



Upgrade the Brain! Graver WaterWorks® replaces antiquated and obsolete controls with state-of-the-art hardware and control logic designed to optimize your water system's performance, uptime and reliability!

WaterWorks® Control System Retrofits/Upgrades

Are you relying on an **antiquated** control system to be the brains of your water treatment system?

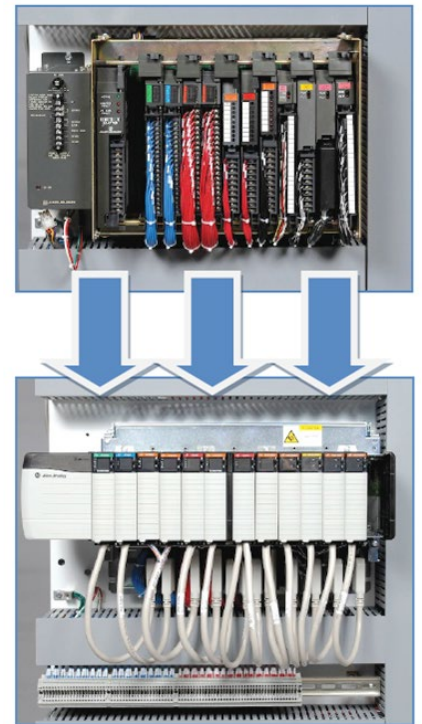
While yesterday's electromechanical controls comprised of push buttons, lights and chart recorders were the standard 30 to 40 years ago - controls technology has changed. Today's programmable logic controllers and touch screen interfaces can greatly improve the operation of your water system and monitoring / troubleshooting ability.

Is your PLC hardware being **discontinued** by the manufacturer?

PLC manufacturers continue to launch new product lines making your existing hardware obsolete! In-time, replacement parts become hard to replace adding uptime risk to your water system. Don't put your operations at risk with water system controls that are no longer supported by the manufacturer.

Is your water control system **not working to your expectations?**

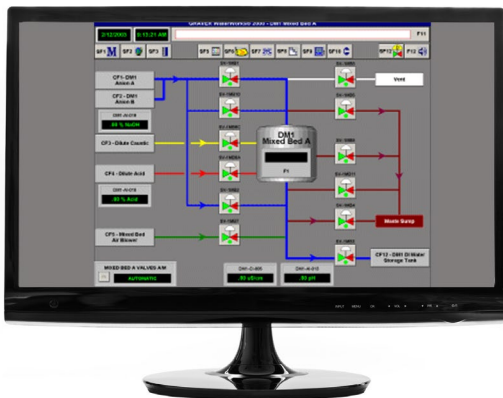
Graver supplies control system replacements to competitor water systems that are lacking in the functionality you need to operate efficiently.



Your Solution - Graver WaterWorks®

Graver WaterWorks® replaces antiquated and obsolete controls with a new Control system with updated hardware designed to provide the same form, fit, and functions replacements for various original manufacturers.

Call 877-472-7379 or email sales@graver.com for more information.



Old vs. New Comparison

OLD	NEW
Stripchart recorders	Historical data tracking and logging modules which allow real-time viewing of data
Annunciator panels	Alarm Summary and Alarm History screens
Hard copy of the plant's "Alarm & Response Procedure"	Replaced by On-Line Alarm Help feature
Pilot lights and Switches	Graphics of valves and pumps allow direct manual control and monitoring
Manual Data recording	Report generator provides custom reports of logged data in spreadsheet format
Analog and PID Indicators	Graphics with bar graph and precise digital readouts

The WaterWorks® System

Graver WaterWorks® is a PC-based HMI control system with proprietary PLC control algorithms that have been optimized with 65 years of water treatment experience. All operator actions are initiated through programmable function keys, the keyboard, or icons displayed by WaterWorks application. Graver WaterWorks® can interface with existing DCS (Distributed Control Systems) for seamless communication plant control room.

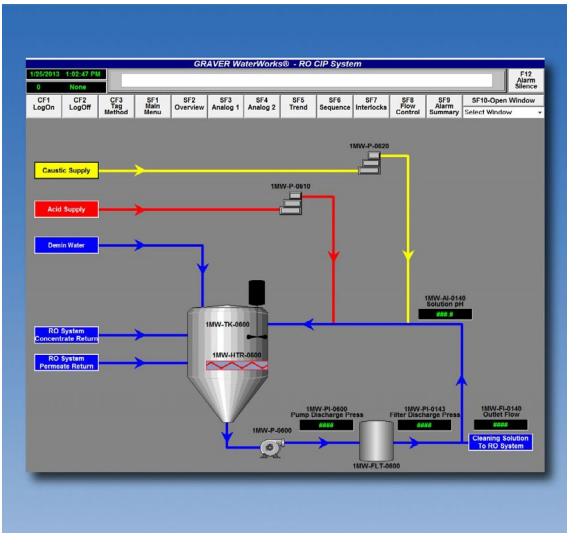
Are you using Windows XP or older to control your critical water system? Upgrading your obsolete control system with Graver WaterWorks® will maximize and fully optimize the operation of your water system. With its flexible design, WaterWorks can be adapted to control virtually any process, no matter how simple or complex.

WW Package	Typical User	PLC Type	Description	Units Controlled	Schematics & Panel Layout	Manual	I/O Testing	Control Philosophy	I/O List	FAT Procedures	Datasheets	Operator Training in Simulation Lab
Bronze	Industrial	CompactLogix + Text based HMI	DIY kit with phone tech support	Clarifier and/or Gravity Filters	x	x	x					
Silver	Power Utility, Industrial	ControlLogix or CompactLogix with Simple HMI	PLC w/ basic graphics, DCS-Ready	Clarifier / Filters & Chem Feed or Powdex Minipak or 2x2 Demin train + Regen	x	x	x	x	x	x		
Gold	Nuclear Plants	ControlLogix + Full HMI	PLC w/ custom HMI graphics, PC OS, Data trending, DCS-Ready	Unlimited unit operations	x	x	x	x	x	x	x	x

Benefits of the WaterWorks® System

Control system upgrades present the single largest opportunity for a plant to improve reliability while controlling O&M costs.

- Ease of start-up & operation
- Increases system availability
- Flexibility: easier to initiate system controls changes
- Allows for future expansion
- Simplifies maintenance with fewer components, fewer failures, added redundancy
- Improves control system response time
- Allows automatic data logging
- Reduces operator workload and minimizes error
- On-board calculation capability & the generation of customized reports
- Addresses obsolescence
- Keeps operators better informed
- Sequence repetition and automation
- Improves operating efficiencies
- Provides real-time performance monitoring
- Centralized PLC control
- Networking capabilities provide remote plant-wide access & control



Controls System Retrofit Modules

Hardware: Programmable Logic Controller (PLC)

Replacement of high maintenance or obsolete mechanical relays with reliable solid-state logic provided by a PLC System. All automatic control functions, modulation of control variables, and analog setpoints are performed by the PLC.

Hardware: Human-Machine Interface (HMI)

Display of equipment status and indications of transmitted variables is provided on an industrial hardened PC. All manual control functions, such as starting and stopping equipment, and opening and closing valves are performed via the HMI.

Software: Graver WaterWorks® System

A control system that is a combination of PLC programming with proprietary control algorithms, which are designed to optimize the operation of your water treatment system.

Special WaterWorks® Features

- Data acquisition
- Trending and reporting
- Predictive maintenance assistance
- On-line alarm
- Response procedures
- Security access controls
- Valve and motor tagouts
- On-Line PLC programming and documentation

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