Instrumentation for the Water and Wastewater industry
Best in class instrumentation for waste water treatment

Today’s instrument engineer doesn’t have the time to study specifications and suppliers to find the solution to specific application requirements.

With Emerson, we have the complete product portfolio for water industry applications, along with the expertise of our instrument consultants who understand your process and the issues that you face.

Emerson has been providing reliable measurement and control products to the water and wastewater treatment industry for over 50 years. Our instrument consultants can help you with the selection process and provide the support, advice and fast response that you need.

**INLET WORKS**

**Inlet pumping station**
3100 Ultrasonic level, 9700 hydrostatic pressure transmitters with 3491 programmable pump controllers for automated control of up to 4 pumps
2051 Pressure transmitter for pumping main pressure

**Inlet flow measurement**
8700 Electromagnetic flowmeters for full pipes, 8714i Calibration Verification™ and diagnostics
3100 Ultrasonic transmitter and 3493 flow controller for open channel flow

**Automatic screen control**
3100 Ultrasonic level transmitters and 3492 differential level controllers for automatic control of screen rake system

**PRIMARY TREATMENT**

**Sludge blanket monitoring**
MSL600 Continuous sludge interface level measurement and/or 433 fixed sludge alarm level sensors for primary settling tanks

**Automatic desludging**
MSM400 Sludge density monitor for automatic desludge control

**Sludge density measurement**
MSM400 Sludge density measurement directly in tank or in-line pipe measurement

**Sludge thickening**
MSL600 Continuous sludge interface level measurement for sludge thickeners

**Sludge holding tanks**
5400 Non-contacting radar level
5300/3300 Guided wave radar for lime dosing level
3100 Ultrasonic level for open tanks
9700 Hydrostatic pressure transmitters
2051 Pressure transmitter with 1199 diaphragm seals for DP level measurement
3491 Controllers for level measurement and control

**Sludge transfer**
8700 Electromagnetic flowmeters for full pipes, 8714i Calibration Verification and diagnostics

**Sludge digester**
5400 Non-contacting radar level
## Biological Treatment

**Aeration flow monitoring**
- 485 Annubar® averaging pitot tubes
- 405 Compact orifice plates
- 2051 Differential pressure transmitters for volume and mass flow of air to aeration lanes

## Secondary Treatment

**Final settlement blanket monitoring**
- MSL600 Continuous sludge interface level
- 433 Fixed sludge interface level for final and secondary settlement tanks

**Dissolved air flotation (DAF)**
- 2051 Pressure transmitters for air pressure measurement

## Tertiary Treatment

**Level measurement**
- 3100 Ultrasonic level transmitter
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control

**Sand filter backwash control**
- 2051 Differential pressure transmitters for head loss across filters

**Backwash solids detection**
- 433 Ultrasonic interface level sensors and controllers

**Final effluent discharge monitoring**
- 3100 Ultrasonic level transmitter and 3493 flow controller
- 8700 Electromagnetic flowmeters for full pipes, 8714i Calibration Verification diagnostic
- 2051 Pressure transmitter for pump discharge monitoring

**Chemical treatment**
- 3100 Ultrasonic level
- 5400 Non-contacting radar level
- 2051 Pressure transmitter with diaphragm seal for tank level
- 3491 Controllers for level measurement and control
Best in class instrumentation for clean water treatment

**ABSTRACTION AND BOREHOLE**

**Flow measurement:** open channel and closed pipe
- 3100 Ultrasonic transmitter and 3493 open channel flow controller
- 8700 Electromagnetic flowmeters for full pipes, 8714i Calibration Verification diagnostic

**INLET MONITORING and SCREENING**

**Level measurement**
- 3100 Ultrasonic level
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control

**Flow measurement**
- 8700 Electromagnetic flowmeters for full pipes

**FILTRATION**

**Level measurement**
- 3100 Ultrasonic level transmitters
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control

**Filter backwash control**
- 2051 Differential pressure transmitters for measuring head loss across filters

**Backwash solids detection**
- 433 Ultrasonic interface level sensors and controllers

**Flow to filters and backwash flow**
- 8700 Electromagnetic flowmeters for full pipes

**GAC PLANT**

**GAC interface level**
- MSL600 Continuous interface level
- 433 Fixed alarm interface level sensors

**Level measurement**
- 3100 Ultrasonic level transmitters
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control

**Backwash solids detection**
- MSL600 Continuous interface level, and 433 fixed alarm interface level sensors
**CHEMICAL TREATMENT**

**Level measurement**
- 3100 Ultrasonic level transmitter
- 2051 Pressure transmitter with diaphragm seal
- 3491 Controllers for level measurement and control

**CLARIFIER**

**Sludge blanket monitoring**
- MSL600 Continuous sludge interface level, and 433 fixed alarm sludge interface level

**Clarifier level**
- 3100 Ultrasonic level transmitters
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control

**SLUDGE TREATMENT (Waste)**

**Sludge blanket monitoring**
- MSL600 Continuous sludge interface level, and 433 fixed sludge interface level

**Automatic desludging**
- MSM400 Sludge density monitor for initiation of automatic desludge control

**Sludge density measurement**
- MSM400 Sludge density measurement for in-tank or in-line pipe measurement

**Sludge holding tanks**
- 5400 Non-contacting radar level
- 5300/3300 Guided wave radar for lime dosing level
- 3100 Ultrasonic level transmitters
- 9700 Hydrostatic pressure transmitters
- 3491 Controllers for level measurement and control in closed and open tanks

**DISTRIBUTION NETWORK**

**Network pressure**
- 2051 Pressure transmitter for pump discharge and network pressure

**Network flow**
- 3051S Differential pressure for DP flow fiscal metering
- 8700 Electromagnetic flowmeters for full pipes, 8714i Calibration Verification diagnostic
- 485 Annubar averaging pitot tubes
- 405 Compact orifice plates
Instrumentation for water industry applications

**3100 Series Ultrasonic Level Transmitters**
Transmitters for level measurement, wetwell, sump pump control and open channel flow measurement.
- Reference accuracy ±0.25%, measuring range up to 40ft (12m)
- FM, CSA, ATEX, IECEx Hazardous area approval, HART® digital communication
- 2 Wire 24V dc loop powered
- Measures liquid height, distance to liquid, volume or flow in open channels
- Automatic temperature compensation

**3490 Series Universal Controllers**
Wall and panel mounting control units for any 4-20mA or HART compatible transmitter.
- Five fully field programmable relays
- Programme wizards to assist configuration and set-up for level, pump control and flow
- Pre-configured flow curves for weirs and flumes in accordance with ISO / BS standards
- 4-20 mA output, 5 x SPDT relay contacts on controllers
- FM, CSA, ATEX, IECEx Hazardous area approval, HART digital communication
- Data logging of up to 7000 events plus totalized flow

**Rosemount Radar Level Transmitters**
Direct level measurement, virtually unaffected by process conditions.
- Repeatability: ±0.04” (±1mm)
- 4-20mA output with digital HART communication
- IS or explosion proof FM, CSA, IECEx, ATEX

**5400 Series Non-contacting radar**
Pulsed, free propagating radar for level measurement in liquids
- Wide range of antennas and mounting connections.
- Measuring range up to 98ft (30m)
- Reference accuracy:
  - Model 5401: ±0.4” (±10mm) - Model 5402: ±0.12” (±3mm)

**3300 and 5300 Series Guided wave radar**
Top mounted, level and interface measurement for liquids or solids.
- Wide variety of probe styles and mounting connections
- Measuring range up to 164ft (50m)
- Reference accuracy:
  - 3300: +/- 0.2” (±5mm), 5300: +/- 0.12” (±3mm)

**2100 Series Vibrating Fork Level Switches**
Level switches using vibrating fork technology for level alarm and control applications
- 4-20mA output with digital HART communications
- IS or explosion-proof FM, CSA, IECEx, ATEX
- WirelessHART™ options
- Extended length to 10ft (3m) available
- Stainless steel wetside with ECTFE/PFA coating option for corrosive applications
- 24-264V dc or ac powered with relay or solid state output
Pressure Transmitters

All models available with flexible Coplanar™ design which helps reduce engineering and installed costs.

**Presssure measurement:**
- Reference accuracy ±0.075% Span (0.065% optional)
- Installed stability = 2 years (5 year optional)
- 100:1 Rangedown

**Differential pressure flow measurement:**
- Rosemount 3051S Ultra for flow enables up to 14:1 flow turndown with a single transmitter
- Annubar technology has ±0.8% of volumetric flow rate accuracy, ideal for large lines due to minimal pressure loss

**Differential pressure level measurement:**
- Rosemount Tuned Systems™ optimize performance and lower installed costs
- Multiple direct mount and capillary options to match vessel mounting requirements

Magnetic Flowmeters

Microprocessor-based SMART instruments using pulsed DC technology providing continuous automatic zeroing to compensate for variations in the process environment.
- All welded construction
- Simple design to enhance reliability
- Available in sizes 0.5 to 72” (12mm to 1.8m)
- Wide selection of wetted materials for compatibility with virtually all conductive fluids
- Advanced diagnostic capabilities, in HART or Fieldbus protocols, reducing commissioning and maintenance time
- NSF approved
- Rosemount 8714i Calibration Verification diagnostic. Allows users to verify calibration without additional equipment
- Verifies both transmitter and flowtube sensor calibration
- No need to remove the meter from the line
Other water industry products from Emerson include:

**Rosemount Pressure, Temperature, Flow and Level**
The Rosemount product offering includes a complete line of pressure, temperature, flow, level, and safety measurement instrumentation. Throughout the process industries, Rosemount devices are specified more often than any other brand of process instrumentation.

**Rosemount Analytical**
Rosemount Analytical offers a comprehensive line of process gas and liquid analyzers, sensors and systems for efficiency, quality, and environmental analysis solutions. Rosemount Analytical instruments and systems will help you maximize performance, productivity and profitability.

**Smart Wireless Networks**
Emerson’s Smart Wireless networks enable a cost effective solution for measurements that were unattainable previously. The self-organizing network ensures an interoperable, adaptive and flexible approach to wireless. It is secure, robust, infinitely configurable, with data reliability of greater than 99%.

**Instrument and Valve Services**
Offering an extensive network of service centers and field service technicians in North America, Emerson’s Instrument and Valve Services help build reliability programs to help plants achieve maximum capacity and minimal risk of downtime.

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