

# ADSORPTION CLARIFICATION WATER TREATMENT PLANTS

AWC Water Solutions offers packaged and modular water and wastewater treatment plants including the Adsorption Clarifier (AC) process. AC plants incorporate a unique, backwashable upflow media clarifier which provides a "tortuous path" combined flocculation and clarification as the raw water passes through the media to the integrated Rapid Gravity Filter. This clarification extends the maximum turbidity of the AC plant compared to a Direct Filter plant while still maintaining a compact footprint and affordable price. AC plants are particularly suited for treating surface waters with a peak turbidity of 50 NTU and average turbidity less than 20 NTU. Options are available for removing organics, iron and manganese.

AWC AC plants are custom-designed to meet our clients' needs. The AC plant can treat capacities up to 2,000 gpm (10,800 m<sup>3</sup>/d) per train. Multiple trains can be combined for higher flows. They also reliably achieve less than 0.1 NTU turbidity and 2.5-log, multi-barrier protection against Giardia and Cryptosporidium with the integrated Rapid Gravity Filter. 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 & encourages suspended particles to form "flocs".

- Multi-chemical injection ports for coagulant, polymer, pH adjustment, etc. provides process flexibility
- Optional static or powered mixers

### FLOCCULATION

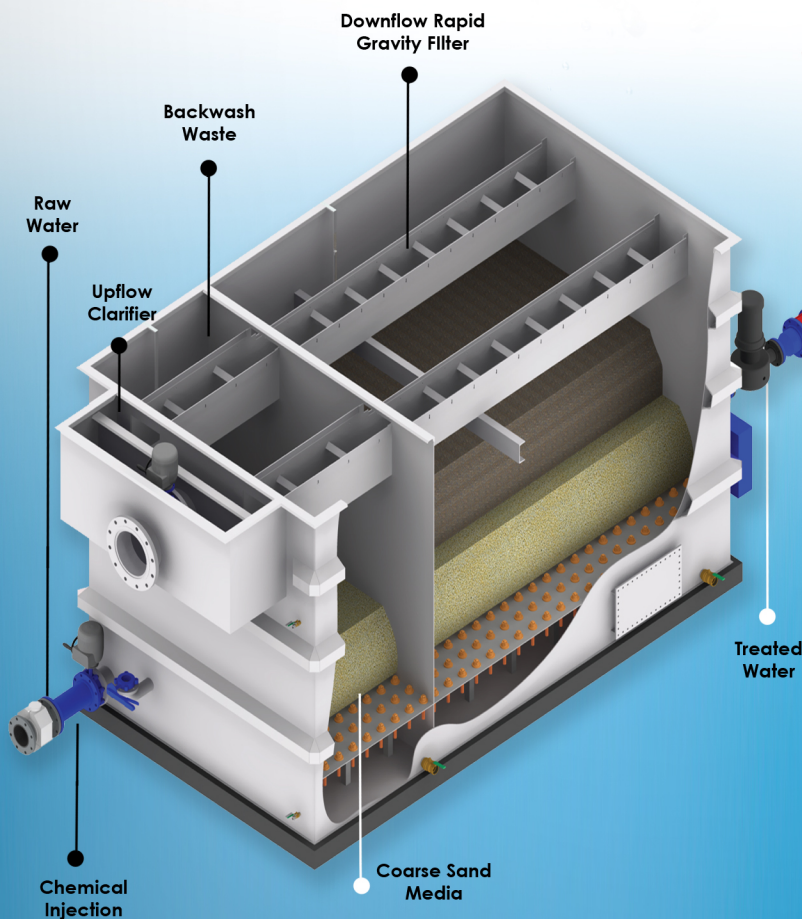
As the water passes upward through the upflow clarifier filter, the flocs grow and are partially removed by the coarse media.

- Acts as both flocculation and clarification zone to reduce filter loading
- Compact footprint compared to conventional flocculation and clarification systems.
- Coarse angular gravel media for particulate retention

### FILTRATION

A high-rate media filter removes remaining particles. Solids that accumulate within both the upflow and downflow filters are periodically removed by automatically controlled air/water backwashing.

- Mono, dual and multi-media options
- Options for iron, manganese and arsenic removal
- Options for water backwash and surface wash and air scour or 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 AC 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 m3/d (25 MGD) can be achieved in this manner. AWC can provide tank dimensions and other civil and building criteria to assist clients construct a complete plant.

### COST-EFFECTIVE

Our packaged AC 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 AC footprint reduces building costs.

### SIMPLICITY

Our AC 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)		UPFLOW CLARIFIER (10 gpm/ft2) (25m/hr) GRAVITY FILTER (5 gpm/ft2) (12m/hr)			UPFLOW CLARIFIER (10 gpm/ft2) (25m/hr) GRAVITY FILTER (5 gpm/ft2) (12m/hr)			UPFLOW CLARIFIER (10 gpm/ft2) (25m/hr) GRAVITY FILTER (5 gpm/ft2) (12m/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	3'0" 910	6'9" 2060	4'3" 1300	4'0" 1220	6'9" 2060	4'9" 1440	4'0" 1220	6'9" 2060	5'3" 1600
100	500	4'0" 1220	6'9" 2360	6'0" 1830	5'0" 1524	7'9" 2360	7'6" 2200	5'0" 1524	7'9" 2360	8'0" 2440
200	1000	6'0" 2440	7'9" 2360	10'6" 3200	6'0" 1830	7'9" 2360	12'9" 3890	6'0" 1830	7'9" 2900	13'9" 4190
400	2000	8'0" 1830	7'9" 2900	15'0" 4500	8'0" 2400	9'6" 2900	19'0" 5790	8'0" 2440	9'6" 2900	20'3" 6170
600	3000	8'0" 2440	9'6" 2900	22'6" 6800	8'0" 2440	9'6" 2900	28'3" 8600	8'0" 2440	9'6" 2900	30'3" 9220
800	4000	8'0" 2440	9'6" 2900	30'0" 9100	10'0" 3060	9'6" 2900	30'3" 9220	10'0" 3060	9'6" 2900	32'3" 9830
1000	5000	8'0" 2440	9'6" 2900	37'6" 11400	10'0" 3060	9'6" 2900	37'9" 11500	10'0" 3060	9'6" 2900	40'3" 12260
MULTIPLE TRAINS AVAILABLE										
IMPERIAL / METRIC DIMENSIONAL TABLE										

MULTIPLE TRAINS AVAILABLE

**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.**



**AWC WATER SOLUTIONS LTD.**  
Tel. 604-638-0760 Fax. 604-638-0795  
Email. [info@awcwater.com](mailto:info@awcwater.com)