

# **EPG** Connection

Your Resource For Landfill, Environmental and Industrial Solutions!

www.epgco.com

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Issue No. 22

November 2011

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EPG Companies Inc. specializes in the manufacture of landfill leachate pumps & controls, sump drainers, remediation equipment, telemetry hardware and SCADA systems and other environmental and industrial products.

#### Dear Mike,

How can you get control over every function of your landfill system? How do you know if it's running with optimum efficiency? How can you monitor, discover and troubleshoot costly interruptions?

As an integral part of a complete Control Panel or as an individual Stand Alone Unit, <u>EPG Monitoring Systems</u> and their components consistently provide the vital information necessary to reach optimum system performance.

Whether you need continuous monitoring of liquid flow, sump or tank levels, EPG has the solution to help you understand, maintain and improve system conditions.



Pictured above are EPG's most popular stand alone units:

FlowMasterTM Stand Alone (FMSA) LevelMasterTM Stand Alone (LMSA) Tank Gauging System (WNSA)

As always, EPG welcomes your feedback. If you have any comments or questions, feel free to contact us at info1@epgco.com.

Sincerely, EPG Companies Inc. www.epgco.com

## Product Highlight - FMSA Liquid Flow Monitoring System

EPG's Stand Alone Flow Meter Liquid Flow Monitoring System provides continuous display of liquid flow rate and records total flow of groundwater, leachate and process water. The system is available in a wide variety of user friendly configurations.

The stand alone flow monitoring system features a microprocessor based digital display meter and requires a 115 Volt, 60 Hertz, single phase power supply (standard). The front panel is menu driven to provide easy set up and calibration. The flow meter retains full functionality in temperatures between 0° and 131° F as it is equipped with a thermostatically controlled heater which also helps eliminate condensation, optimize meter accuracy, and extend the life of the system.



#### **Standard Features**

EPG Flow Monitoring Stand Alone (FMSA)

- Digital LED display
- Factory tested
- Non-volatile memory
- Field programmable
- Thermostatically controlled heater
- Weatherized enclosure to withstand extreme environments such as landfillsAvailable with optional intrinsically safe (IS) barrier for use in classified
- atmospheres

#### Options

- Truck loading batch control
- Data logging
- Remote monitoring

The FMSA Flow Meter has the flexibility to work with a variety of flow sensors.

Examples:

A. **Paddlewheel:** Flowing liquid turns a paddlewheel, which sends out a pulse proportionate to flow rate. It can be used with pipe sizes from 1" to 14" with flow rates of 2 to 1,850 gpm.

B. **Magnetic:** The magnetic sensor measures flow by passing the liquid through a magnetic field and measuring the voltage produced. Since the induced voltage is proportional to the average flow velocity and the inside diameter of the pipe is known, the volumetric flow rate can be calculated. It can be used with any pipe size.

C. **Ultrasonic:** This sensor is attached to the outside of the pipe. It operates by transmitting a high frequency signal off of solids entrained in the liquid and reading the return signal. The detected frequency shift is proportional to the liquid velocity (Doppler Effect). It can be used with any pipe size.

For more components, follow the link below: <u>Monitoring Systems and Components</u>

### 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 dependent 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

done

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 swirlgenerating 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.

Contact an EPG Applications Specialist at 1-800-443-7426 for more information.

# Education & Training - EPG Service School

### **Reminder!**

EPG's Service School is scheduled for March 12-14 for the Pumps & Controls class and March 14-16 for the Advanced class. Register today to reserve your spot!

For 15 years, EPG has served over 500 attendees in a small group setting. Our education and training classes are applicable for all who are involved with the design, maintenance, and/or installation of Liquid or Gas Handling Systems, Remediation Systems and/or SCADA and Data Acquisition Systems.

Classes are suitable for the following:

- Design Engineers
- Landfill Operators
- 3rd Party Service
- Landfill Managers
- Installation Contractors
- Maintenance Personnel
- Owner Operators



**Topics include:** Use of Test Meters Motor & Electricity Basics Level & Flow Meters Pump Basics Pump Controllers Control Panels Installation & Start-Up Operations & Maintenance Grounding Safety Issues Telemetry

Our schools include classroom discussion, presentations, hands-on training, networking opportunities, meals, lodging, applicable test equipment, instruction manuals and SWANA CEUs. <u>Click here</u> to download registration forms.





\* Receive up to 10 Continuing Education Units through SWANA (Solid Waste Association of North America)

Upcoming Events EPG will be participating at the following SWANA and industry related events: 3/19-3/22 SWANA's 35th Annual Landfill Gas Symposium - Orlando, FL

**2012 Service School** March 12-16. You can download registration forms for the Basic and Advanced classes at <u>www.epgco.com</u>. Call us at **1-800-443-7426** with questions.

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Solid Waste Association of North America