

WaterWorks

Overview

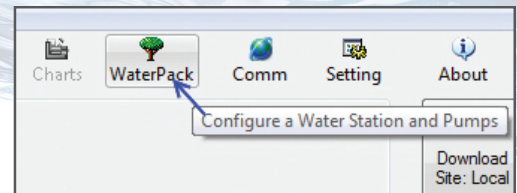
The **WaterWorks** package encompasses the station and pump motor control of any clean or waste water pumping application, including lift stations, stormwater stations, booster stations, reservoirs and others. A supplementary piece of the **StaRTU** Configuration software, it allows those with zero programming skills to quickly and easily configure a site and to replicate that configuration (with few, many or no modifications) for the other sites in a water system.

STATION / SITE CONFIGURATION

- Station type
- Number of pumps
- Level source
- Pump sequencing / alternation
- Timing parameters
- Station setpoint for pump control
- Define output control

PUMP CONFIGURATION

- Run indication
- Auto / Not in Auto indication
- Fault(s) indication
- Support for check valve
- Supports VFD
- Speed
- Maximum runtime for motor protection
- Pump cool-down time



*Not only does the **WaterWorks** package allow the user to quickly configure and commission a pump site, it also includes many built-in logic functions for tailoring monitoring and control to the specific lift station or other pump application.*

Typical data provided for pump motor protection:

PROTECTION (THESE CAN BE CONFIGURED TO SHUT OFF PUMP)

- Thermal overload
- Phase imbalance and phase failure
- Thermal motor protection via PTC probes
- Phase reversal
- Ground fault detection
- Long starting times and motor stalling
- Automatic load shedding and restarting
- Load fluctuations (current, voltage, power)
- Variations of Cos ϕ (power factor)

METERING:

- Current on the 3 phases
- Voltage on the 3 phases (shedding)
- Motor temperature
- Ground fault sensing
- Average current
- Frequency
- Power factor, power, power consumption

Monitoring and control of the **storage tank, wet well, and other level requirements**

Level Rate of Change - daily peak time highs with time stamp

Monitoring and control of output and input **pressures and flows**

Pressure Management System - flexible customized software for Motorola RTUs, enabling RTUs to communicate real-time system pressure data among each other, and manage it via site-specific set points and commands.

Pumping / Flow Averaging and Sampling - Calculate an average of the flow from the main pump station that pumps into the plant in order to help smooth out the high and low peaks.

Monthly Flow Totals from RTUs - Compute Monthly flow totals in the RTUs

Master / Satellite Control – This involves peer-to-peer communication (ability for Master station to slow/stop inflow from satellites stations directly – NOT via the SCADA)

Programmed support for **local HMIs**

Benefits & Features

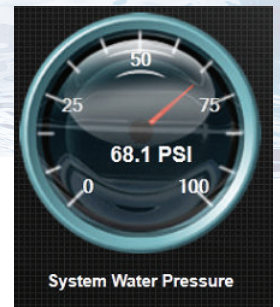
PUMP CONTROL - The WaterWorks package includes basic to advanced pump control, and it provides pump alternation patterns easily selected by the operator. Various pump alternation scenarios include:

- Runtime equalization
- Starts equalization
- Fixed percentage
- Emergency modes
- Power efficiency equalization

START/STOP HOA monitoring and control of all pumps (supports up to 4 at one site)

PUMP STATISTICS include multi-period starts/runtime counters (minutes, hours, daily, weekly, monthly, and annually)

Programmed support for Modbus slave devices - full support of almost any 3rd party devices (power analyzer, pump protection devices, VFDs, etc.). This can include but is not limited to monitoring of pump motor amperage, voltage, temperature and any other relevant information that may be provided by a 3rd party device.



MONITOR ONLY

- Standard Duplex or Triplex Pumping System
- Level monitoring via Transducer and/or Float (up to 5 for duplex; up to 2 for triplex)
- (2) Analog inputs; (1) Level Transducer, (1) User defined

OPTIONAL FEATURES

- Flow Calculation available for all applications.
- Mixer Control available for duplex applications.
- Flush Cycle
- Floating Setpoints

SCADA OVERVIEW

- WaterWorks SCADA
 - Summary & Feature Highlights
 - System requirements
 - Link to WaterWorks SCADA site and/or Star's SCADA manual, brochure, or other informational.
- Other SCADA
 - Summary of use with 3rd party or customers' own SCADA system
 - Highlight compatibility, simplicity, and other positive features

MONITOR & CONTROL SIMPLE

- Basic Duplex Control
 - Level monitoring via Transducer only
 - High Level Float discrete input (default)
 - Phase Monitor discrete input (default)
 - (1) Free, up to (3) total user defined discrete inputs
 - (2) Analog inputs; (1) Level Transducer, (1) User defined
 - Two pump control outputs
 - High level alarm output
 - Control Enable output
 - Up to (2) user defined outputs
 - Optional Mixer control function; (1) control output, (1) discrete input
- Basic Triplex Control
 - Level monitoring via Transducer only
 - High Level Float discrete input (default). May be user defined.
 - (2) Analog inputs; (1) Level Transducer, (1) User defined
 - Three pump control outputs
 - High level alarm output
 - Control Enable output
 - (1) user defined outputs

MONITOR & CONTROL ADVANCED

- Advanced Duplex Control
 - Level monitoring via Transducer and/or Floats (up to 5)
 - High Level float discrete input (included in total float count above)
 - Phase Monitor discrete input
 - (4) Free; Up to (11) total user defined discrete inputs
 - (4) Analog inputs; (1) Level Transducer, (3) User defined
 - Two pump control outputs
 - High level alarm output
 - Control Enable output
 - Up to (2) user defined outputs
 - Optional Mixer control function; (1) control output, (3) discrete inputs
- Advanced Triplex Control
 - Level monitoring via Transducer and/or Floats (up to 6)
 - High Level float discrete input (included in total float count above)
 - Phase Monitor discrete input
 - (3) Free; Up to (8) total user defined discrete inputs
 - (4) Analog inputs; (1) Level Transducer, (3) User defined
 - Three pump control outputs
 - High level alarm output
 - Control Enable output
 - (1) User defined output
 - "Excessive" runs/starts warnings



0 kW	Active Power kW
144 kWh	Power Usage
0 A	AVG Current
0 A	L1 Current
0 A	L2 Current
0 A	L3 Current
493 VAC	AVG Voltage
492 VAC	L1-L2 Voltage
487 VAC	L2-L3 Voltage
498 VAC	L3-L1 Voltage
0 %	Current Phase Imbalance
60 Hz	Frequency
97 mA	Ground Current
2 %	Ground Current Ratio
0 %	Power Factor
1 %	Voltage Phase Imbalance
0 Code	Warning Code

AR 7	98	Battery Charge
AR 8	23.0	battery Volts
AR 9	42	Daily Rainfall
AR 10	332	Influent Rate
AR 11	443	Effluent Rate
AR 12	9856	Influent Total
AR 13	18734	Effluent Total
AR 14	32.0	Generator Runtime