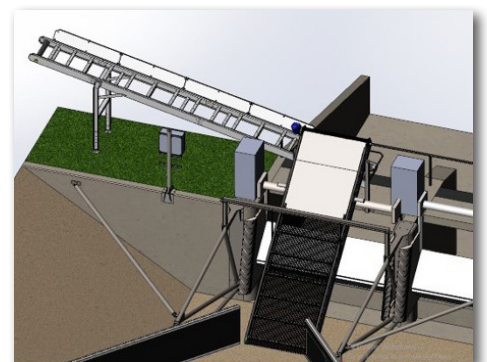


Product Information



Escalator Trash Rack/Screen Cleaner

Aqua Systems 2000 introduces the self-cleaning Trash Rack. This simple and flexible design can be readily adapted to large or small applications where trash problems range from surface debris to entrained plant matter. Unwanted trash can be swept out of water with a reliable, low power, low maintenance and self-cleaning screen/rack from Aqua Systems 2000. The Escalator Trash Rack has a clearance advantage for removal of large debris. It can also work in conjunction with Trash Deflectors for total canal cleaning.



Features:

- Stainless steel frame and screen design for full water load
- Waterproof or stainless steel chain drive
- UHMW chain track and nylon idlers
- Nylon bristles set in epoxy with aluminum backing
- Helical gear box drive
- Overload protection
- Start warning horn

Site Specific Design Options:

- V-Wire, perforated plate, or bar grate screens
- Various screen open areas available to provide minimal head loss
- Solar DC power or grid AC power
- Brush speed
- Full automation package or basic on/off operation
- Trash removal conveyor(s)



Product Information



Fabricated Side Gate

Aqua Systems 2000 Slide Gate comes equipped with single or dual stem operators and can be supplied in an overshot or undershot configuration.

The Aqua Systems 2000 Slide Gate can be supplied with a manual Hand Crank or motorized using DC controls. When used in conjunction with one of our controllers, the slide gate can be automated for flow control or level control.



Features:

- 3CR12 Stainless Steel
- Single or Dual 304 Stainless Steel Stem with ACME thread
- Bevel Gearbox for Stem Actuator
- Stop nut
- UHMW slides
- UV resistant EPDM gate seals for watertight leaf to gate frame seal
- Helical Bevel add on gearbox with appropriate drive speed for automatic control
- Multi-turn electrical limit switch
- Encoder for accurate gate position
- 12 or 24Vdc motor

Applications:

- Turnout structures
- Irrigation check structures
- Spill structures

Advantages:

- Reliable, accurate control
- Overshot or Undershot configurations available
- Flow measurement



Product Information



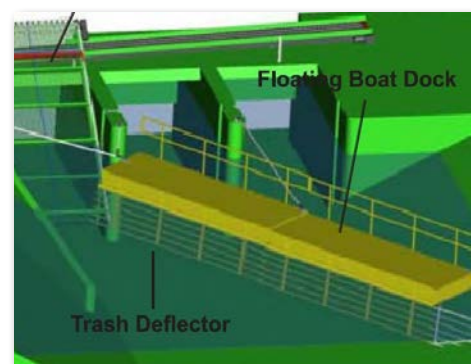
Floating Dock Trash Deflector

Aqua Systems 2000 has developed a floating dock trash deflector that can be a cost-effective addition to tools for managing and disposal of water weeds, algae and other debris that floats down canals and interferes with water management. A large percentage of the debris in a canal is floating on the surface or suspended in the top two or three feet of depth. The floating dock and screen positioned at an angle across the canal effectively re-directs this debris with virtually no effect on the normal water flow in the canal. Removing or diverting this debris from the canal can have major benefits to other downstream screening devices and water users.



Plan A: SMRID East Lateral

Over the past years, Aqua Systems 2000, with assistance from St. Mary River Irrigation District and Scottco Marine, has been testing a prototype of the floating dock and screen to collect and/or direct floating debris in a canal. Multiple docks can be linked together if necessary to increase the length of the deflector. The deflector, when used in conjunction with one of our In-Line Trash racks, can be used to remove debris from the canal.



Plan B: Deflecting trash towards In-Line Trash Rack

Initial testing has shown that a relatively fine screen of wedge wire stays cleaner than any other surface tested. Water weeds and large "islands" of algae and debris tend to deflect with very little material stopping on the screen. Smaller formations of algae tend to adhere loosely to the screen and require periodic sweeping with a simple lawn grass rake. Alternatively, a solid plate deflector may be used if there is sufficient area under the deflector for minimal flow disturbance. Solid plate deflectors require less maintenance as cleaning is not required.



Product Information



Hydra LOPAC® Gate

The LOPAC gate was developed by Peter Langemann in the 1980's to assist tail end irrigators in managing widely fluctuating water supplies. A number of installations have operated successfully for the past couple of decades. Aqua Systems 2000 have combined the simplicity of the LOPAC with a hydraulic actuator to provide a flexible and economical solution to water control problems in small to medium sized canal.

Application Suitability:

- Irrigation check structures
- Spillway structures
- Diversion structures
- Fish screening structures



Features:

- 3CR12 Stainless Steel
- Hydraulic actuation
- Environment friendly oil
- Manual electric operation
- NEMA 4 electrical panel
- Motor starter, overload relay, limit switch
- Independent high-level emergency assist
- 24 Vdc battery operation for reliability
- Solar powered

Advantages:

- Superior trash management
- Low power requirements
- Reliable, accurate control

- Ease of installation: LOPAC gates are fully assembled for shipping and are typically dropped into existing stop-log guides

Options:

- 304 Stainless Steel components where aggressive water is encountered
- Operation modes:
 - Hydraulic
 - Automated
 - Screw Jack
 - Manual (cordless drill operated)
 - Manual electric
 - Automated



Product Information



Inline Cleaners/ Rack Cleaners

This self-operating screen cleaner was developed by Aqua Systems 2000 in conjunction with the Lethbridge Northern Irrigation District. A simple and flexible design that can be readily adapted to applications both small and large where the trash situation ranges from surface debris to entrained plant matter. Unwanted trash is swept out of the water with a reliable, low power and low maintenance self cleaning screen / rack provided by Aqua Systems 2000.



Features:

- Stainless steel frame and screen design for full water load
- Mild steel screen cleaner frame coated with two-part epoxy paint
- Water proof or stainless steel chain drive
- UHMW chain track and idlers
- Nylon bristles set in epoxy with aluminum backing
- Helical gear box drive
- Adjustable operating parameters
- Overload protection
- Start warning horn

Site Specific Design Options:

- V-Wire, perforated plate, or bar grate screens
- Various screen open areas available to provide minimal head loss
- Solar DC power or grid AC power
- Brush speed
- Full automation package or basic on/off operation



Product Information



Langemann® Gate Details



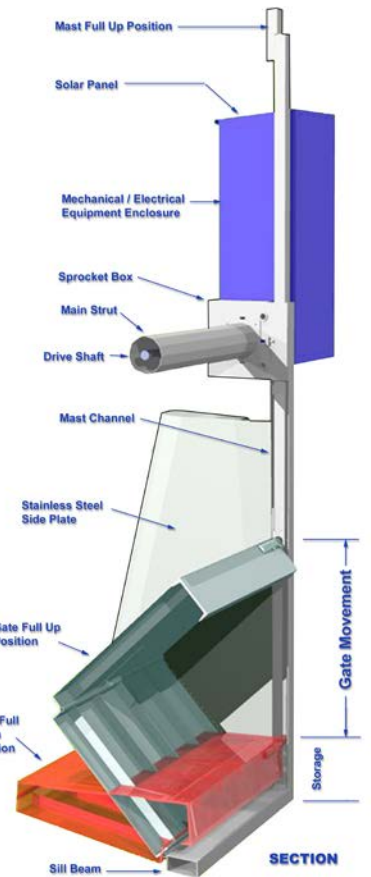
CLOSED GATE - DOWNSTREAM VIEW



CLOSED GATE - UPSTREAM VIEW



OPEN GATE - UPSTREAM VIEW



Product Information



Langemann® Gate

Created by Peter Langemann, the Langemann Gate was developed through a cooperative effort between St. Mary River Irrigation District, Peter Langemann, and Aqua Systems 2000. The Langemann gate used in conjunction with one of our controllers provides solutions to a host of water control issues. The patented design has gained recognition due to its simplicity, overshot technology and low power requirements.

Application Suitability:

- Maintain constant upstream water level (such as in a check structure)
- Provide a pre-determined constant flow to downstream users (such as a turnout)

Features:

- 3CR12 Stainless Steel
- Stainless steel gate pin
- Tuffcast rollers
- Nylon idlers
- 1045/1050 IHCP hinge pin
- Water-proof roller chain (omega config.)
- Efficient helical worm speed reducer
- NEMA 4 electrical panel
- Overload relay
- Limit switch
- Motor starter
- 12 or 24Vdc operation for reliability
- Inconspicuous solar panel
- Independent high-level emergency assist

Advantages:

- **Precise Positioning:** Positive linear movement in either direction. Convenient staff gauge placement and the linear relationship of the gate and water level provides reliable operating information
- **Ease of Installation:** All but the extra-large gates are fully assembled for shipping. A small crew and suitably sized crane can install a gate within a couple of hours

- **Low power requirements:** Unique distribution of water pressure and low friction operating components provide for remarkably low power requirements
- Superior trash management

Control Applications:

- Irrigation check structures
- Turnout structures
- Spillway structures
- Diversion structures
- Water and sewage treatment plants
- Flood control structure

Options:

- 304 Stainless Steel components where aggressive water is encountered
- Operation modes:
 - Manual (cordless drill operated)
 - Manual Electric
 - Automated – Upstream level or flow control
- Integrated stilling well



Product Information



Micro SCADA Ready Controller

Aqua Systems 2000 introduces the Micro SCADA Ready Controller for irrigation canal control operations. Plug-and-play SCADA systems are made easy with built-in support for the widely accepted Modbus® communications protocol. Developed around an off-the-shelf industrial programmable logic controller with incorporated touch screen human machine interface, this integrated package is a reliable, flexible and user friendly control solution for both over-shot and under-shot control gates. Combined with fully operator configurable control algorithms, the Micro SCADA Ready Controller from Aqua Systems 2000 provides solid control for single gate applications.

Features:

- Low power, 12 or 24 Vdc operation
- Suitable for solar powered applications
- NEMA 3 equipment enclosure
- Maple Systems PLC-HMI controller
- Integrated 12 or 24Vdc reversing motor starter with overload protection
- Fully adjustable control and alarm settings
- Accepts loop powered level transmitters: cable extension spring return, ultrasonic or differential pressure
- QPS Evaluation (UL/CSA equivalent) inspected
- Motor controller and circuit breaker
- Solar powered or AC with battery backup

Control Algorithms:

- Upstream or Downstream level maintained using proportional plus reset control
- Over-shot flow control maintained using gate head differential control



Control Applications:

- Langemann gate
- LOPAC gate
- Single-leaf overshot gate
- Undershot gate
- Slide Gate
- Trash management

Applications Specific Options:

- AC power with battery backup
- DC solar power
- Weather-proof equipment enclosures
- Gate position feedback
- Custom control algorithms



Product Information



Aqua Systems 2000 Complete Product Line

Water Control Gates:

- **Langemann® Gate** – Unique double hinged over-shot leaf gate offers intuitive canal control and accurate flow measurement; easy to automate.
- **Lopac® Gate** – Simple and cost effective hydraulically actuated barn door style gate; ideal for upstream or downstream level control in small canals.
- **Slide Gate Actuator** – Automation ready AC or DC powered actuators; designed to retrofit to existing gates.

Trash Management:

- **In-Line Cleaner** - Complete removal of trash and debris upstream of pipeline entrances, the in-line cleaner is the answer.

- **Side Sweep Cleaner** – Distinctive cleaning system for turnout screens incorporated into the canal incline; simply sweeps unwanted trash downstream.
- **Unique Cleaning Solutions** – Variety of different cleaning solutions adaptable to fit site-specific cleaning requirements.

Automation:

- **SCADA Ready Controller** – High quality automation components pre-configured to provide level control or flow control for up to three control gates; ready for integration into most SCADA systems
- **Micro SCADA Ready Controller** – Simple to operate, cost effective, pre-configured to provide level control or flow control for single gate applications; ready for integration into most SCADA systems.

SCADA Applications:

- **SCADA Systems** – Design and integration of complete SCADA systems including Master Radio sites, RTU sites, Repeater sites and Control sites; host computer interface development

including data logging, reporting and alarm notification.

- **SCADA Radio Design** – Complete radio network design, implementation and maintenance using state of the art topographic modeling and test equipment resulting in robust and reliable wireless systems.

Custom Applications:

- **Solar Power Systems** – Eliminate costly connection to the grid; solar energy is free and solar power is often a more cost-effective solution for control and monitoring sites.
- **Pump Automation** – Enhance pump and increased pumping efficiency can be realized with automatic pump controls.
- **Gate Automation** – Increase efficiency and improve canal control by automating existing manually operated control gates.
- **Field Service** – Scheduled after market maintenance and repairs; troubleshooting, maintenance and upgrades for older control and SCADA systems.



Product Information



SCADA Ready Controller

Aqua Systems 2000 introduces the SCADA Ready Controller for irrigation canal control operations. Plug-and-play SCADA systems are made easy with built-in support for the widely accepted Modbus® and DNP3 communications protocol.

Developed around an off-the-shelf industrial programmable controller and panel mounted operator interface, this integrated package is a reliable, flexible and user friendly control solution for both over-shot and under-shot control gates. Combined with fully operator configurable control algorithms, the SCADA Ready Controller from Aqua Systems 2000 provides solid control for any canal automation application whether it be large or small.

Features:

- Low power, 12 Vdc operation
- Suitable for solar powered applications
- NEMA 4 equipment enclosure
- SCADA Pack controller (standard)
Modicon M340 (option)
- Touch Screen Human Machine Interface
- Integrated 12 or 24Vdc reversing motor starter with overload protection
- Fully adjustable control and alarm settings
- Accepts loop powered level transmitters: cable extension spring return, ultrasonic or differential pressure
- QPS Evaluation (UL/CSA equivalent) inspected

Control Algorithms:

- Fully configurable for level or flow control with user selectable overrides
- Upstream or Downstream level maintained using proportional plus reset control
- Over-shot flow control maintained using gate head differential control
- Timed set point changes



Control Applications:

- Langemann gate
- Single-leaf overshot gate
- Undershot gate
- Slide gate
- Multiple gate structures
- Pumping systems
- Trash management

Applications Specific Options:

- AC power with battery backup
- DC solar power
- Weather-proof equipment enclosures
- Gate position feedback
- Custom control algorithms
- SCADA Radio



Product Information



Side Sweep Screen Cleaner

Aqua Systems 2000 introduces the self-cleaning screen cleaner developed in conjunction with the Bow River Irrigation District. This Simple and flexible design can be readily adapted to large or small applications where trash problems range from surface debris to entrained plant matter. Unwanted trash can now be swept downstream easily with a reliable, low power and low maintenance self-cleaning screen cleaner from Aqua Systems 2000.



Features:

- Stainless steel frame and screen design for full water load
- Mild steel screen cleaner frame coated with two-part epoxy paint
- Water proof or stainless steel chain drive
- UHMW chain track and idlers
- Nylon bristles set in epoxy with aluminum backing
- Helical gear box drive
- Adjustable operating parameters
- Overload protection
- Start warning horn

Site Specific Design Options:

- V-Wire, perforated plate, or bar grate screens
- Various screen open areas available to provide minimal head loss
- Solar DC power or grid AC power
- Brush speed
- Full automation package or basic on/off operation





Single Leaf Overshot Gate

The Single Leaf Overshot Gate dates back to the 1980's in which the first known installation in Southern Alberta was performed on the inlet to Sauder Reservoir. The simplicity of the design makes it affordable and adaptable to a number of different structure configurations. The gate can be configured as a fully assembled drop in unit, or built in two parts with the hoist assembly and gate leaf assembly installed separately.

Application Suitability:

- Maintain constant upstream water level (such as in a check structure)
- Provide a pre-determined constant flow to downstream users (such as a turnout)

Features:

- 3CR12 Stainless Steel gate leaf
- 1045/1050 IHCP hinge pin
- Machined cable drums
- J Seal gate to side plate seal
- 304 Stainless Steel cable
- Efficient helical worm speed reducer
- NEMA 3 electrical panel
- Stainless Steel Panel Stand
- Limit switch with optional gate position sensor
- Motor starter
- 12 or 24Vdc operation for reliability
- Independent high-level emergency assist

Advantages:

- Simple Design allows for cost effective solution to canal control requirements
- Flexible configuration allows for a wide range of installations
- Locking bar on drum drive allows for speed reducer servicing during the water season



Control Applications:

- Irrigation check structures
- Spillway structures
- Diversion structures
- Flood control structure

Options:

- 304 Stainless Steel components where aggressive water is encountered
- Operation modes:
 - Manual (cordless drill operated)
 - Manual Electric
 - Automated – Upstream level or flow control



Product Information



Slide Gate Actuator

Aqua Systems 2000 Slide Gate Actuator turns existing manual slide gates into manual electric control gates. The Slide Gate Actuator, when used in conjunction with one of our controllers, can be automated for flow control or level control.



Features:

- Dual input bevel actuator with brass nut machined to fit existing stem
- Stop nut
- Multi-turn limit switch
- Encoder for accurate gate position
- 12 or 24Vdc motor
- Manual electric operation
- NEMA 3 electrical panel
- Motor starter, overload relay, limit switch
- 12 or 24Vdc battery operation for reliability
- Solar powered or AC with battery backup

Applications:

- Turnout structures
- Irrigation check structures
- Spill structures

Advantages:

- Low power requirements
- Reliable, accurate control
- Flexibility: Designed with adaptor plate to accommodate a variety of different slide gates
- Flow measurement





Unique Screen Cleaning Solutions

Aqua Systems 2000 is committed to providing innovative trash management solutions for a variety of different site requirements.

Designed using our ongoing commitment to provide reliability, low power consumption and easy to maintain products, our unique cleaning solutions provide effective and worry free removal of trash from any water screening application.



1. Trash conveyors for removal and piling of debris and water weeds in high trash load situations Irrigation check structures
2. Wiper cleaner for low to medium flow applications
3. Windmill Cleaner for low flow turnouts





Wireless SCADA Communication Design

System Design:

- Complete in-house radio system design from concept to implementation
- Design with an optimum balance between reliability and cost depending on customer needs

Propagation study & Simulation:

- Accurate preliminary assessment of radio paths based on detailed geographical computer needs
- A radio path simulation coupled with concise field path-tests offer a high degree of confidence in the design of a reliable link

Radio Frequency Path Test & Site Survey:

- Site visits with point-to-point radio field tests to measure the real path, validate the simulations, and identify any physical obstructions
- Measure the presence, direction and strength of any potentially interfering radio signals that may be operating in the area

Industry Canada Radio License Application:

- Complete Government radio license applications and follow the licensing process through until approval

Radio Equipment Installation:

- Install radio and antenna equipment in new and existing control panels to comply with local regulations

Radio System Troubleshooting:

- Fast and efficient fault finding in any wireless system with the use of specialized cable, antenna and radio-spectrum analyzers that measure critical performance parameters at high frequencies



Radio System Preventative Maintenance:

- Routine maintenance to ensure that your radio system is performing at peak performance and identify signs of problems with radio equipment, RF-cables and antennas before they fail

