



# 10-Tips that Enhance Process Monitoring

Ten important industrial process plant functions that can benefit from accurate, repeatable and reliable electronic flow or level measurement are:



## #1 Pump Protection

Pumping systems are extremely important to the continuous operation and production costs of process industry plants. As a result, flow monitoring for reliable and trouble-free pump protection is a necessary requirement to detect dry-running conditions. Failing to detect pump dry-running conditions will result in extra maintenance and can shorten the life of the pump.



## #2 Tank Liquid Level Protection

The reactor is often the central process in chemical & tank applications, and many other types of industrial process plants. Level switches are installed to support various reactors, vessels & tanks ensuring accuracy of the reactor process. Low level monitoring at the bottom of the reactors help eliminate batch contamination. High level detection prevents an overflow or spill condition.



### #3 Fluid Additive Monitors

Liquid and gas additives are frequently injected into processes, including for example oil well heads, mercaptan into natural gas, chlorine into water treatment, etc. To assure chemical injection flow is occurring, an inline flow switch can detect gas flows down to 0.1 ft/sec and liquid flows down to 0.01 ft/sec— ideal for virtually all injection processes.



### #4 Plant Gases Distribution

Many chemical & process plants utilize large amounts of N<sub>2</sub>, Ar, O<sub>2</sub>, H<sub>2</sub> & other gases in their processes, plant power & safety systems. Thermal mass gas flowmeters measure mass flow for accurate & repeatable process control and inventory purposes. Where sub-metering is desirable to track individual gas use & its costs, thermal flowmeters are effective solutions.



### #5 Tank Blanketing

Nitrogen tank blanketing is a practice commonly used in the chemical, petroleum refining & other process industry plants to reduce the hazards associated with flammable liquids, improving the plant's safety in the plant and helping to increase productivity. Blanketing & padding is a process of applying nitrogen gas to the vapor space of a tank/vessel, minimizing the possibility of an explosion or fire.



### #6 Boiler Gas/Air Optimization

Carefully monitoring the natural gas flow fueling plant boilers minimizes fuel consumption, lowers plant energy costs and reduces pollutant emissions. Optimizing the fuel-to-air ratio for boiler control helps to both reduce plant fuel costs and protect the environment. The measurement of natural gas flows allows facility engineers to monitor & control the precise amount of fuel needed to run HVAC boiler.



## #7 Compressed Air Usage

In compressed air systems, the ability to measure accurately & rapidly detect flow measurement changes helps to reduce the consumption of pneumatic air. It improves manufacturing, assembly & process plant efficiency & identifies leakages to eliminate wasted energy. The installation of compressed air flow meters allows operators to compare compressor usage and adjust them for optimum efficiencies.



## #8 Flow Analyzer Assurance

Gas chromatographs (GCs), mass & optical spectrometers, photometers are examples of analyzer plant technologies applied in process and systems that need sample flow assurance. Sampling systems must have some type of flow monitor to assure valid samples & analysis. Analyzer flow switch/monitors are designed specifically for gas/liquid process analyzers and sampling systems.



## #9 Stack Gas Monitoring

Flue gases are the general name given to the mixed composition gases that are the by-product of a combustion process. Flue gases need to be monitored accurately for process control data and reporting, which is often mandated by environmental & regional air quality regulations. Thermal dispersion insertion flow meters provide a cost effective and accurate solution to flue gas flow measurement.



## #10 Flare Gas Monitoring

Flaring systems are used to burn-off & dispose of waste, excess off-gases & as a safety system to protect processes & equipment. Flare flow meters are a critical component used in these systems that monitor/report these gas flows, abnormal process changes, early leak detection and to comply with environmental regulations for greenhouse gases (GHG's).

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