



Softening Solutions

US Municipal Portfolio

WATER TECHNOLOGIES

Softening Solutions

Preventing Hard Water Buildup



Upon extended exposure to hard water, calcium and magnesium deposits may form on the interior of pipes and other surfaces. This accumulation is most common in areas where water is being heated, and might threaten to block water flow, which could in turn cause reduced efficiency or complete failure. Water softening systems reduce water hardness to prevent scale build up and improve drinking water taste and aesthetics.

Water softening pilot units are available upon request.

- Weekly rental rates
- Pilot operator and engineering services included
- Testing protocol tailored to site specific needs

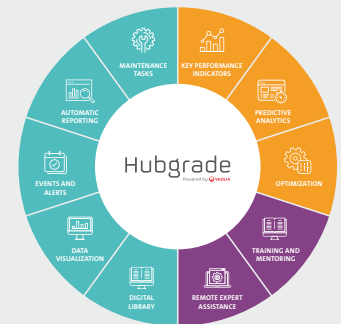


Digital services can be added to enhance softening treatment. Hubgrade™ is Veolia's highly flexible suite of digital service offerings for water treatment and reclamation facilities helping to improve treatment performance and compliance, reduce operating and maintenance costs, and in many cases postpone or avoid capital expenditures.

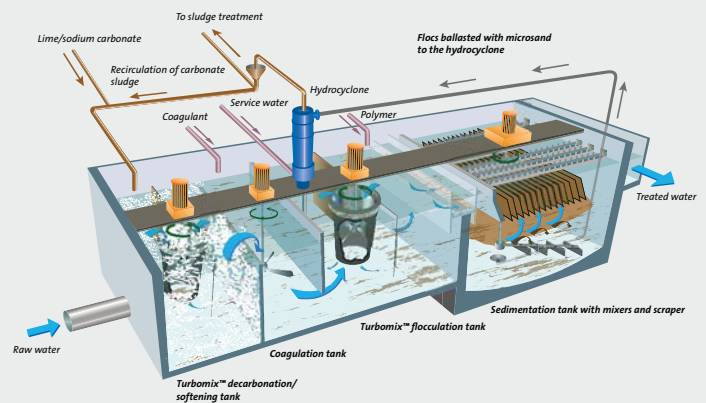
Hubgrade
ESSENTIAL
 Performance Optimization Tool

Hubgrade
ASSIST
 Access to Veolia Experts

Hubgrade
PERFORMANCE
 Online Smart Control Tool



ACTIFLO® Softening



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

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.

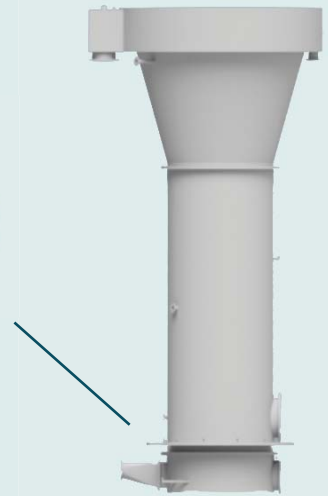
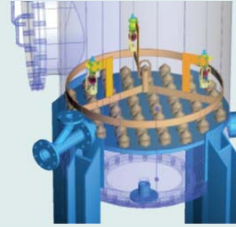
- ~10X more compact than conventional softening
- Reduced OPEX due to Turbomix™ reactor and carbonate sludge recirculation
- Operational flexibility to handle varying influent conditions

Actina™ Pellet Softening



Actina™ reduces calcium hardness, metals, organics and other contaminants with a simple, fluidized bed reactor that uses a catalyst (sand, pellets) to promote calcium carbonate precipitation. A strainer plate is located at the bottom of the reactor and is specifically designed for pellet softening that allows for material in raw water to pass. Caustic/lime plus softened carrier water is pumped to a removable chemical dispersion unit for pH adjustment.

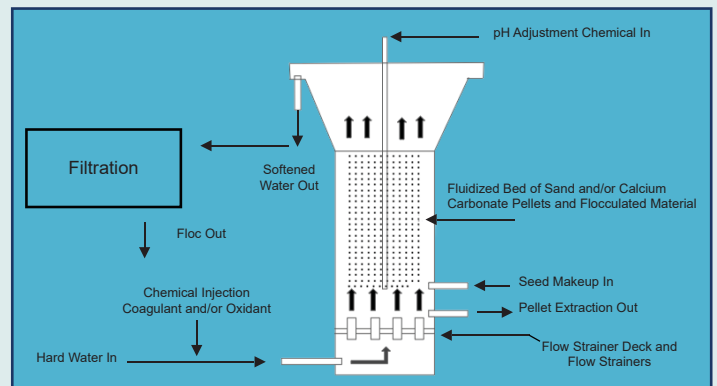
- 40% less chemicals and labor versus lime softening
- 50% less energy than lime softening
- 95% less energy than membranes
- Pellets significantly reduce waste disposal costs



Actina™ advantages:

- Small process footprint
- Simple operation, no moving parts
- No mechanical dewatering of waste pellets required (pellets self-dewater to 95% solids)
- Can operate with caustic or lime
- Pellets can be repurposed (construction fill, concrete production, animal feed supplement)

Actina™ Enhanced



Actina™ Enhanced combines coagulation with hardness and metal precipitation into one process step that maximizes performance, reduces overall operating costs and can eliminate the need for a separate pre-treatment technology.

Parameter (mg/l)	pH Adjustment Only	pH Adjustment and Coagulant
Total Hardness	65 to 75%	Same but at a lower pH
Calcium Hardness	65 to 85%	Same but at a lower pH
Magnesium Hardness	10 to 40%	Same but at a lower pH
Total Organic Carbon	5 to 10% w/ NaOH 15 to 20% w/ lime	40 to 50%

Resourcing the world

Veolia Water Technologies

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