

# DISSOLVED AIR FLOTATION WATER TREATMENT PLANTS

AWC Water Solutions offers packaged and modular water and wastewater treatment plants including Dissolved Air Flotation (DAF) technology. Our Potable DAF plant excels in treating water with high levels of color, organics, algae, and iron and manganese. DAF offers several advantages over settling clarifiers, 1) DAF's flocculation zone and clarification zone are significantly smaller providing a much smaller plant footprint, 2) DAF excels at clarifying lighter organic or hydrocarbon substances 3) DAF maintains throughput even with cold water, not requiring over-sizing and polymer use is low or not required.

Our plants are custom designed to meet our clients' particular challenges. They can treat capacities up to 1,400 gpm (7,600 m<sup>3</sup>/d) per train (multiple trains for higher flows) and reliably achieve less than 0.1 NTU turbidity and 2.5-log, multi-barrier protection against Giardia and Cryptosporidium. The ability to remove both high solids and organics, in a compact package, to 0.1 NTU is unique to the AWC DAF. Systems are used for community and potable water supplies as well as pretreatment for industrial processes and NF and RO membranes.



## HOW IT WORKS

### FLASH MIXING

A coagulant added to the raw water precipitates dissolved contaminants and encourages particles to form "flocs".

- Multi-chemical injection ports for coagulant, polymer, pH adjustment, etc. provides process flexibility
- Static or powered mixers are options

### FLOCCULATION

Gentle agitation in the flocculation zone helps these flocs grow before they pass into the flotation zone.

- Multi-stage hydraulic or mechanical flocculation
- Carefully designed to minimize short-circuiting
- Hydraulic flocculation has variable nozzles for site adjustable energy input
- Mechanical flocculators are fitted with variable speed drives

### DISSOLVED AIR FLOTATION

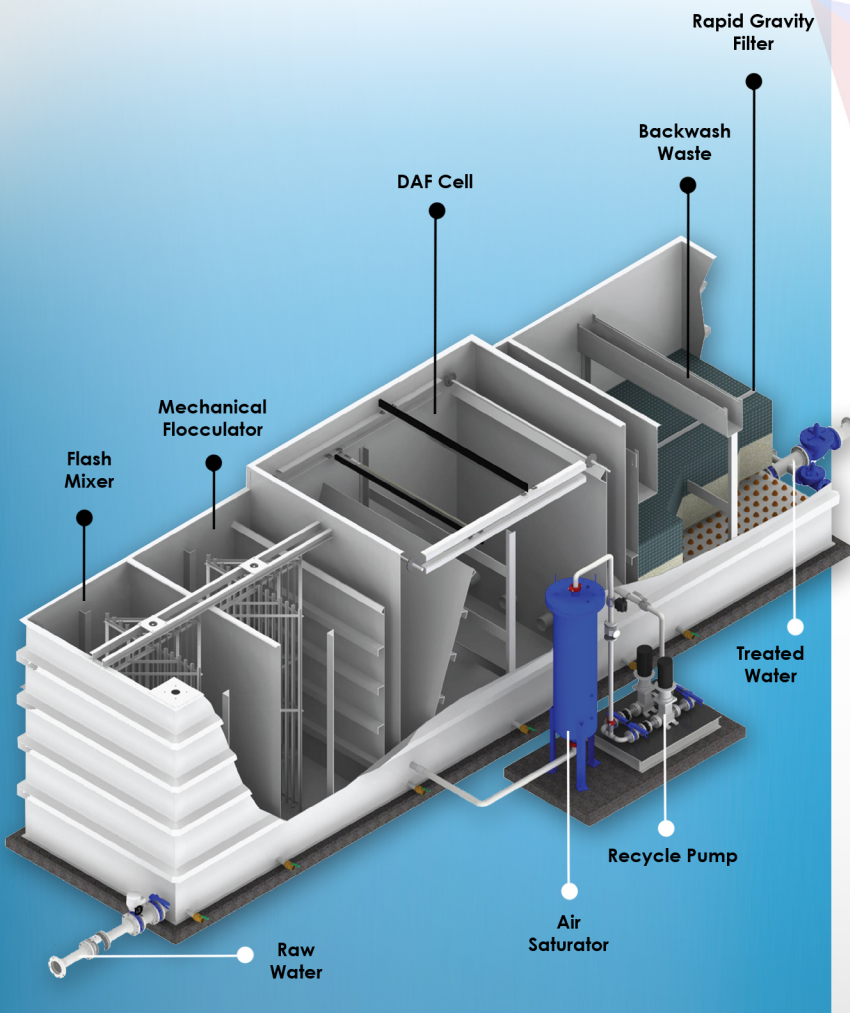
Once in the flotation zone, microscopic air bubbles are injected. The 50 micron bubbles used for flotation are formed by recycling a small stream of clarified water through an air pressurized, packed tower saturator to specially designed nozzles at the DAF cell inlet. Here, a rapid pressure drop causes the air to come out of the solution and form millions of small bubbles, which are then dispersed through the flocculated raw water. Then, the bubbles rapidly float the flocs to the surface and the accumulated float is skimmed off. Typically polymers are not required, saving chemical costs and operating costs.

- Inlet/outlet manifolds for even flow distribution
- Mechanical float or hydraulic removal options are available
- "V" hopper bottom for sludge thickening and hydraulic sludge removal option available

### FILTRATION

Clarified water passes to the integrated high-rate filter for final polishing.

- Mono, dual and multi-media options
- Options for iron, manganese and arsenic removal
- Options for water backwash and surface wash and air scour/water backwash for reduced water consumption and improved cleaning.
- Nozzle and plenum-type underdrain





## PLANT FEATURES

### CORROSION-RESISTANT CONSTRUCTION

AWC constructs its tanks out of highly corrosion-resistant marine-grade, 5086 aluminum alloy achieving an EPA tank life rating of 100 years. This construction eliminates the need for corrosion-protection coatings and future recoating maintenance and prevents premature failures, which can occur with poor surface preparation or coating application. Sacrificial anodes are used to further increase protection. All fasteners in contact with the aluminum are 316 stainless steel to minimize galvanic corrosion. Stainless steel, epoxy coated steel or composite tanks are also available upon request.

### ELECTRICAL SYSTEMS AND CONTROL PANELS

AWC designs, builds, programs and commissions fully integrated, automated control and electrical systems. Our systems feature:

- Integrated UL and CSA approved MCC's, drives and control panels
- Fully automatic operation with advanced instruments and controls
- Remote monitoring via SCADA, or PC/Tablet or smart phone options are available
- Industry standard PLC options for reduced training and technical support

### CHEMICAL AND PUMPING SYSTEMS

AWC offers a full range of chemical mixing and dosing systems, including solution tanks, mixers, dosing pumps, spill containment and safety equipment. Well pumps, feed and distribution pumps skids are completely integrated with plant controls providing a seamless operation and control environment.

### TECH SUPPORT AND REMOTE MONITORING

Full technical support services including telephone & emergency support, remote system monitoring and diagnostics, pilot programs & process optimization, performance audits, training, and upgrade planning are available.

## ADVANTAGES OF AWC DAF PLANTS

### HIGH CAPACITY TREATMENT AND RETROFITS

Our process equipment components can also be supplied for installation into site-constructed concrete tanks or retrofitted into existing tankage. Capacities ranging to 100,000 m<sup>3</sup>/d (25 MGD) can be achieved in this manner. ADI can provide tank dimensions and other civil and building criteria to assist clients construct a complete plant.

### COST-EFFECTIVE

Our packaged DAF plants are pre-assembled and tested in our facility, often saving 50% or more over in-situ construction costs and schedule. The plant can also be integrated into pre-engineered building systems and shipped to site for increased savings. The small DAF footprint reduces building costs.

### SIMPLICITY

Our DAF plants are quiet, simple and easy-to-operate with minimal operator input. They adjust quickly to rapidly changing process conditions. They are also supplied complete with chemical dosing, water quality instrumentation, automatic controls and monitoring systems customized to meet local needs. System start-up, commissioning and onsite customization by our PLC/process technicians assures performance objectives are achieved.



CAPACITY (gpm) (m3/d)		15 MINUTES FLOCCULATION DAF RATE (6 gpm/ft2) (15m/hr) FILTER RATE (5 gpm/ft2) (12m/hr)				20 MINUTES FLOCCULATION DAF RATE (5 gpm/ft2) (12m/hr) FILTER RATE (4 gpm/ft2) (10m/hr)				30 MINUTES FLOCCULATION DAF RATE (4 gpm/ft2) (10m/hr) FILTER RATE (4 gpm/ft2) (10m/hr)			
		(ft) W (mm)	(ft) H (mm)	(ft) L (mm)	(ft) W (mm)	(ft) H (mm)	(ft) L (mm)	(ft) W (mm)	(ft) H (mm)	(ft) L (mm)			
50	250	4'6" 1370	8'0" 2360	9'9" 2972	4'6" 1370	8'0" 2360	11'9" 3581	4'6" 1370	8'0" 2360	14'3" 4343			
100	500	6'0" 1830	8'0" 2360	13'3" 4038	6'0" 1830	8'0" 2360	16'3" 4953	6'0" 1830	8'0" 2360	20'3" 6172			
200	1000	8'0" 2440	8'0" 2360	18'9" 5715	8'0" 2440	8'0" 2360	23'0" 7010	8'0" 2440	8'0" 2360	29'0" 8839			
400	2000	10'0" 3050	9'6" 2900	26'3" 8001	10'0" 3050	9'6" 2900	32'0" 9754	10'0" 3050	9'6" 2900	40'0" 12192			
600	3000	12'0" 3660	11'0" 3350	30'6" 9296	12'0" 3660	11'0" 3350	37'9" 11507	12'0" 3660	11'0" 3350	46'9" 14250			
800	4000	12'0" 3660	12'0" 3660	38'9" 11811	12'0" 3660	12'0" 3660	48'0" 14630						
1000	5000	12'0" 3660	12'0" 3660	47'9" 14555									
MULTIPLE TRAINS AVAILABLE													
IMPERIAL / METRIC DIMENSIONAL TABLE													

**IMPERIAL / METRIC**  
DIMENSIONAL TABLE

### ABOUT AWC WATER SOLUTIONS

AWC Water specializes in providing innovative packaged and modular water and wastewater treatment solutions for municipal and industrial applications. With more than 500 plants delivered around the world, we offer unmatched expertise and a reputation for delivering reliable, high quality water and wastewater solutions.

**Contact AWC today to discuss your project needs.**



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