

Measurement Solutions

for the Natural Gas Industry

AMETEK®
SENSORS, TEST & CALIBRATION

The Natural Gas System is a complex network of wells, pipelines, storage facilities, and processing stations, which transport the natural gas from production to consumption. Three major types of pipelines are used throughout the system: the gathering system, the interstate pipeline, and the distribution system. Each type of pipeline has its own set of tests, which are necessary to, among other things, prevent moisture, corrosion, inefficient fuel usage, and to also meet official safety regulations.

Pressure and temperature are two critical components which are routinely tested and sometimes documented for regulatory purposes. Depending on where in the world the system is, pressure tests can be done in gauge pressure, absolute pressure, or both. Differential pressure is one of the components used to calculate gas flow, and is also used for other applications like filter testing. In addition to pressure, deviations in the temperature have a great impact on the performance and costs.

At AMETEK, we have a long history of producing calibration and test equipment for use throughout the Gas Industry. In fact, we have worked closely with large gas companies worldwide to add features to our equipment that save both time and money. From intrinsically safe digital test gauges and data recorders, to high accuracy dry block temperature calibrators, we have a variety of equipment to help you do your job.















AMETEK®
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The Products You Need for Natural Gas Systems

XP2i DIGITAL PRESSURE GAUGE

- Ultra rugged, intrinsically safe, digital gauge.
- New low absolute pressure ranges.
- Three different accuracy levels.
- Now includes calibration reminders and alerts.
- Upgrade to record 32 000 data points.



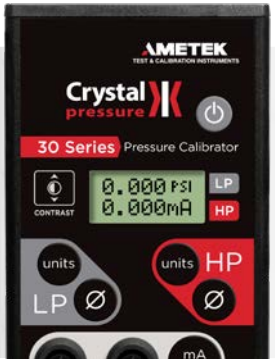
nVISION REFERENCE RECORDER

- Intrinsically safe reference recorder.
- Gauge, absolute, or differential pressure.
- Temperature, mA, VDC, Switch Test.
- 1 million data points—10 readings per second.
- Export to tamper-proof digital records.



30 SERIES PRESSURE CALIBRATOR

- Dual sensor, wide pressure range.
- Intrinsically Safe.
- Indicates milliamps to calibrate transmitters.
- Easy to learn and use.
- Brings laboratory accuracy to field use.



PK II DEADWEIGHT TESTER

- Accuracy to 0.015% of reading.
- Ranges to 30 psi / 854 "H2O.
- Small Incremental weight sets.
- Quick leveling system for field use.
- Optional Tripod.



RTC REFERENCE TEMPERATURE CALIBRATOR

- Temperature range from -100 to 700° C.
- Accuracy to ± 0.04° C and Stability to ± 0.005° C.
- Dry block and liquid bath combined.
- "Plug and Play" intelligent reference sensors.
- Time saving fast cooling and heating times.



CTC COMPACT TEMPERATURE CALIBRATOR

- Temperature range from -25 to 1205°C.
- Accuracy to ± 0.2° C and Stability to ± 0.04° C.
- Multi-hole and/or insert kits.
- Automatic switch test and auto stepping.
- Lightweight and easy to carry.

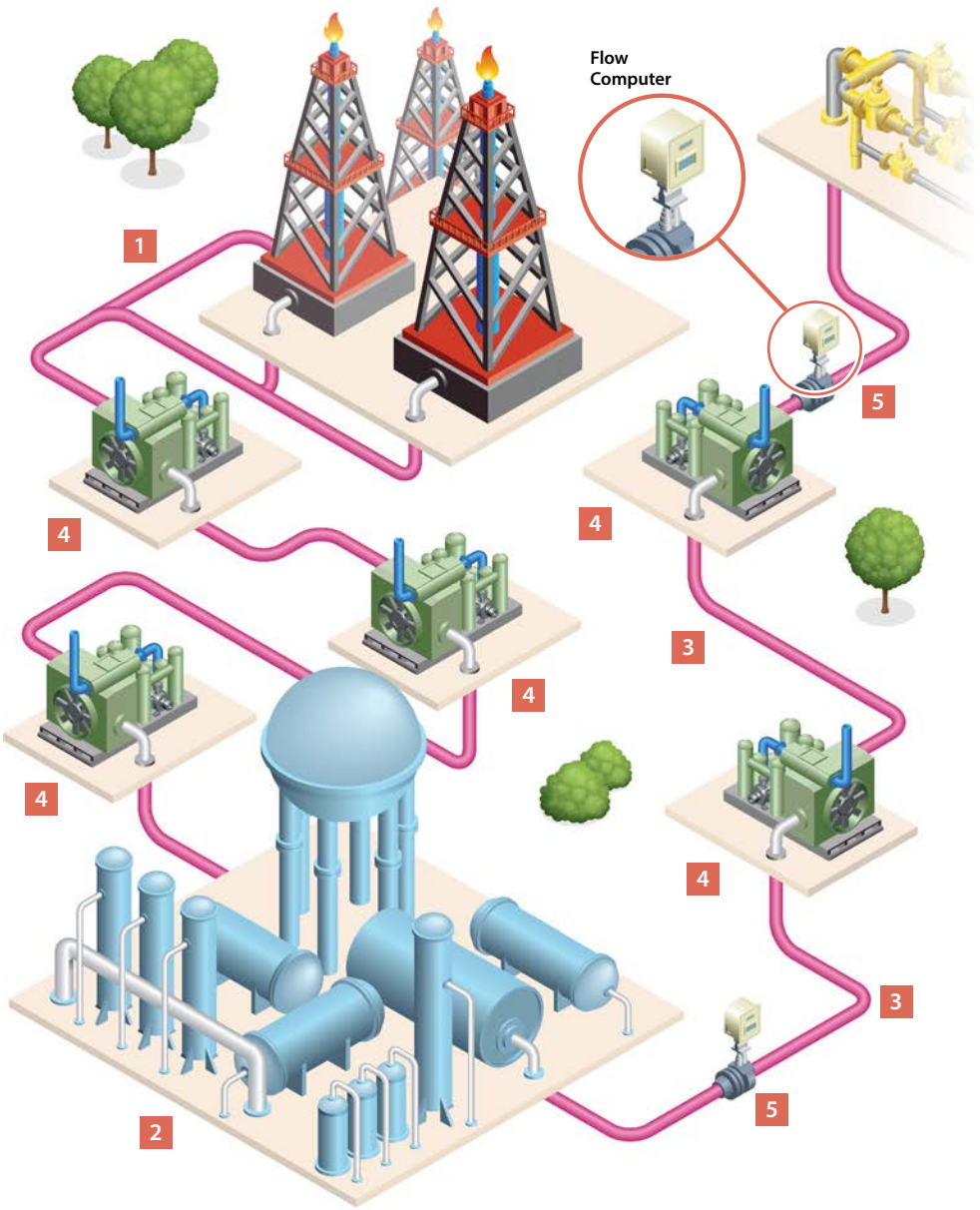


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The Natural Gas Process part 1





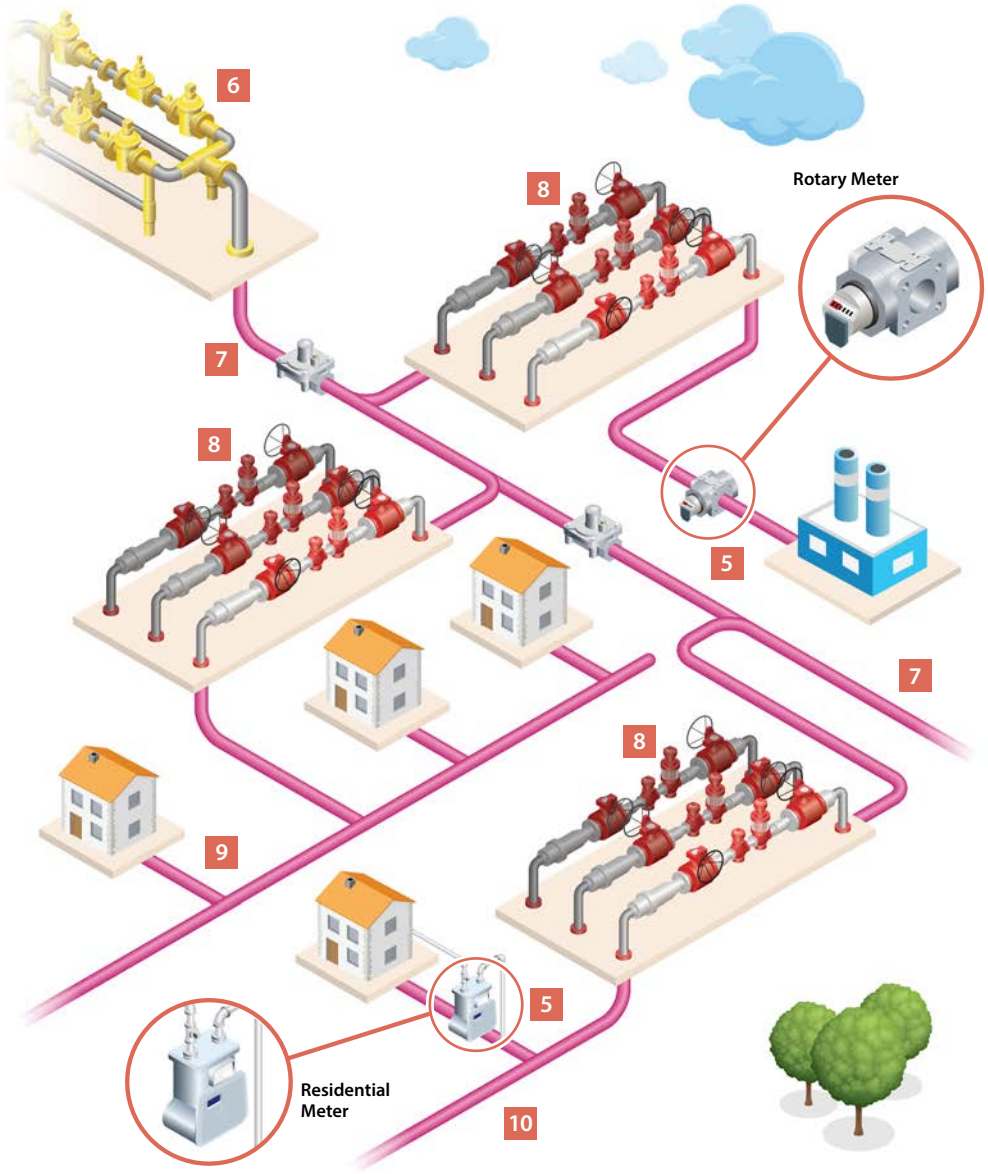


	APPLICATION	DESCRIPTION
1	Gathering Systems	Gas from a well is collected using gathering lines, which get larger as they get closer to the central collection point. Our pressure products are used to measure and test pressures and temperatures throughout the varying lines.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, & Temperature Calibrators	
2	Processing Plants	To produce pipeline quality natural gas, processing plants clean the raw natural gas by separating contaminants such as water, carbon dioxide, and hydrogen sulfide. A fully operational plant delivers natural gas that can be used as fuel by residential, commercial, and industrial customers.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, & Temperature Calibrators	
3	Transmission System	The transmission system moves large amounts of natural gas thousands of miles from the gathering systems to local distribution companies. The pressure of gas in each section of line typically ranges from 200 to 3000 psi / 30 to 200 bar, depending on the type of area in which the pipeline is operating. Various measurement tasks are carried out on transmission pipelines.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, PK II, & Temperature Calibrators	
4	Compressor Stations	Located approximately every 30 to 60 miles / 50 to 100 km along each pipeline, compressor stations boost the pressure that is lost through the friction of the natural gas moving through the steel pipe. Many stations are automated, so the equipment can be started or stopped from a central control room. Control stations can remotely operate shut-off valves, and their operators keep detailed data on each station.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, PK II, & Temperature Calibrators	
5	Metering Systems / Fiscal Metering	Simple mechanical domestic meters, to high-end flow computers are used for inline measurement, custody transfer, and larger business customers to determine the amount of energy supplied, rather than the amount of gas. Within a gas corrector, values from volume meters, thermometers and pressure meters are fed into its calculator. Each of its functions can be calibrated individually, and temperature and pressure can typically be calibrated onsite.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, PK II, & Temperature Calibrators	

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The Natural Gas Process part 2





	APPLICATION	DESCRIPTION
6	Gate Stations	When the natural gas reaches a local gas utility, it normally passes through a gate station, which serves three purposes: **1** Reduces the pressure in the line from transmission levels (200 to 3000 psi / 30 to 200 bar) to distribution levels (0.25 to 900 psi / 20 mbar to 60 bar). **2** Adds odorant. **3** Measures the flow rate of the gas to determine the amount being received by the utility.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, & Temperature Calibrators	
7	Distribution System	Distribution lines, or "mains" are sections of pipe that function at different pressures with regulators (some of which are operated remotely) controlling the pressure. The gas utility's main control center continuously monitors flow rates to ensure that gas reaches each customer with sufficient flow rate and pressure. They also ensure that pressures stay below the maximum for each segment.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, & Temperature Calibrators	
8	Reduction Stations	As gas distribution systems are based on the principal of gas flowing from high to low pressure, reduction stations/units are used throughout the network. When the pressure of natural gas decreases by 88%, the temperature decreases by about 65%. Decreases in temperature can cause operational (freezing valves) and quality problems. Measuring temperature and pressure throughout the process is key to keeping problems under control.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, & Temperature Instruments	
9	Service Lines	Natural gas from the mains is delivered to a home or business via a service line. The gas typically flows between 60 and 0.25 psi / 4 bar to 20 mbar. When the gas reaches a customer's meter, it may need to pass through another regulator to reduce its pressure to under 0.25 psi / 4 bar.
	AMETEK SOLUTIONS: nVision, XP2i, 30 Series, HPC40 Series, PK II, & Temperature Calibrators	
10	Distribution Grid and System Maintenance	Before any gas is put into the system, a range of tests are done through the grid with varying pressure ranges—leak testing is a primary example. Data logging of these pressure tests is common.
	AMETEK SOLUTIONS: nVision & XP2i	

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Crystal pressure

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