PROCESS INSTRUMENTATION

How can data logging your key variables **optimize your operations?**

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If you already have level and pump controllers, or if you're planning to purchase any for your next project, chances are you're looking to monitor level in water basins, tanks, wet-wells and control pumps – or, in the case of open channels, to monitor flow in weirs and flumes.

Often, a level and pump controller are leveraged only for its most basic operations, and much of its power is never utilized – either by choice or because the user is unaware of how much more the device can do. For instance, advanced level and pump controllers can simulate process and totalizer values, relay settings, and even instrument diagnostics, offering you the opportunity to validate operation prior to putting the instrument into service. Some controllers can also be set to data log relevant variables and parameters for virtually any application – a highly valuable feature, as you will learn below

What is data logging, anyway?
Data logging is a process that can be carried out manually or automated via an instrument. The idea is to collect data and events that can then be analyzed to predict trends, outcomes, and maintenance requirements, and thus enable proactive action to make process improvements.

The type of data collected varies by industry but can include everything from temperature measurements and water usage to chemical levels. Collecting this type of data on a large scale is impractical, which is what makes data loggers so useful. They can be computer-based, web-based, standalone or – in the case of the SITRANS LT500 HydroRanger and SITRANS LT500 MultiRanger level controllers from Siemens – integrated right into the controller. With an integrated data logger, a full range of data logging capabilities are built in as standard, and all you need to do to reap the benefits is decide which variables should be tracked for future analysis.

The data logging functionality included with all LT500s is relatively easy to set up and offers a great deal of transparency into your processes. For example, you can use it to monitor pump running hours, which might make you aware that a pump is now taking 40 minutes to pump the same volume that took only 30 minutes two weeks ago. In other words, pump efficiency is decreasing. With just a few clicks of your mouse, you have valuable data at your fingertips allowing you to address the issue proactively instead of waiting to do maintenance based on a pre-determined schedule. This is a far more cost-effective strategy and could potentially prevent a total pump failure, which would really wreak havoc on your operations.

Can you optimize when your pumps run to save money?
Operating pumps often represents a big portion of a facility's overall budget. Of course, this depends on the size and type of operation. When treating water in the oil and gas sector, particularly when carried out by water midstream services, scheduling pump operation can be less predictable than in municipalities or large cities where huge amounts of water are moved and treated. Here, data logging can help you decide if the economy pumping routines built into some advanced level controllers can be of benefit to your business. This strategy requires you to prime your wells by lowering their levels and preparing them for more liquid intake prior to peak hours when kilo-watt hours are more costly. Thus, reviewing the trends related to your pumps' running hours can help you optimize when your pumps operate to reduce energy consumption – which can translate to thousands of dollars in savings per year and, in some cases, per pump!

As an added benefit, retrieving information from an integrated data logger is quite simple and can be accomplished either by plugging the microSD card from the level controller into a laptop or by connecting the controller and laptop with a USB cable. In either case, it will appear as an additional drive on your computer and data log files can then be extracted. The information can also be retrieved via a smart phone or tablet or transmitted via any of the industrial protocols available with the LT500, including HART, Profinet, Profibus, Modbus and, coming soon, Ethernet IP.

Can the logged data be lost due to power outage?
If a power outage occurs, all data that was collected prior to the event is retained, even if the outage last hours or days. Additionally, the large-capacity industrial microchip allows for up to nine different variables and 81 parameters to be logged, with login interval options from 10 milliseconds to 24 hours. For example, if we log nine values every two minutes, it will take 260 years before the 8GB microSD card is filled.

If you want to know when maximum or minimum levels are taking place, simply review the timestamps associated with these occurrences. Also, if a pump interlock was configured in the controller and a pump fails to start, that pump will be interlocked and taken out of the operational sequence, and you will know when the event took place. In addition to the data logging values you choose to activate, the LT500 will independently log alarm events and configuration changes with timestamped audit trail logs. These capabilities provide you a valuable window into your process – and none of it will be lost due to a power outage.

Bring your process measurements to the next level
If you want to know your process intimately, start data logging key variables and parameters to see what's trending. Remove the mystery from your process measurement – know what actions to take, and when to optimize your process.

To learn more about the SITRANS LT500 HydroRanger and LT500 MultiRanger, please visit our website at
www.usa.siemens.com/sitranslt500

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