

Water Technologies & Solutions

AquaDAF* high-rate clarifier

drinking water treatment

AquaDAF* is a high-rate clarifier for low-turbidity and algae-laden surface waters. The AquaDAF clarifier's uniquely engineered effluent collection system provides operating rates unequaled by conventional flotation technologies. The result is increased capacity for existing or new treatment facilities with no minimal space required.

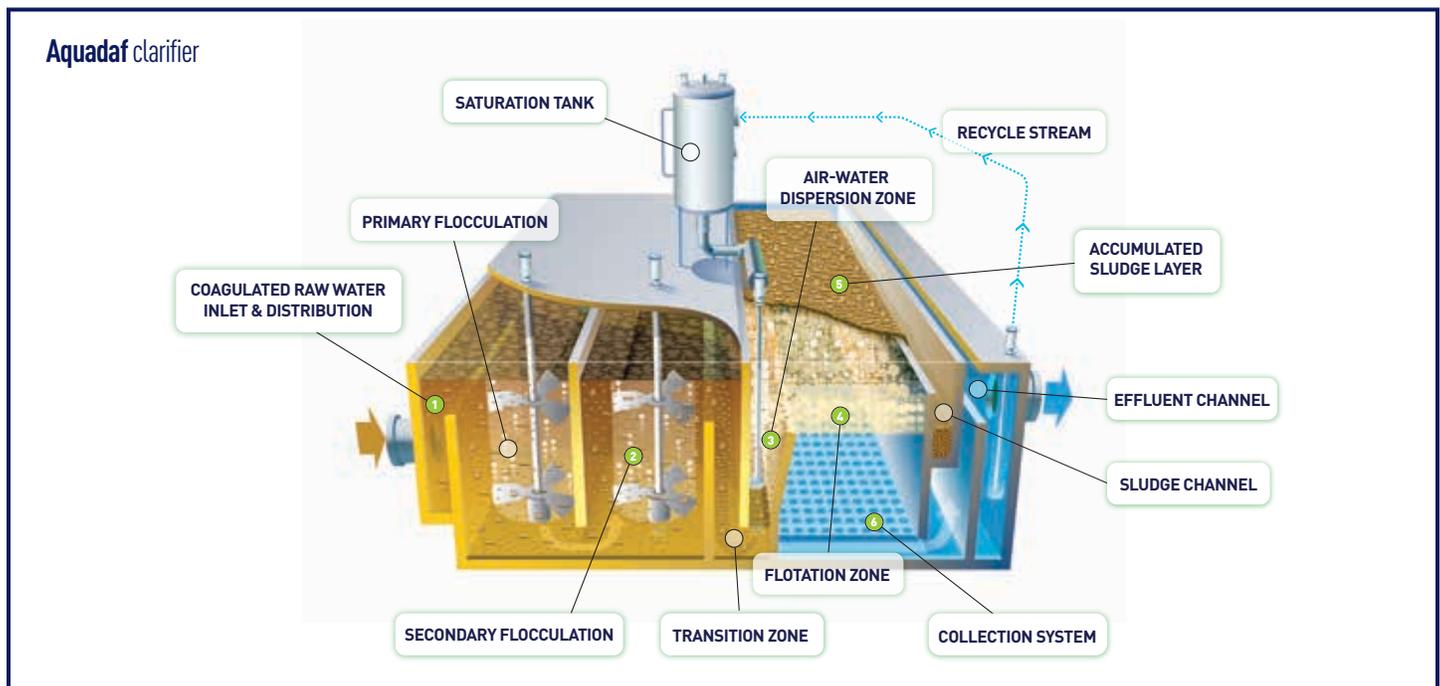
Dissolved Air Flotation (DAF) is an excellent solution for clarifying water with high levels of algae and other low-density solids that cannot be removed efficiently by sedimentation. The AquaDAF clarifier combines conventional DAF principles with several enhanced components, including a unique effluent collection system. This and other process improvements allow efficient hydraulics within the DAF flotation zone at superior surface loading rates.

ready for the resource revolution



how it works

- 1 raw water inlet:** Coagulated water from an in-line rapid mixer enters a flow distribution channel prior to the flocculation zone. Coagulation is the destabilization of colloidal particles, which facilitates their aggregation and is achieved by the injection of a coagulant, such as alum or ferric chloride.
- 2 flocculation zone:** Coagulated water is equally split to each unit, with traditional 2-stage tapered energy flocculation with variable frequency mixers. In this step, the destabilized particles agglomerate and form larger floc particles. The AquaDAF® flotation process requires only the formation of light, pinpoint particles, eliminating or significantly reducing the need for flocculant polymers. Additionally, the retention time employed in this stage is generally between 8 to 10 minutes.
- 3 air-water dispersion zone:** Flocculated water is then transitioned to the base of the flotation zone, where it passes through the injection of a saturated air-water recycle stream. This recycle stream is produced by recycling 8-12% of clarified or filtered water to a pressurized saturator vessel (70 to 90 psi). The recycle stream is then depressurized through a series of release nozzles, which are submerged and span the entire width of this transition zone. This depressurization creates thousands of micro bubbles, which disperse into the flotation zone.
- 4 flotation zone:** The principle behind the flotation process is the micro-bubbles which will form a dense air blanket within the flotation zone. The flocculated particulate will agglomerate with the micro-bubbles, as they rise to the surface, subsequently clarifying the water.



main features

- compact footprint - 10 to 20 gpm/ft² DAF loading rate
- all stainless steel recycle system
- no, or limited, polymer use
- start-up & shutdown within minutes
- ideal membrane pretreatment technology - increased flux rates
- hydraulic or mechanical sludge removal options

- 5 sludge accumulation:** The floated solids accumulate on the surface of the AquaDAF resulting in a thick sludge layer. Sludge may be removed with one of two methods:
 - Hydraulically, whereby an automatic effluent weir rises in a prescribed time. Subsequently, the flotation zone water level rises and the sludge is removed to an integral sludge trough.
 - Mechanically, whereby a traveling bridge scraper mechanism will penetrate and scrape the solids layer into the integral sludge trough.
- 6 collection:** Clarified water is collected uniformly across a perforated collection floor. This uniquely engineered system, in combination with other process enhancements, creates resistance over the flotation zone, resulting in uniform collection and efficient hydraulics throughout the basin. The result is the ability to handle high downward velocities and DAF loading rates significantly higher than conventional DAF processes.

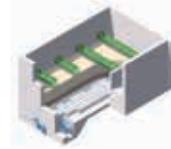
drinking water – clarification



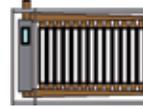
RAW WATER SOURCE



AQUADAF



DUAL MEDIA FILTERS

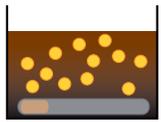


MEMBRANE FILTRATION



UV OR CL₂ DISINFECTION

tertiary wastewater – phosphorus & tss removal



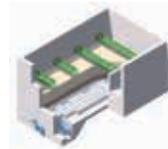
SECONDARY TREATMENT



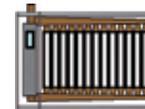
SECONDARY CLARIFICATION



AQUADAF



DUAL MEDIA FILTERS



MEMBRANE FILTRATION



UV OR CL₂ DISINFECTION

performance advantages

- clarified turbidity less than 1 NTU
- algae removal greater than 90%
- flocculation time of less than 10 minutes
- Phosphorus removal less than 0.1 mg/l TP
- thickened sludge of 2-4%

design options

- hydraulic or mechanical sludge removal
- **package systems** - nine standard package units from 100 gpm to 1,750 gpm (with or without filters)

design specifications

AquaDAF	Single Unit Capacity
	MGD
10 - 20 gpm/ft ²	0.5 to 25

technical features

- flexible layout options
- customize to any size plan
- loading rates: 10 to 20 gpm/ft²
- no or limited polymer use
- polymer-free membrane pretreatment
- efficient for cold water clarification
- unit heights 10 to 14 feet
- start-up and shutdown within minutes
- retrofit existing sedimentation basins
- common-wall layout with our Greenleaf® filter

AquaDAF

high-rate clarifier

integrated treatment solutions

As a full treatment line specialist, SUEZ draws upon a broad portfolio of proven technologies to assist industries and municipalities in meeting their water and wastewater treatment challenges. We custom design integrated equipment solutions and offer a comprehensive set of chemicals, monitoring instruments, and digitally enabled services for a wide range of applications:

- industrial water and wastewater
- municipal drinking water
- municipal wastewater
- biosolids management

We also offer global expertise in the design, build, operation and maintenance of water treatment plants and systems, all delivered to your specific demands.

services

Aftermarket

SUEZ sells parts and components for most SUEZ brand equipment as well as parts for demineralizers, thickeners, nozzles, pressure filters, and valves. We offer reliable spare parts at competitive prices. We maintain records of previous installations to quickly identify your requirements. Many items are shipped directly from stock for quick delivery.

Rebuilds, Retrofits and Upgrades

SUEZ offers cost-effective rebuilds and upgrades for SUEZ provided systems, no matter what year they were built. If you are interested in an economical alternative to installing a whole new system, contact us for a proposal.



product highlights

- efficient removal of low-density particles
- » operates at high load-rates, has a small footprint, and low installation costs
- » very low effluent turbidity and excellent solids and algae removal
- » easy operation and maintenance
- » polymer-free membrane pretreatment
- » clarification of water with low turbidity
- » cold water treatment
- » filter backwash applications

piloting

SUEZ offers pilot systems and services for this and many other of our product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- proof of system reliability
- optimal design conditions for the full-scale system
- raw water lab analysis
- regulatory approval

Please contact us if you would like to learn more about pilot studies for this system.

contact Find a contact near you by visiting www.suezwatertechnologies.com and clicking on “**Contact Us.**”

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