



Clarification Solutions

US Municipal Actiflo® Portfolio

WATER TECHNOLOGIES

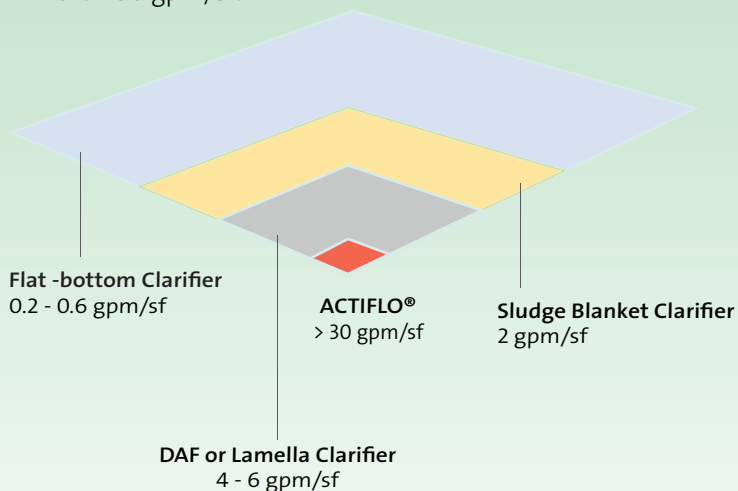
Clarification Solutions

High-Rate Ballasted Clarification



ACTIFLO® is the compact clarification system that sets the bar for high rate clarifiers. The combination of 25 years of design experience and advanced flocculation results in an ACTIFLO® process train that can produce high quality effluent within minutes at a clarifier loading rate greater than 30 gpm/sf.

Since its introduction in 1989, ACTIFLO® has been on the forefront of drinking water and wastewater clarification. With over 1300 installations worldwide, the ACTIFLO® process can be found efficiently treating the following:



- Unpredictable storm water flows
- Low turbidity mountain runoff
- Reservoirs with algae
- Warm/cold water sources with high levels of organic carbon
- Primary, Secondary, and Tertiary WW streams
- Hard water
- Soft water
- Groundwater
- Spring water
- Flashy rivers and streams
- Brackish water
- Sea water

Process Benefits

- Proven performance with integrated automation for operational simplicity
- Small process footprint; suited for restricted spaces and existing basin retrofits
- Low system headloss, incorporates into most existing hydraulic profiles
- Reduced civil engineering costs
- High degree of operational flexibility
- Minimum equipment to maintain, all easily accessible

ACTIFLO® Cylinder Demonstration

A = Conventional B = Polymer Assisted C = Ballasted Settling

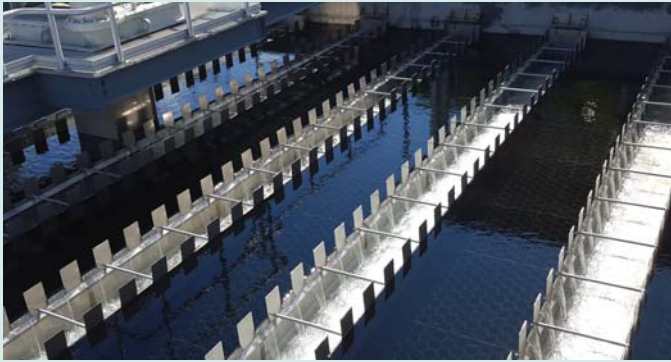


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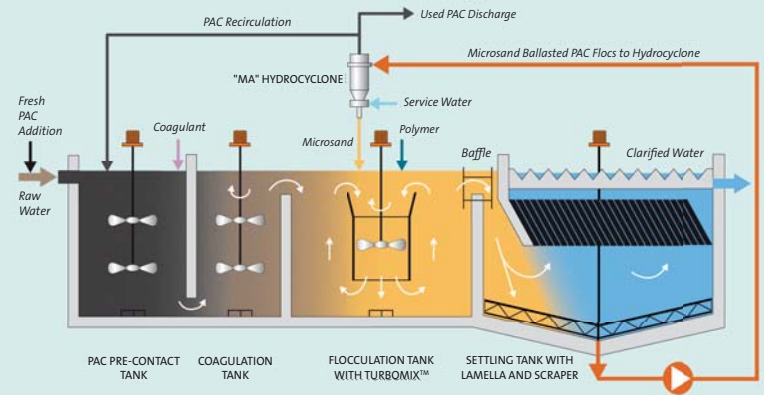


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Drinking Water Treatment ACTIFLO® Carb

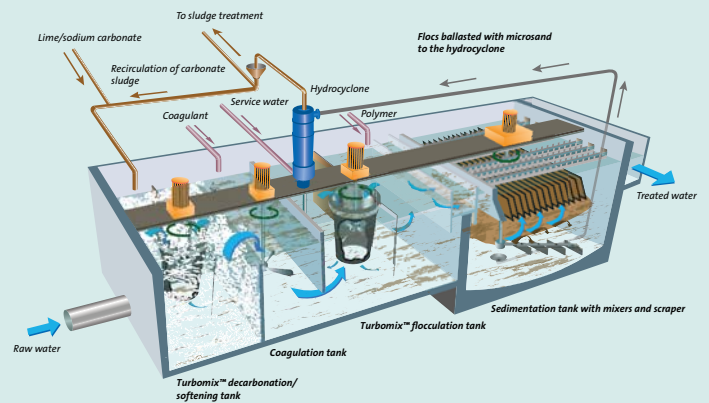


ACTIFLO® is a resilient process that can help maintain the quality of treated water under a variety of conditions. To enhance the removal of compounds that are refractory to water clarification, such as Natural Organic Matter (NOM), taste and odor, pesticides, hydrocarbons, and emerging micropollutants, the ACTIFLO® Carb process combines the benefits of ballasted clarification with the adsorption capacities of powdered activated carbon (PAC).



- Recirculation of PAC = minimizes PAC dose
- Maximizes use of PAC adsorption sites
- Reduces sludge volume and increases sludge solids content
- TOC removal rates improved up to 50% versus clarification alone
- Ideal for direct or indirect potable reuse applications

ACTIFLO® Softening

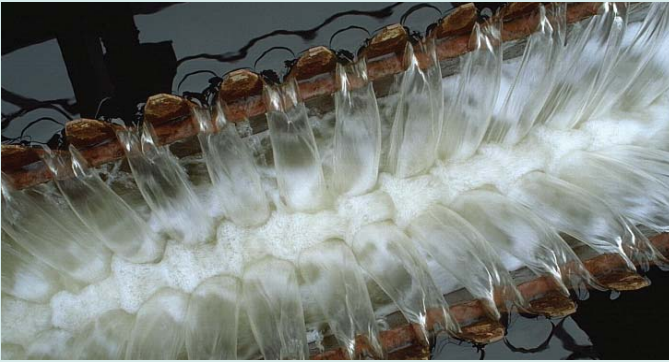


ACTIFLO® Softening combines ballasted high rate clarification with softening operations to reduce hardness, alkalinity, silica and heavy metals by addition of lime and/or soda ash.

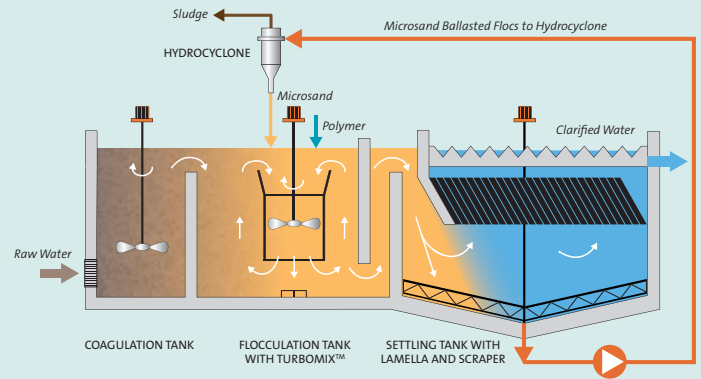
- ~10X more compact than conventional softening
- Reduced OPEX due to Turbomix™ reactor and carbonate sludge recirculation
- Operational flexibility to handle varying influent conditions

Inlet Hardness	150 - 500 mg/l as CaCO ₃
Rise Rate	35 gpm/sf
Clarified Water	< 35 mg/l Ca as CaCO ₃ < 50 mg/l Mg as CaCO ₃
TSS	< 10 mg/l
Turbidity	< 1 NTU

Wastewater Treatment ACTIFLO® for Tertiary Treatment



With tighter discharge limits being imposed on wastewater treatment plants the need for a cost effective, flexible process has evolved. Over the years, the Actiflo® process has proven its effectiveness in meeting extremely low phosphorus, metals, and TSS limits.

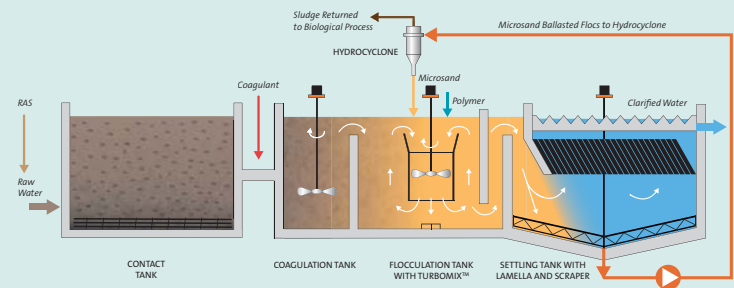


- Ability to treat a wide range of influent phosphorus levels to extremely low limits
- Flexibility to meet future limits (phosphorus, metals) without modifying the process train
- The same tertiary treatment trains can also be used to treat wet weather flows
- Treatment of flows with high solids concentration without impacting effluent quality (solids washout from secondary clarifiers during peak flow)
- Reduce sludge volume by incorporating a HCS system
- Reduce operating costs with sludge recirculation (internal)

BIOACTIFLO™ for Wet Weather



If flow diversion is not an option or the TSS and particulate BOD removal with Actiflo® alone are not enough, BIOACTIFLO™ can be incorporated into the treatment flow path, taking advantage of excess biological activity and improving soluble BOD removal through the system.

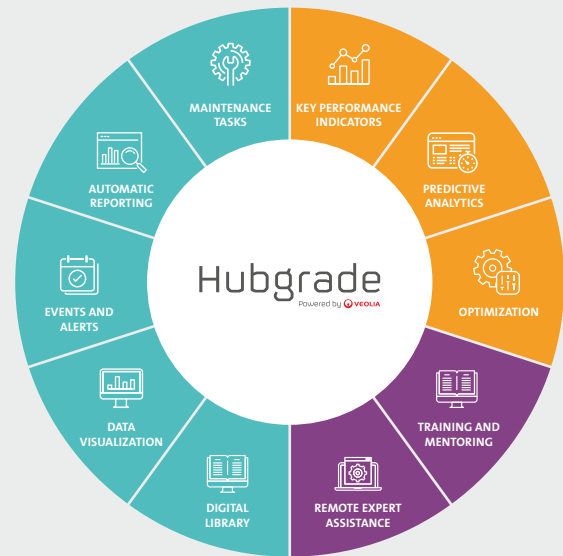


Return activated sludge (RAS) from the existing clarifiers is combined with the excess flows into a solids contact tank. A targeted mixed liquor suspended solids (MLSS) concentration is maintained in the contact tank to facilitate rapid uptake of soluble biological oxygen demand (BOD) via contact stabilization. Clarification with ACTIFLO® follows, allowing the system to handle the varying flows and loads associated with wet weather events, producing exceptional TSS and total BOD removal rates and allowing for efficient disinfection.

Digital Services

Hubgrade™ is Veolia's highly flexible suite of digital service offerings for water treatment and reclamation facilities. Hubgrade™ helps these facilities improve treatment performance and compliance, reduce operating and maintenance costs, and in many cases postpone or avoid capital expenditures.

Hubgrade™ provides several levels of service to match Veolia's expertise with the needs of the customer.



Hubgrade

ESSENTIAL



Performance Optimization Tool

- Secure cloud portal to facilitate better access and use of data
- Digital library to access all relevant documents
- Data visualization to collect and display process data
- Events and alarms to prevent shutdowns or regulatory breaches
- Automatic reporting to facilitate data analysis and reporting regularly

Hubgrade

ASSIST



Access to Veolia Experts

- Expert assistance to help facilities proactively address performance and maintenance needs
- The latest in augmented reality tools for enhanced remote support
- Increase operator skills with e-learning courses and operator refresher training programs
- Expert support is enhanced with the use of Hubgrade Essential

Hubgrade

PERFORMANCE



Online Smart Control Tool

- Key performance indicators assess the quality of the operation and guide operational decision making
- Predictive analytics predicts the evolution of strategic operation parameters or anticipates the failures, reduces downtime risks and optimizes maintenance
- Optimization features provide simulated operational scenarios and setpoints

Aftermarket Services

Customer support is a continuous process, from the design, to start-up, to operation. Our team of informed and experienced professionals are available for anything from process reoptimization, preventative maintenance or spare parts. Additionally, we offer Hydrex™ chemical cleaners to provide the most effective cleaning method available.

We also maintain an extensive parts inventory so that most items can ship the same day the order is placed. In addition to parts, we can provide a repair service that includes a trained technician to assist with the part replacement.

Recommended Chemicals for ACTIFLO®

3,000 Series

Drinking water production

4,000 Series

Effective membrane antiscalants and cleaners approved by major membrane manufacturers

6,000 Series

State-of-the-art clarification and wastewater chemistry and application experience

9,000 Series

Formulated Microsand

HYDREX

