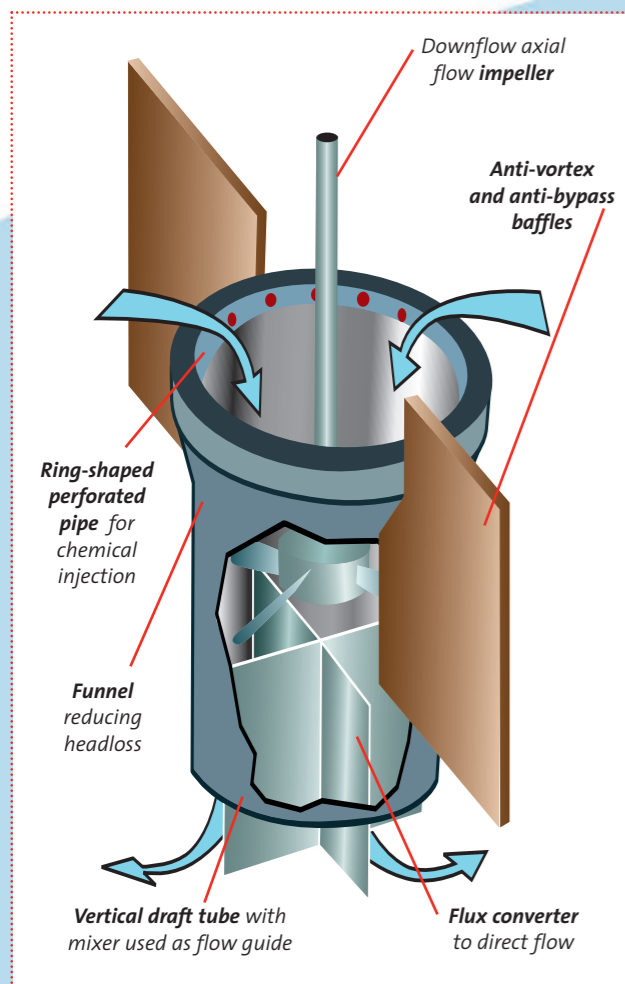
## Turbomix® a technological innovation

The Turbomix® reactor incorporates the latest developments in hydraulics and computational fluid dynamics into our proven MULTIFLO™ and ACTIFLO® technologies. Designed to optimize the efficiency of the precipitation and flocculation reactions, Turbomix® ensures optimum utilization of all chemicals, enhanced reaction kinetics and a smaller tank footprint.



- The Turbomix® provides:
- **High level of homogenization**, reducing retention time
  - **Removal of bypass and dead zones** to achieve classical precipitation and flocculation efficiencies in a smaller tank

- **Complete mixing** of the influent water with the chemicals and recirculated sludge
- **Increased pumping efficiency**
- **Reduced chemical and power consumption**
- **Easy control and maintenance** of the reagent injection system
- **Maximum crystal growth**



	MULTIFLO™ Softening*	ACTIFLO® Softening*
<b>Inlet hardness concentrations</b>	150 - 1000 ppm as CaCO <sub>3</sub>	150 - 500 ppm as CaCO <sub>3</sub>
<b>Hydraulic loading rates</b>	12 gpm/ft <sup>2</sup>	32 gpm/ft <sup>2</sup>
<b>Sludge concentration</b>	60 - 70 g/l	< 10 g/l
<b>Clarified water hardness</b>	< 35 mg/l Calcium as CaCO <sub>3</sub>	< 35 mg/l Calcium as CaCO <sub>3</sub>
	< 50 mg/l Magnesium as CaCO <sub>3</sub>	< 50 mg/l Magnesium as CaCO <sub>3</sub>
<b>Clarified water TSS</b>	< 10 mg/l	< 10 mg/l
<b>Clarified water turbidity</b>	< 1 NTU	< 1 NTU

\*Values depend upon water characteristics



**Veolia Water Solutions & Technologies is committed to delivering sustainable solutions and resource recovery based on three key principles:**

**Service is what we provide our customers.** We offer customer care at its best, not only through operation and maintenance contracts and asset management, but also aftermarket field services and Hydrex™ chemicals.

**Value is what we create for our customers.** We seek opportunities for recycle and reuse of resources, product recovery and energy production as part of our water treatment processes. For each project, we look for ways to add value for our customers.

**Responsibility is the cornerstone of all our business activities.** As part of Veolia Environnement, the world's largest environmental company, we understand the importance of our social responsibility to protect the resources of our planet for future generations. We utilize tools such as Carbon Footprint evaluation and Water Impact Index to help our customers achieve their corporate sustainability goals.

**Veolia Water Solutions & Technologies**

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