



Tech notes



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Pre-engineered Package Lift Stations
for Wastewater and Stormwater

August 2004 Product Information & Updates • Installation & Technical Tips

THIS EDITION OF TECH NOTES features the liquid level sensing system in Romtec Utilities' Pre-engineered Package Lift Stations, and its integration into the controller environment. The conductive level sensing probe represents the latest in liquid level sensing technology and offers significant advantages over more traditional approaches, such as captured air, float and sound-based systems. The MultiTrode, Inc., control system, used exclusively by Romtec Utilities as a component of its Pre-engineered Package Lift Station, offers the advantages of a multi-sensor probe operating in an integrated controller environment. MultiTrode is an ITT Flygt strategic partner and today's leading authority on pump station management technology.

The Probe

The liquid level sensing system measures levels in the wet well basin in order to start and stop pumps and to initiate high level/low level alarms. MultiTrode's patented conductive level sensing probe consists of a PVC tube assembly containing stainless steel sensors connected by wire to a pump controller. The probe, available with up to 25 sensors, is simply lowered into the wet well and suspended by its own cable using a supplied mounting kit. The probe measures liquid levels by monitoring resistance to ground. The extra-low sensing voltage, when combined with intrinsically safe barriers, meet explosion-proof standards set for wet wells.

The conductive level sensing probe is a completely electronic system that is unaffected by the build-up of fat, grease, debris and foam. The signal is sent from the sensors, through the cable to a pump controller located in the control panel. Other than output contacts, there are no mechanical aspects or calibration required. It's

either wet or it's dry; it's either on or it's off.

Turbulence does not affect the probe's operation, and in fact, has a beneficial cleaning effect. The probe also ensures a positive pump cut-out: Pumps are turned off at the same level every single time, avoiding

damage from pump over-run and the cost of additional control equipment.

Alternative Systems

The conductive level sensing probes manufactured by MultiTrode are more efficient and reliable than many methods



The MultiTrode conductive level sensing probe is suspended between two submersible pumps.



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Romtec Utilities is a dedicated integrator of submersible pumps and lift station equipment manufactured by ITT Flygt.



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commonly used today, including captured air, ultrasonic and float systems.

A captured air system relies on pressure readings obtained via an air compressor. The system is plagued by potential point failures. If the compressor doesn't deliver enough air, for example, it takes longer to compress to the pre-set psi, providing incorrect pump-start levels.

With ultrasonic systems, a column of sound reads levels by bouncing off the substance in the wet well. Solid objects such as debris, the head of a pump or even a piece of pipe can

interfere with an accurate level reading, as can a build-up of foam.

The cable float-based system measures liquid levels by means of sensors encased in floats; the floats are set to tip at certain levels, activating the sensors inside. This commonly used system is prone to several problems in the lift station environment. Station starts often wear out the cable attached to the float, which moves with the liquid. Fat and grease build-ups compromise buoyancy, and any type of debris in the well can foul the float system set up.

this creates a situation where there is little continuity in the way the various controllers in a network of lift stations are operated.

The use of PLCs (programmable logic circuits) in lift station control systems is common, but often the knowledge of how to program and run the control software resides with only one or two people. Integrators who program controllers do not always specialize in liquid level sensing and controlling, and station operators often find themselves tied to the person who designed the system.

With an integrated approach, the conductive level sensing probe is connected to a standard, user-friendly interface that is easily manipulated by operators at any level of experience.

At the control panel level, operators are able to choose their preferred level of sophistication across the entire lift station network, ranging from basic pump



An ITT Flygt technician programs the MultiTrode controller during start-up of a Romtec lift station.

and alarm functions to full SCADA, with the ability to operate an entire network of lift stations from one desk.



This section view shows the MultiTrode liquid level sensing probe suspended in the wet well.

Integration of MultiTrode Technology in Romtec Lift Stations

Besides providing the best-in-class liquid level sensor probe, the MultiTrode system offers significant advantages through integration of common components within each lift station in a wastewater collection system.

In the alternative methods discussed above, the interface between the level sensor system and the controller is traditionally the choice of the system designer or owner. Often,

FOR MORE INFORMATION:

The MultiTrode, Inc., liquid level sensing probe is offered exclusively by Romtec Utilities as a component of its Pre-engineered Package Lift Station. The probe features safe low voltage for sensing level of wastewater or stormwater in the well, and virtually no maintenance is required. For more information, call Romtec Utilities at 541-496-3541 or visit www.romtecutilities.com.