

WTR[®] Engineering LLC

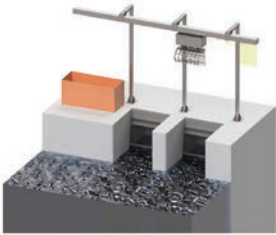
A Century of Screening Experience



Screening for Power, Industry and Municipal Water

Products and Solutions

Bar Screens and Raking Machines



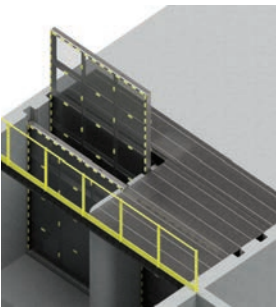
- Bar Screens are a plant's first line of defense for coarse debris control. Each is custom designed per site including spacing, bar size, mounting and differential.
- Screens are available in epoxy coated or galvanized carbon steel, 304L, 316L, Duplex SS or other materials.
- Raking Machines are available in either an overhead Talon Rake® for off deck discharge or a deck mounted Traversing Talon Rake with integral debris hopper or conveyor discharge.
- Controls can be automatic, semi-automatic or wireless manual remote if operators need to be present. HMI's allow for real time changes to dynamic site conditions and operational sequences.

Stop Gates and Lifting Beams

- Stop Gates are used to allow dewatering of an intake structure if dry maintenance of plant equipment is critical. Gates may be in sections or full height based on site conditions.
- Gates are normally stored in sections above the deck and used when necessary.
- Gates may include valves which open with the lifting cycle to allow gravity filling of intake.
- Recessed guides and on-seating head creates ideal sealing for dewatering conditions.
- Lifting Beams can be provided for automatic engagement / disengagement of gates eliminating the need for divers to attach / detach gate sections. Lifting is via owner's site or mobile crane.



Stationary Screens



- Stationary Screens are commonly used for pump and condenser protection from blowdown, wind-blown debris and degrading tower elements in closed loop cooling cycles.
- Screens contain a debris scoop to capture debris on manual screen removal via owner's site crane.
- Primary screens face the flow in each channel and a second roving screen is used downstream when a primary screen accumulates debris. Stationary Screens are also ideal for low flow or light debris loads.
- Various mesh sizes, materials of construction and lifting attachment methods are available.
- Screens can be single height or in sections based on available plant lifting equipment.

Traveling Screens

- Dual and Center Flow Screens filter debris through two faces simultaneously. The screen is oriented parallel to the flow allowing for effective widths ½ that of Thru Flow Screens.
- Dual Flow Conversion Screens are available to create a dual flow arrangement in an existing thru flow chamber thus eliminating carry over while negating civil modifications.
- Dual Flow Screens are double entry single exit for raw water intakes and Central Flow Screens are single entry double exit for headworks or polishing of sewage treatment plants.
- Thru (Single) Flow Screens filter debris through the upstream face only. The screen spans the width of the channel perpendicular to the flow. Debris is captured on the upstream face and removed via wash water at the deck level.
- Fish Recovery and Return screens are available to meet 316(b) requirements to significantly increase the survivability of juvenile marine life and offered in Dual Flow, Conversion or Thru Flow patterns.

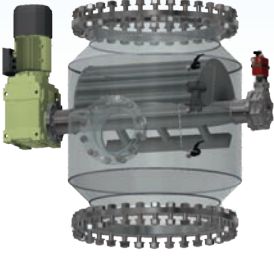


Circular Screens



- Circular Screens are available in numerous flow patterns for specific sites including:
 - Single Entry Disc Screens for shallow water and situated perpendicular to the flow.
 - Single Entry Cup Screens for lower flows with single entrance and flow through the perimeter.
 - Double Entry Drum Screens for high flows with dual entrances and flow through the perimeter.
- All circular screens provide zero carry-over of debris with complete separation of influent and effluent.
- Robust design, single rotating frame and positive sealing provides for virtually no maintenance.
- Disc, Cup and Drum Screens utilize no permanently submerged rotating components.

Debris Filters



- Debris Filters provide ultimate protection from macro fouling for condensers, critical heat exchange equipment and process water while the plant is online.
- Located upstream of the condenser / heat exchanger, the debris filter allows nothing larger than the aperture to pass downstream (such as debris carry-over from traveling screens or mollusk shells).
- The debris filter operates on line and uses a multiple suction cleaning rotor to vacuum debris via reverse pressure from a small percentage of the flow, relatively unnoticed by the exchanger.
- The filter operates on differential, timer or manual initiation with debris sent to the plant discharge.

Condenser Tube Cleaning Systems

- Condenser Tube Cleaning Systems automatically maintain the cleanliness of condenser tubes while on line, thus providing maximum heat exchange capacity.
- Elastomeric balls slightly larger than the tube ID are injected into the flow stream, thus wiping the surface clean of scaling contaminants within the water source.
- Balls are recovered on the discharge and recirculated back for additional passes or may be collected for replacement.
- The CTCS is vital in extending tube life by preventing tube fouling, scaling, under deposit corrosion and aids in prevention of MIC attack.



Headworks Screening



- Coarse screening 3/4" to 4" (20mm to 100mm) via Monorail Talon Rake for multiple or deep channels with automated debris discharge.
- Fine screening 1/16" to 3/8" (2mm to 10mm) for conventional sewage treatment works or membrane water reclamation facilities.
- Fine screens are available in various flow patterns including: Central Flow (single entry double exit), Single Entry Cup Screen or Double Entry Drum Screen.
- Unique Honeycomb mesh arrangements and apertures clean easily and prevent fibrous buildup (hair pinning) common to other screening media.
- Various screenings handling, washing, compaction and dewatering equipment is available.

- The WTR Engineering Sales & Support Department provides full aftermarket support, spare parts and field services.
- We can provide onsite engineering & inspection, installation supervision, maintenance and repair, equipment retrofitting, plant upgrades, startup and training.
- Our experienced service professionals are accustomed to analyzing unusual conditions and providing solutions to unique site or operating challenges.
- WTR can provide spares, services and recommendations for our products and other equipment manufacturers.

Parts and Services



Key Attributes



WTR Engineering targets key or anticipated operating issues to provide comprehensive solutions including:

- Robust components for reliability and durability.
- Simplicity of design for operation and maintenance.
- Maintenance free operation where applicable and practical.
- Custom designed for specific site conditions and debris types.
- Advanced controls with user friendly interface to meet dynamics and equipment response times.

WTR Engineering

A Century of Expertise

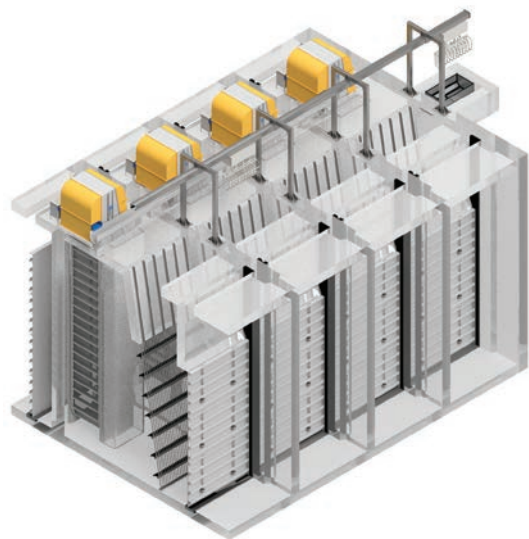


WTR Engineering LLC has 100+ years of experience in mechanical water filtration. Whether it's a raw water intake for an industrial plant, a condenser protection issue or a headworks problem at a sewage treatment works, our team of experts can quickly diagnose, develop a solution and provide the ideal equipment. From greenfield concepts to operating plants, WTR has the knowledge and experience to find an economical and reliable solution to debris and fouling issues. We can assist your staff from the initial design concept, provide recommendations for troublesome failures/operating issues or provide a complete turnkey solution.

Markets Served

WTR Engineering serves numerous industrial and municipal water markets including:

- Electrical generating stations (fossil, nuclear, hydro)
- Pumping stations (flood control, irrigation)
- Refineries and PetroChemical facilities
- Steel mills and industrial complexes
- Domestic sewage treatment plants
- Potable drinking water plants



Products and Solutions

Our screening products for raw water, condenser protection or headworks include:

- Bar Screens – coarse and fine
- Raking Machines – monorail and deck mounted
- Stop Gates and Lifting Beams – for site dewatering
- Stationary Screens - for closed cycle cooling or low flow
- Traveling Screens – dual flow or thru flow, conversion & fish recovery
- Circular Screens – single entry disc, cup or double entry drum
- Debris Filters – for condenser macro fouling protection
- Condenser Tube Cleaning Systems – for micro fouling



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