

WATER TANK MONITORING SYSTEM FOR R&D TESTING

DELPHIN PROFIMESSAGE MODULAR DATA ACQUISITION SYSTEM



CAS DataLoggers supplied the data acquisition solution for a customer specializing in providing water purification filter systems and cartridges for industrial and household applications. With growing attention to health and safety, the importance of water purification cannot be minimized. The customer's filter cartridges were widely used to improve water quality and taste, especially for coffee vending machines as well as large industrial plants. The filter material acted to reduce the water's calcium content, balancing its pH level and binding other metallic ions. The filter [granular material](#) itself was developed in

the customer's R&D lab for each specific filter and purification treatment application individually, where they needed to be tested to gauge their effectiveness on water consumption. In the principal test setup, the water flowed through the filter unit from a storage tank holding a specific water quality and was then recovered in a wastewater tank. Each test covered several thousands of quarts of water and could take several days to finish. During the test cycle the pH level, conductivity, and temperature were all measured ahead of and after the filter unit. The objective was to show the water pH & conductivity level after the filter over the water consumption period. Given this proprietary information, data security was very important for the customer as well as the need for an automatic control to stop the test when the specified end criteria were reached.

Some tests ran over several days and over weekends, so any breakdown of the recording and test process required a follow-up test, wasting both time and test water. Therefore, the customer required a reliable, stand-alone water tank monitoring system to handle all R&D testing. This system would also need to feature powerful software for quick configuration and integrated test reporting.

INSTALLATION

Management installed a [Delphin ProfiMessage](#) data acquisition system equipped with an ADIT module and a DIOT module with 11 pulse counter inputs. The system's 10 universal analog inputs enabled an easy connection to the sensors via screw terminals and could handle 30 analog inputs or 48 digital inputs. The modular and scalable ProfiMessage

device offered the customer a range of I/O modules suitable for any number of channels and sensor types. A network interface enabled the ProfiMessage to be directly connected to a PC workstation or laptop/netbook computer. The ProfiMessage's universal inputs enabled the connection of signals of any type including non-isolated signals. Potential isolation between channels and differential inputs saved both time and money. Measurements were made at high accuracy with 24-bit resolution. Signal conditioning took place within the device,

which also supported connection to external equipment and PLC control. Configuration was handled via PC, while data transmission was handled via LAN (internet/intranet). Additionally, an optionally integrated data memory could permanently store up to 128 million measurement values without PC support and event-based triggering allowed for quick identification of critical events.



USAGE

The ProfiMessage data logger's software channels automatically controlled the start of the test by opening the valve using one of the digital outputs of the DIOT module. The device also automatically performed the integration of the flow rate to show the total volume of water consumed. In a combination of the limit channels and the max volume set point, the data logger closed the valve when the required water volume passed through the filter. Due to the flexibility of the Delphin system, several filter materials could be tested in parallel. The device's onboard logic and calculation functions provided a complete stand-alone operation which increased the test performance and safety, especially over weekends when no lab engineer was present. The PC's display screen showed an overview of the ProfiMessage's analog inputs and calculation channels which were configured inside the CPU module of the data acquisition system.

The configuration of the Message device took place with the PC user-friendly Data Service Configurator software. Configuration data was processed online and stored permanently within the water tank monitoring system. Apart from the automatic test operation through the software channels of the ProfiMessage data logger, a [ProfiSignal Basic software](#) application was developed to monitor the live data. The user-friendly ProfiSignal Basic software helped users to quickly configure the logger and set up the live data readings, analog and digital displays, and electronic strip charts. The application provided a Y(t) graph for temperature and flow rate monitoring, while the pH level and the conductivity were plotted in a YX-chart over water quantity consumed. ProfiSignal Basic also featured integrated test reporting with graphs and indicators.

BENEFITS

The main advantage for the customer following installation of the Delphin ProfiMessage data acquisition system was its many standalone control and recording functions. Standalone recording and process control and logic functions automated the entire test process without any reliance on the lab's PC. There were no breakdowns of the recording and test process, and repeated tests became a thing of the past. Lab personnel also utilized the user-friendly ProfiSignal Basic software to set up the live data readings, analog and digital displays, and strip charts. Additionally, the data was kept highly secure with these reliable systems.

For further information on the [Delphin ProfiMessage](#) Data Acquisition System, water tank monitoring systems or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.