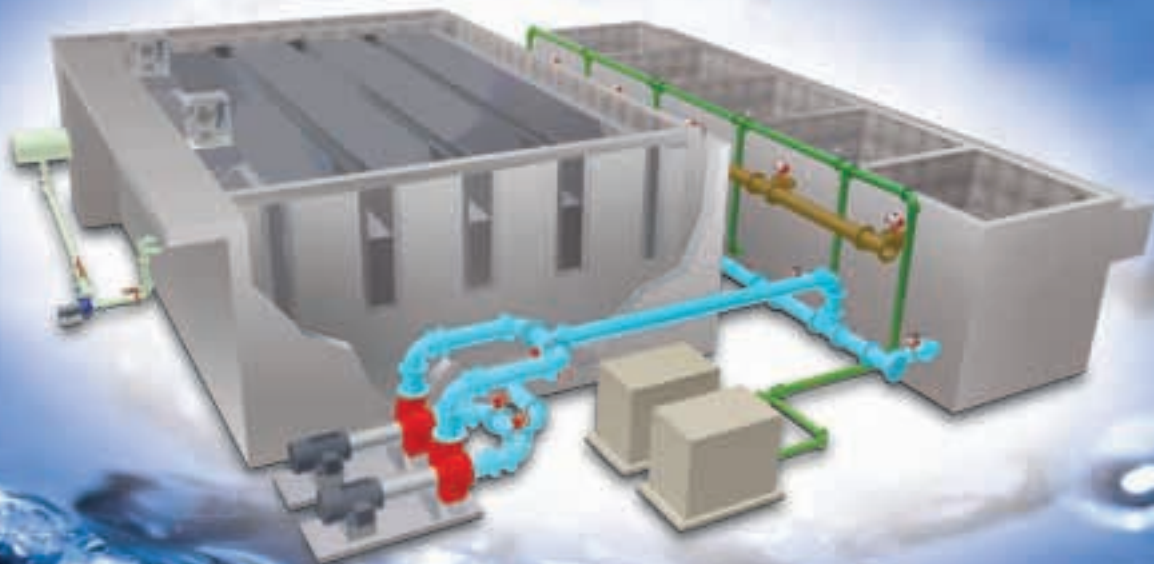


Water Technologies

Trident® HSC  
multi-barrier water  
treatment clarifier

**SIEMENS**



# Trident<sup>®</sup> HSC multi-barrier water treatment clarifier

Multi-Barrier Clarification: Trident<sup>®</sup> HSC multi-barrier clarification units offer two-stage protection for surface water, groundwater and industrial process water treatment systems. The series-operated stages each reduce incoming contaminants to produce high-quality effluent while providing back-up protection for the overall process.

Throughout the treatment system, corrosion-resistant components are utilized to reduce maintenance.

The treatment process uses proven coagulation-flocculation technology operating at high rates to minimize required footprint.

## Trident<sup>®</sup> HSC clarifier applications:

- High turbidity and color applications
- High iron, manganese and arsenic applications
- Wastewater phosphorus removal
- Variable influent water conditions
- Enhanced coagulation treatment
- Cold water conditions

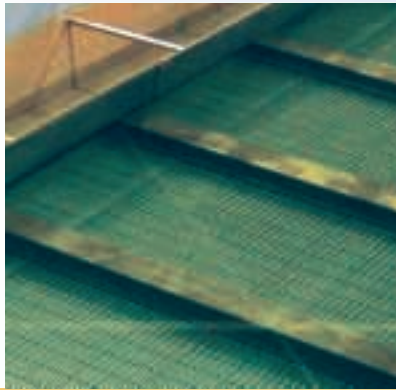
Trident<sup>®</sup>  
HSC

## Stage 1

Treatment begins with the addition of coagulant, polymer and recirculated sludge prior to water entering the treatment basin. High intensity mixing quickly develops rapidly settling floc particles without the need for specialty chemicals or external ballast. Required footprint is reduced by the elimination of conventional flash mix and flocculation chambers. Influent water is introduced into the high solids zone below the plate separators to increase solids contacting. Floc particles are separated from the water using inclined plate separators which use hydraulic control on the inlet and effluent points.

Through the use of solids contacting and concentrating, this stage of treatment improves organics removal while reducing the sludge volume generated.

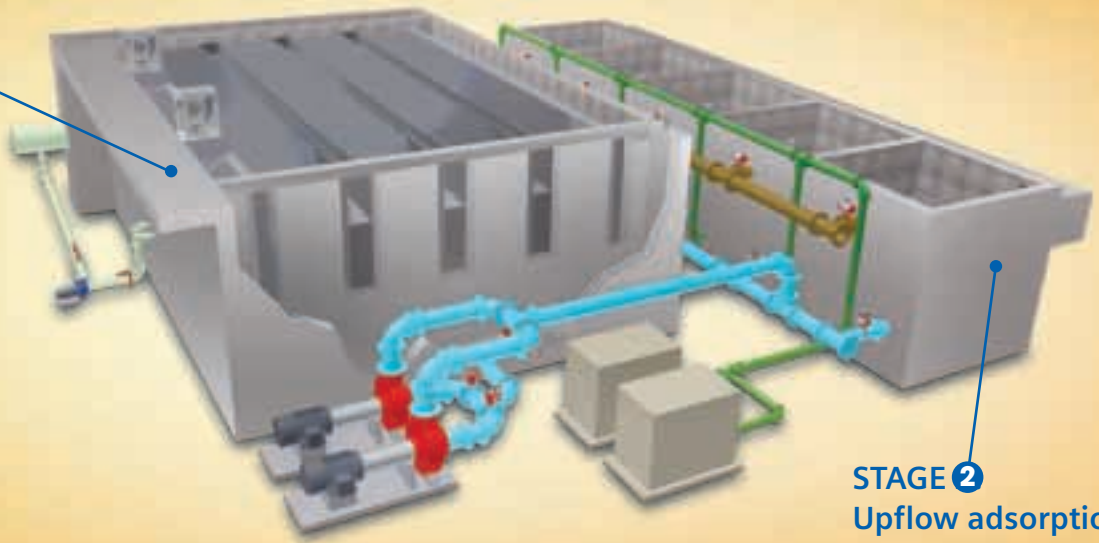
For plants incorporating enhanced coagulation, the plate clarification stage reduces influent solids concentration prior to the Adsorption Clarifier® stage, leaving the majority of coagulated particles in the plate clarifier. For cold water conditions, the plate clarifier provides added detention time. Overall, the plate clarifier reduces plant waste volume and improves organics removal.



## Stage 2

Solids exiting the first stage are smaller floc particles. To capture these particles, an upflow buoyant media clarifier system operated at 12-15 gpm/sq.ft. is used. The Adsorption Clarifier® system has been used at hundreds of installations for light floc reduction. The high-rate system traps solids inside the buoyant media similar to a filter bed. The buoyant media includes rolled and scarified beads to enhance floc capture and retention. Captured solids are periodically flushed from the clarifier media using clarified water and air scouring. Each Trident® HSC unit incorporates five Adsorption Clarifier® cells to provide forward flow even during a clarifier flush cycle while minimizing instantaneous waste flow. On-line redundant air scour blowers are provided for the cleaning cycle. The entire process is monitored and controlled by an integrated control system to ensure high-quality effluent is produced and operator attention is minimized.

**STAGE 1**  
High intensity mixing and particle settling



**STAGE 2**  
Upflow adsorption clarification

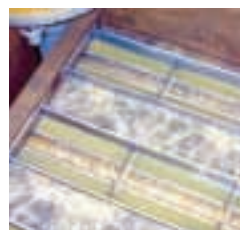
Trident® HSC clarifier allows for multiple tank designs and easy future expansion.



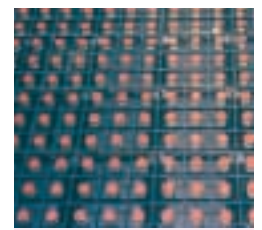
MULTIBLOCK®  
Underdrain and laser shield™ media retention



CentROL®  
Gravity filters in a cluster arrangement



MULTIWASH®  
Sustained simultaneous air-water backwash



MULTICRETE™ II  
Monolithic false floor underdrain

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Printed in U.S.A.  
MO-USA-HSCBR-0506  
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