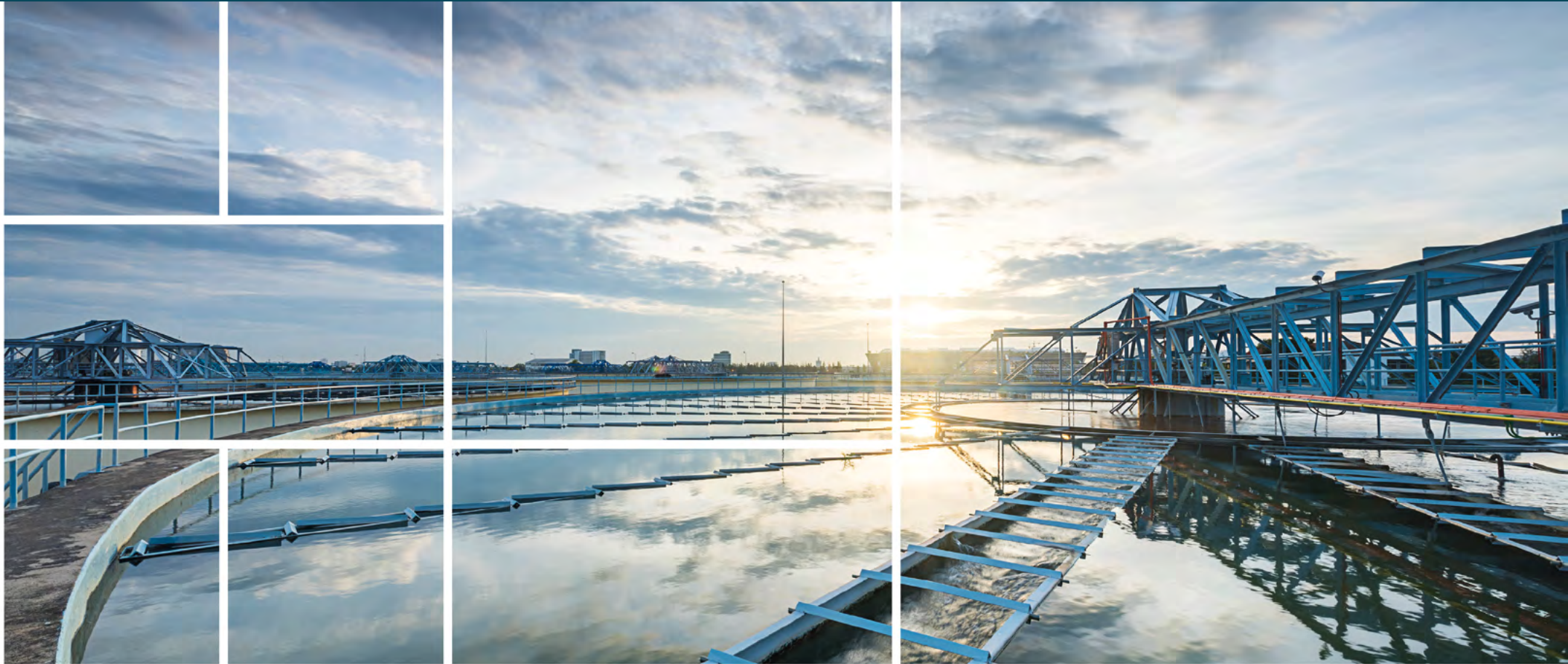


# Creating Effective Calibration and Measurement Solutions for the **Water & Wastewater Industry**



AMETEK Sensors, Test & Calibration is one of the world's leading developers and producers of calibration instruments for temperature, pressure, level, and process signals. Our comprehensive range of instruments for measuring and calibrating pressure and temperature are backed by an impressive customer support program that includes technical support, factory service capabilities, calibration, and more.

**AMETEK<sup>®</sup>**  
**SENSORS, TEST & CALIBRATION**

# Pressure, Temperature, & Submersible Level Solutions

**A**T AMETEK STC, we understand the importance of accurate pressure, temperature, process, and level measurement throughout the water/wastewater industry. Our products are found worldwide in water facilities, including potable water treatment plants, wastewater treatment plants, agricultural water, industrial water, and more. We specialize in sensors, transmitters, and calibration and test equipment used throughout the industry. From analog gauges, submersible transmitters, digital test gauges and data recorders, to high-accuracy dry block temperature calibrators and multi-function process calibrators, we have the equipment to help you do your job.

## DIGITAL PRESSURE



XP2i  
Pressure Gauge



m1  
Pressure Gauge



HPC40 Series  
Pressure Calibrator



HPC50 Series  
Pressure Calibrator



nVision  
Pressure Recorder

## TEMPERATURE



ETC Series Easy  
Temperature Calibrators



CTC Series Compact  
Temperature Calibrators



ASC-400  
Multifunction Calibrator

## PROCESS

## SUBMERSIBLE LEVEL



Models SDT & 375  
Level Transmitters



Model SST Slimline  
Level Transmitter



Models 575, 575 NSF, & 575P  
Level Transmitters



Model 675 Shark Cage  
Level Transmitter

## ANALOG PRESSURE



656 Liquid Fillable  
Pressure Gauge



1981 Process  
Pressure Gauge

## DIAPHRAGM SEALS



Model EW  
Diaphragm Seal



Model SG  
Diaphragm Seal

# The Right Product for You

While we offer a variety of products to fit numerous water industry applications, all of our products follow our strategy of producing high-quality, reliable, easy-to-use products that you can count on to make your job easier. Use the tables on this page to find the perfect product for your use:

**Submersible Level**

Pressure Range	Accuracy	Approvals	Sensing Port	Electrical Connection	Wetted Parts	Model
0 to 150 psi (0 to 345 ft water)	±(0.25% of FS) BFSL	None—General Industrial	Delrin Snubnose	Polyurethane, Polyolen or Teflon Cable	316L Stainless Steel, Polyurethane (or Polyolefin or Teflon), Viton, Delrin	SDT
0 to 300 psi (0 to 690 ft water)	±(0.25% of FS) BFSL	None—General Industrial	Delrin or SST Snubnose or Flush Mount	Polyurethane Cable Potted w/ Vent Tube	316L Stainless Steel, Polyurethane, Viton, Delrin	375
0 to 300 psi (0 to 690 ft water)	±(0.25% of FS) BFSL	Intrinsically Safe	Protected Flush Cage, Nylon or SST Snubnose or Flush Mount	Teflon or Polyurethane Cable (opt. Potting & Vent Tube)	316L Stainless Steel, Polyurethane (or Teflon), Viton	575, 575 NSF & 575P
0 to 60 psi (0 to 138 ft water)	±(0.25% of FS) BFSL	Intrinsically Safe	3.5" Diaphragm Protected by 4.75" Cage	Polyurethane Cable Potted w/ Vent Tube	316L Stainless Steel, Polyurethane, Viton	675 Shark Cage

## Pressure Measurement

Pressure Range	Pressure Accuracy	Vacuum Accuracy	Operating Temp. Range	IP Rating	Pressure Sensors	Pressure Connection	Functions										Model
							Datalogging	Differential Pressure	Absolute Pressure	Read Temperature	Read Electrical	24VDC Power Supply	Switch Test	External Pressure Module	Intrinsically Safe		
Vacuum to 15000 psi	± 0.035% Rdg	± 0.05% FS	-20 to 50° C	IP65	1 or 2	CPF Female		✓	✓	✓	✓	✓	✓	✓	✓	✓	HPC40 Series
Vacuum to 15000 psi	± 0.1% Rdg	± 0.25% FS	-10 to 50° C	IP67	1	CPF Female	✓		✓							✓	XP2i
Vacuum to 15000 psi	± 0.025% Rdg	± 0.06% FS	-20 to 50° C	IP67	1 or 2	CPF Female		✓	✓	✓			✓			✓	nVision
Vacuum to 10000 psi	± 0.035% Rdg	± 0.05% FS	-20 to 50° C	IP65	1 or 2	CPF Female		✓	✓	✓			✓		✓	✓	HPC50 Series
Vacuum to 10000 psi	± 0.2% Rdg	± 0.25% FS	-10 to 50° C	IP65	1	CPF Female											m1

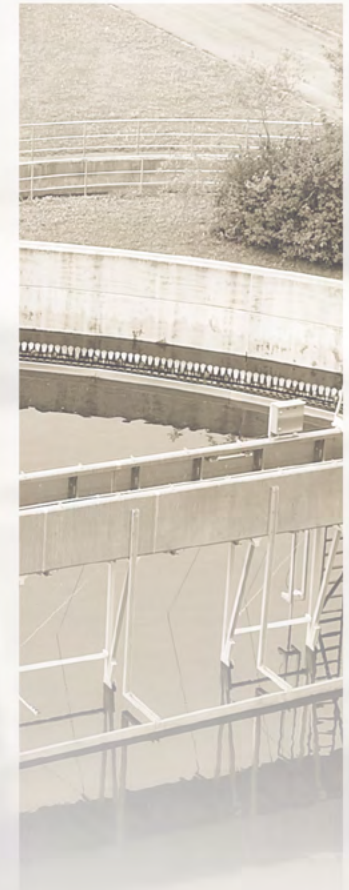
▲ From 18 to 28° C. 
 ▼ Typical. 
 ▲ 1/4" NPT M, 1/4" BSP M, or M20 M adapter included.

## Low-Range Temperature Measurement

Temperature Range	Internal Accuracy (°C)	External Accuracy (°C)	Stability (°C)	Resolution (°C)	Type	Insert Diameter (mm)	Immersion Depth (mm)	Functions						Model		
								External Ref. Sensor	Sensor Under Test Input*	Dynamic Load Compensation	Clamp Calibration	Set Follows True	Autostep		Switch Test	
-25°C to 155°C	0.30	0.20	0.040	0.01	Dry	25.8	120	✓					✓	✓	✓	CTC-155
-10°C to 125°C	0.50	—	0.050	0.1	Dry	12.5	110							✓		ETC-125

## High-Range Temperature Measurement

Temperature Range	Internal Accuracy (°C)	External Accuracy (°C)	Stability (°C)	Resolution (°C)	Type	Insert Diameter (mm)	Immersion Depth (mm)	Functions							Model	
								External Ref. Sensor	Sensor Under Test Input*	Dynamic Load Compensation	Set Follows True	Autostep	Switch Test	Mains Variance Immunity		
28°C to 350°C	0.45	0.25	0.050	0.01	Dry	25.7	110	✓			✓	✓	✓	✓	✓	CTC-350A
28°C to 400°C	0.50	—	0.150	0.1	Dry	Fixed	105					✓	✓			ETC-400
28°C to 400°C (INFRARED)	0.50	—	0.300	0.1	Dry	36.0	—					✓	✓			ETC-400R
28°C to 660°C	0.85	0.45	0.080	0.01	Dry	25.7	110	✓			✓	✓	✓	✓	✓	CTC-660A
28°C to 650°C	0.65	0.45	0.050	0.01	Dry	25.7	190	✓			✓	✓	✓	✓	✓	CTC-652
100°C to 1205°C	2.00	2.00	0.100	0.01	Dry	27.0	137	✓			✓	✓	✓	✓	✓	CTC-1205



# Digital Pressure Equipment

We provide some of the world's most popular digital pressure instruments for numerous applications in the water/wastewater industries. Our pressure instruments offer a wide variety of features, accuracies, and pressure ranges, including intrinsically safe percent of reading gauges and calibrators.

Pressure Is our Business™

## DIGITAL PRESSURE GAUGE

### The m1—Affordable and Accurate



- 0.2% of reading accuracy
- Resolution to 0.1 inH2O and 0.001 psi
- Replace multiple mechanical gauges
- 2-year recommended calibration cycle
- Includes protective boot

## INTRINSICALLY SAFE DIGITAL PRESSURE GAUGE

### The XP2i—The World's Most Popular Test Gauge



- 0.1% of reading, 0.02% of FS, or 0.05% of FS accuracies
- Resolution to 0.01 inH2O and 0.001 psi
- Marine grade enclosure resists corrosion
- Calibration reminders and alerts
- Fast pressure safety valve (PSV) mode
- Easy to Use – No Menu. No Manual? No Problem!
- Record up to 30,000 data points – download to a PC

## DIGITAL PRESSURE CALIBRATOR

### The HPC40—Full Color Display Calibrator



- 0.035% of reading accuracy
- Resolution to 0.01 inH2O and 0.001 psi
- Pressure and mA loop calibrator – temperature compensated (-20 to 50°C)
- Gauge, Absolute, and Differential pressure
- Advanced Simplicity “Non-Menu” Interface
- Internal 24VDC Power Supply—Measure and Source mA

## INTRINSICALLY SAFE DIGITAL PRESSURE CALIBRATOR

### The HPC50—Intrinsically Safe Full Color Display Calibrator



- 0.035% of reading accuracy
- Resolution to 0.01 inH2O and 0.001 psi
- Pressure and mA loop calibrator – temperature compensated (-20 to 50°C)
- Gauge, Absolute, and Differential pressure
- Advanced Simplicity “Non-Menu” Interface
- Intrinsically Safe

# Analog Pressure Equipment

**A** METEK products are used throughout water plants from lift stations, pump houses, sludge digesters, and aeration. Many plants use the Model 1981 with the bright yellow dial for low-light applications to improve visibility and worker safety. All welded seals with flush connections reduce potential leak paths while giving the operators the functionality to clean out their processes when needed.

Liquid-filling our pressure gauges adds a level of protection to the gauge in three main ways: 1) Dampens vibration, mechanical shock, and pressure pulsations, enabling easier-to-see pressure readings. 2) Eliminates corrosion, moisture penetration and icing due to ambient temperature. 3) Lubricates all moving parts, dramatically reducing the wear of the equipment.

## LIQUID-FILLED GAUGES

### Model 1981 Process Gauge—Easy-to-Read Display



- 4 ½ inch chemical-resistant PET solid front safety case
- Durable 316L stainless steel socket and seamless bourdon tube
- Low-pressure ranges available
- Dry or Liquid Filled
- Optional high visibility yellow dial and red pointer

### Model 656 Pressure Gauge—Liquid Fillable



- 1% or 1.6% FS accuracy
- 2 ½ inch, 4 inch, and 6 inch sizes
- 316L SST wetted parts
- SST case
- Factory or field fillable
- Reduces vibration

## Why You Should Use a Diaphragm Seal

Diaphragm seals are protective devices that isolate pressure gauges, transmitters, and switches from potentially damaging process media. In the wastewater industry, this is particularly important where the process fluid has a high viscosity or is comprised of slurries, sludge, or other material that can coat or damage traditional pressure measuring devices. Diaphragm seals are cost-effective solutions to protect important pressure instruments.



Model EW and SG Diaphragm Seals

Our diaphragm seals typically comprise a metal, TEFLON™, or elastomer diaphragm mounted between two housings and sealed to prevent leakage of process gases or fluids. The space on the instrument side of the diaphragm, the connections, and the instrument-sensing element are all filled with instrument oil, silicon, or other suitable fluids.

When the process line pressure is applied, the diaphragm exerts equal pressure on the instrument side of the seal producing a reading on the gauge or process instrument. Instruments may be attached directly to the diaphragm or connected remotely using a filled system—typically a length of armored capillary tubing.

# Industrial Submersible Level Transmitters

Our Submersible Level Transmitters are one of the most complete lines in the industry for measuring industrial and water/wastewater plant levels. From the low-cost Model SDT with a lightweight 316 Stainless Steel body that can measure levels up to 345 feet to the Model 575 and 675 with a 316 Stainless Steel body and Hastelloy diaphragm that can measure up to 690 feet with CSA intrinsically safe approval for hazardous locations, such as lift stations, process sludge tanks. The Model 575 is now available in an NSF Certified version for potable water, livestock tanks, and municipal water treatment. Whatever your level measurement application, we're confident we have the solution for you.

## SUBMERSIBLE LEVEL TRANSMITTERS

### Models SDT & 375 Submersible Level Transmitters



- Low cost
- Measuring range from 0-2.3 feet to 0-690 feet of water
- 316 SST construction for durability
- Non-clogging, removable snub nose
- Drop-in installation
- SDT has a self-venting cable
- 375 has a potted cable

### Model SST Slimline Submersible Level Transmitter



- 0.69 inch diameter for small bore systems
- Measuring range up to 345 feet of water
- Lightweight (8 oz. without cable) for deep wells
- 2 wire 4-20 mA output
- Potted for moisture protection
- Removable snub nose for easy cleaning

## LevelMate III Level Measurement System

For those looking for a complete level measuring and display system, we are proud to offer our LevelMate III System. The

customized LevelMate III system displays data from any AMETEK submersible level transmitter, provides excitation voltage, and transmits an analog signal for remote recording, alarm, or control functions. It is easy to calibrate by front panel adjustments, and its programmable relay allows for set and reset programming.

The large, easy-to-read LED display gives local indication, while the optional isolated analog output can interface with ancillary display, recording, or control devices. Combined into one convenient package, the AMETEK LevelMate III Level System provides you with the most versatile level measurement system on the market!



LevelMate III  
Level Measurement System

# Intrinsically Safe Level Transmitters

The models included in our intrinsically safe line of level transmitters all include CSA Intrinsically Safe Ratings. The model NSF 575 is tested and certified to NSF/ANSI/CAN 61: Drinking Water System Components Certification. This approval is critical in water treatment systems to protect the health of their customers.

## INTRINSICALLY SAFE SUBMERSIBLE LEVEL TRANSMITTERS

### Models 575, 575 NSF, & 575P Submersible Level Transmitters



- Class 1, Div 1, Hazardous Approvals
- Standard or flush diaphragms for ease of cleaning
- Measurement ranges up to 690 feet of water
- Protected flush option available with Hastelloy C diaphragm for sewage applications
- Handles liquids and sludge slurries
- Submersible or externally mounted models

### Model 675 Shark Cage Submersible Level Transmitter



- Class 1, Div 1, Hazardous Approvals
- Heavy duty cage assembly to stay at the bottom of the well
- 316 SST construction for durability
- 3.5 inch flush diaphragm to prevent clogging or sewage buildup on sensor
- Measurement ranges up to 690 feet of water
- Excellent with sludge slurries

## NSF Ratings

For drinking water applications, understanding the ratings of the instruments used within that water is essential. We have a safe solution with its PMT 575 NSF-certified submersible level transmitter. NSF (National Sanitation Foundation) is a public health and environmental organization that develops health regulations and certifies equipment and products. They have verified that the PMT 575 meets its NSF/ANSI/CAN 61 classification standards, used to identify products that meet its drinking water leachate requirements, including the lead percentage.



The AMETEK STC PMT 575 submersible level transmitters indicate liquid level by continuously measuring hydrostatic level pressure via its sensing element and transmitted by a 4-20 mA signal. This design provides excellent linearity and repeatability, low hysteresis, and long-term stability. The 575 is available with a nylon or stainless steel snub nose, ranges from 0-14 feet through 0-690 feet, and are CSA-rated intrinsically safe.

# Advanced Simplicity at its Finest

The ASC-400 is a portable multifunction process calibrator that provides the functionality and accuracy you expect from a laboratory calibration system but is still compact enough to fit into a toolbox and operate with one hand for easy field calibration. The ASC-400 is more than just a process calibrator. Combined with our APM external pressure modules or our dry-block calibrator, it will calibrate pressure and temperature.



The ASC-400 and APM External Pressure Module

With its function and cursor keys, the full numerical keypad provides a simple and quick user interface; and the full-color display offers superior visibility and overview. Sturdy construction, state-of-the-art circuitry, and fuseless protection ensure the ASC-400 will deliver consistently high accuracy for years to come.

- Large full color display
- Advanced Simplicity user interface
- Connection Assistant provides connection details for the current set-up
- Simultaneous read-back and fast RTD simulation
- Connect an RTD to use as a high accuracy thermometer using "True Ohm" technology
- Full numerical keypad with cursor and function keys
- Recall saved tasks for both upper and lower windows
- Fuseless Protection
- Inputs for Thermocouple Calibration

The multifunctions of the ASC-400 include:

- Read and source RTD, Thermocouple, Current, Voltage, Frequency, Resistance, and Pulse Train Output
- Calibrate gauge or absolute pressure when combined with an APM CPF pressure module
- Calibrate temperature when combined with a dry-block calibrator

## Save Time and Reduce Errors Using Our Connection Wizard

Multi-function calibrators remain a popular instrument type as they allow users to test, read, and source multiple process signals, including volts, millivolts, amps, or milliamps. Each of these may have large range differences, and rather than carry multiple devices, most users turn to a multi-function calibrator to satisfy all situations. However, as the options increase, the instrument's complexity tends also to increase. For novice users, a task seemingly as simple as connecting the instrument to the signal may prove difficult.

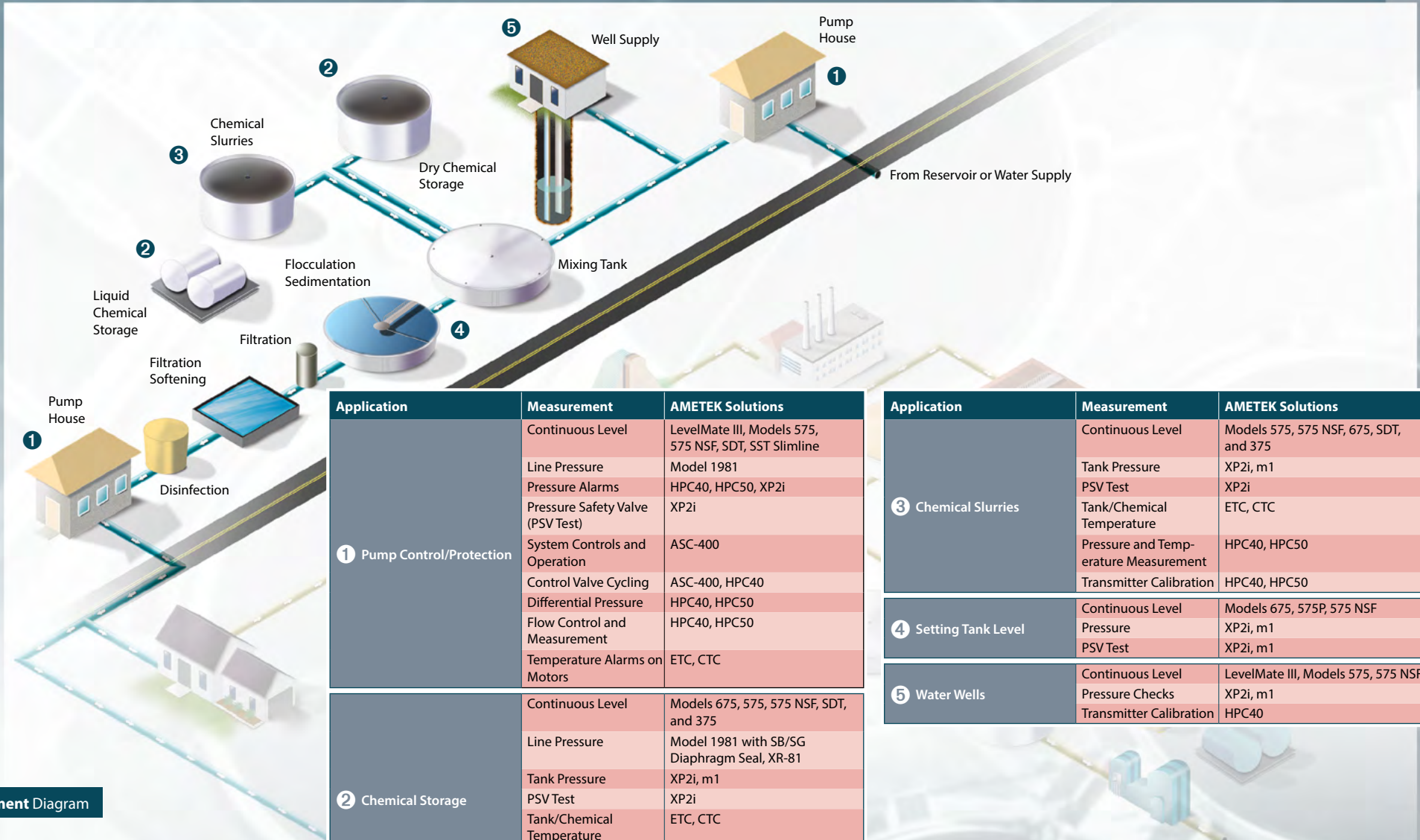
The JOFRA ASC-400 Advanced Signal Calibrator has a solution with its connection assistant. The ASC-400 now includes a built-in help function that offers a graphical solution to exactly how to connect the ASC-400s current set-up. The connection assistant screen will change if the measurement parameters change (from V to mA, for example). Use the new feature to reduce errors and wasted time significantly.



View of ASC-400 connectors and corresponding Connection Assistant display.



# Products for Water Treatment



Application	Measurement	AMETEK Solutions
1 Pump Control/Protection	Continuous Level	LevelMate III, Models 575, 575 NSF, SDT, SST Slimline
	Line Pressure	Model 1981
	Pressure Alarms	HPC40, HPC50, XP2i
	Pressure Safety Valve (PSV Test)	XP2i
	System Controls and Operation	ASC-400
	Control Valve Cycling	ASC-400, HPC40
	Differential Pressure	HPC40, HPC50
	Flow Control and Measurement	HPC40, HPC50
	Temperature Alarms on Motors	ETC, CTC
	2 Chemical Storage	Continuous Level
Line Pressure		Model 1981 with SB/SG Diaphragm Seal, XR-81
Tank Pressure		XP2i, m1
PSV Test		XP2i
Tank/Chemical Temperature		ETC, CTC
Pressure and Temperature Measurement		HPC40, HPC50
Transmitter Calibration		HPC40, HPC50

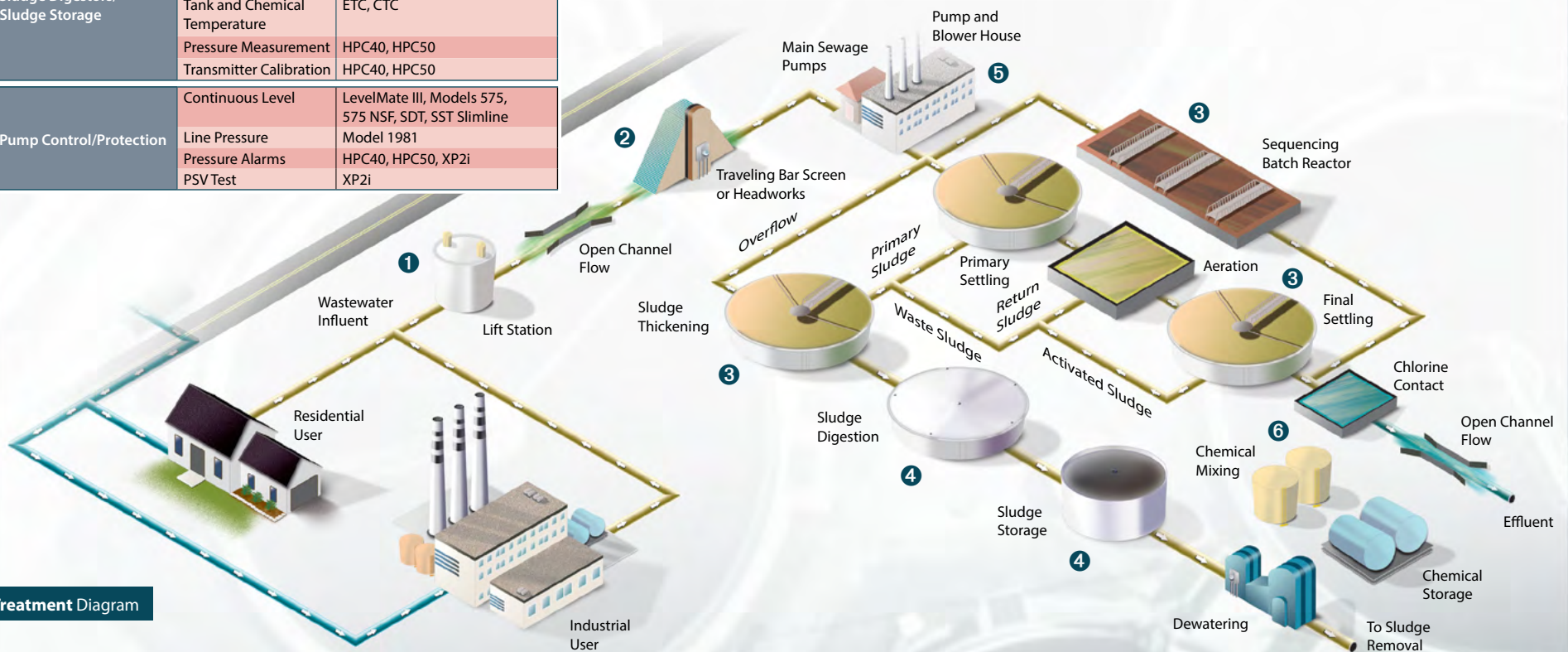
Application	Measurement	AMETEK Solutions
3 Chemical Slurries	Continuous Level	Models 575, 575 NSF, 675, SDT, and 375
	Tank Pressure	XP2i, m1
	PSV Test	XP2i
	Tank/Chemical Temperature	ETC, CTC
	Pressure and Temperature Measurement	HPC40, HPC50
4 Setting Tank Level	Continuous Level	Models 675, 575P, 575 NSF
	Pressure	XP2i, m1
	PSV Test	XP2i, m1
5 Water Wells	Continuous Level	LevelMate III, Models 575, 575 NSF
	Pressure Checks	XP2i, m1
	Transmitter Calibration	HPC40

Water Treatment Diagram

# Products for WasteWater Treatment

Application	Measurement	AMETEK Solutions
1 Lift Station or Wetwell	Continuous Level	LevelMate III, Models 675, 575P
	Pressure Checks	XP2i, m1
	Transmitter Calibration	HPC40
2 Traveling Bar Screen or Headworks	Continuous Level	Models 675, 575P
3 Setting Tank Level	Continuous Level	Models 675, 575P, 575 NSF
	Pressure	XP2i, m1
	PSV Test	XP2i, m1
4 Sludge Digestors/ Sludge Storage	Continuous Level	Models 675, 575P
	Tank Pressure	XP2i, m1
	PSV Test	XP2i
	Tank and Chemical Temperature	ETC, CTC
	Pressure Measurement	HPC40, HPC50
	Transmitter Calibration	HPC40, HPC50
5 Pump Control/Protection	Continuous Level	LevelMate III, Models 575, 575 NSF, SDT, SST Slimline
	Line Pressure	Model 1981
	Pressure Alarms	HPC40, HPC50, XP2i
	PSV Test	XP2i

Application	Measurement	AMETEK Solutions
5 Pump Control/Protection (continued)	System Controls and Operation	ASC-400
	Control Valve Cycling	ASC-400, HPC40
	Differential Pressure	HPC40, HPC50
	Flow Control and Measurement	HPC40, HPC50
	Temperature Alarms on Motors	ETC, CTC
6 Chemical Mixing	Line Pressure	Model 1981 with SB/SG Diaphragm Seal, XR-81
	Pressure	XP2i, m1
	PSV Test	XP2i



WasteWater Treatment Diagram

## Accredited Laboratories\*

Accredited Laboratories are determined to be technically proficient in calibration by calibration bodies, and provide calibration certificates in which the reference instruments used can be traced by an unbroken chain to National and International primary reference standards. Accredited calibration certificates are identified with the calibration body that has accredited them and certifies to customers the accuracy of the data contained in the certificate.

AMETEK Denmark is accredited by the national calibration body, DANAK and Crystal Engineering is accredited by the American Association for Laboratory Accreditation or A2LA. Crystal Engineering's calibration lab, located in San Luis Obispo, CA, is A2LA accredited for pressure and temperature equipment (certificate 2601.01).

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