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EPG CONNECTION

Your Resource For Environmental Pollution Solutions!

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If you see your name here call EPG by 8/30/02 to receive $25!

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A Guide to Flow Sensor Installation

The most important consideration in working with flow meters is the way in which the sensor is installed.

The specifications supplied by manufacturers are based on test data taken from textbook installations. The accuracy and repeatability achieved with the sensor will be dependant upon its installation.

The rules about placement of the flow sensor should be obeyed implicitly if accurate measurements are required.

PIPE SIZING – Insertion (paddlewheel) flow sensors are velocity devices. For an insertion (paddlewheel) flow sensor to achieve accuracy and repeatability, it requires the pipe it is installed in to be full with a minimum velocity of 2 ft./sec. (check with EPG for lower velocity). These sensors should be installed based on the minimum velocity rather than the discharge or force main pipe size.

UPSTREAM FLOW DISTURBANCE – Although the effect of upstream flow disturbance is more severe on some styles of flow meters than it is on others, the effect of these disturbances can be quite serious with almost any style of meter. There is no reliable way of predicting what the effect of a given pipe configuration upon a given flow meter is likely to be, because fluid dynamics of each installation is highly complicated and so varied. EPG recommends a minimum of 10 pipe diameters upstream of the flow sensor.

DOWNSTREAM FLOW DISTURBANCES – One would think that once a fluid has gone through a flow meter it doesn't matter what happens to it. Unfortunately, this is a common misconception. Disturbances caused by a bend, valve, etc. can propagate backward against the current for a few diameters affecting a flow meter installed close upstream of them. EPG recommends a minimum of five pipe diameters downstream of the flow sensor.

SUGGESTIONS FOR AVOIDING INSTALLATION ERRORS – When installing paddlewheel flow sensors, these steps should be followed if accurate results are to be obtained:

1) Remember that swirl is the worst enemy. Above all, try to avoid the classic swirl-generating situations where the flow is forced to make a three-dimensional bend. That is to turn two successive right angles in two perpendicular planes. The suggested distance from these swirl inducing bends is 100 pipe diameters upstream of the flow sensor.

2) If at all possible, install the flow sensor with adequate lengths of straight pipe of the correct diameter upstream and downstream of the flow sensor. The generally approved specification is 10 times the pipe diameter upstream and five times the pipe diameter downstream so long as rule #1 is followed. In cases where turbulence inducing equipment such as elbows, valves, tees, etc. are present, lengths of 50 diameters upstream and 10 diameters downstream are sufficient.

3) If it is impossible to accommodate the desirable lengths of straight pipe, there are two alternatives: either have the flow meter calibrated after it has been installed in its pipe work complete with all bends, valves, etc., or install a flow straightener which is designed to remove swirl, not to correct a distorted velocity profile. Some types of straighteners are designed to improve a badly shaped profile as well as reduce swirl, but other types do not have a very beneficial effect on a bad profile, and often they may actually make a fairly good profile worse.

If you have a current application or would like more information about EPG products and capabilities, please call us at 800-443-7426, fax us at (763) 493-4812, or e-mail us at info@epgco.com.

Request for Articles

The EPG CONNECTION is one way we keep in touch on a regular basis with prospective customers as well as current customers. We hope that many find this newsletter useful and informative.

One way we would like to make our newsletter even more useful is to have people in the industry submit articles that they feel would be beneficial to others reading the newsletter.

Therefore, we invite anyone with an article or even some hints and tips for the field to submit them to us for future placement in the newsletter.

We also welcome any comments, thoughts or ideas about how to make this newsletter as worthwhile to the reader as possible.

If you have something you would like to submit for the newsletter, please send it by one of the following methods to the attention of Ethan Nutter – Marketing Coordinator.

E-mail: info@epgco.com

Fax: 763-493-4812

Mail: EPG Companies Inc.
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Rogers, MN 55374

Remote Monitoring

There are a variety of monitoring systems that remotely monitor sensors and other unattended equipment. EPG Companies Inc. offers several types of remote monitoring and control systems to meet site specific needs.

Autodialers

These offer perhaps the simplest means of monitoring key operating parameters. Autodialers are often called alarm dialers since the most common application is to automatically call out on a phone line for alarm conditions that occur on-site. Typical autodialers have at least one and up to eight discrete, dry contact inputs that monitor site conditions and power supply. Connection of a power supply and a telephone line are required. Rechargeable Ni-Cad batteries in certain units provide limited power backup in case of power outages.

Most autodialers are able to call up to four different telephone numbers, cellular phones, or pagers. Some units will allow the user to record a voice message for call out. Others will allow the user to call the autodialer to "listen-in" to on-site sounds.

More advanced autodialers offer more inputs and communication via fax, e-mail, or computer. Some units even have universal inputs that can be set up to accept digital or analog inputs.

There are also autodialers available that call out on alarms and have built-in data logging capacity with programmable software and real-time graphics.

Data Loggers

These devices periodically record user selected parameters that can be down loaded on to a diskette or computer. This historical data can be useful in evaluating important events that occur on-site such as changes in levels, temperature, and motor run times.

Data loggers can be configured for access locally or remotely via modem and computer. The features and benefits of data loggers vary widely based on functionality.

Programmable Logic Controllers

Programmable Logic Controllers or PLCs offer true telemetry capability functioning as Supervisory Control and Data Acquisition (SCADA) systems. That is, remote communication through modems that allow the user to not only monitor operating parameters, but permit changing the operation of equipment remotely. For example, this interaction allows the user to start and stop a pump or blower remotely, or activate some other device. PLCs can also be programmed to record data that can be periodically down loaded.

Typically PLCs are programmed with ladder logic to control the operation of sensors and equipment. They offer relay outputs that in effect can eliminate the need for external or additional relays. Time functions within the PLC can also eliminate the need for separate timers that record elapsed run time of motors, and relays that act as time delays. Internal counters can record signals from flow sensors and measuring equipment.

In some cases, the PLC is built-in on the controller as an optional device that can be functionally bypassed. In bypass mode, the controller operates using standard relay logic. This provides the operator the option to monitor and control the system remotely using the PLC, or only at the control panel.

The most important part of the PLC when used for remote monitoring and control is the software and interface used for communication. The communication should be clear and easy for anyone to use. It usually involves a graphics package whereby the user can monitor real-time conditions and make changes from a computer screen.

For more information on these systems and how they may be applied to your existing and/or future systems, please call EPG at 800-443-7426 to speak with an applications specialist.

EPG People...

Jim Bailey heads the remediation and thermal oxidizer sales divisions at EPG. He has 17 years experience in the environmental field working for two environmental consultants and an environmental contractor prior to joining EPG in 1993.

Having worked on remediation systems in 30 states across the U.S. and Canada, Jim brings a unique and practical understanding of effective equipment applications, design, installation, maintenance, and troubleshooting. He also has degrees in Biology and Environmental Studies.

Jim enjoys the challenge and variety that remediation systems equipment design presents. Most of his free time is spent enjoying the outdoors fishing and hunting with an occasional trip out west skiing.

Jim Bailey

Product Highlights

“F” Series Sensors

EPG “F” Series sensors are level displacement sensors (floats) that move up and down a guide rod actuating a magnetic reed switch. Each sensor has 50’ (standard) of a color coded waterproof, gasoline, oil, and chemical resistant outer jacket over a twisted pair of color coded signal wires. The sensors have a small diameter PVC outer protective shell and are designed to be vertically suspended. They will float when submerged in water or petroleum products. The high (blue) and low (yellow) sensors are used to start and stop a pump, while the high level (red) sensor is used to annunciate a high level alarm. They are often used with intrinsically safe control circuits that have energy potentials so low that they are incapable of causing ignition of flammable or combustible materials.

TSP Pump with Level Sensor

The EPG TSP submersible pump with level sensor mount is designed with the small diameter vertical well in mind. This pump can be used to pump groundwater, leachate, and other contaminated liquids. Since the level sensor mounts below the TSP pump motor, it is able to be installed in wells as small as four inches in diameter. When used in conjunction with EPG’s LevelMaster™ Level Control System the benefits of continuous accurate monitoring and control of liquid levels in a smaller diameter well are achieved.

EPG Upcoming Events

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OCTOBER 28-31
WASTECON 2002
Long Beach, CA

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