APPLICATION NOTE

CAS DATALOGGERS

Flow Rate Monitoring to Minimize Water Pollution

dataTaker DT82E Proves To Be a Cost-Effective Single Solution

A wastewater management district located near Cleveland, Ohio contacted CAS to supply an automated flow rate monitoring solution in a sewer line as part of an environmental project. In most cities, sanitary sewers and storm sewers are separate, so that stormwater is diverted into a nearby lake. However, because of their age, many sewers in Cleveland combined both in one pipe, so all of the flow went to the sewage treatment plant.

In times of heavy rainfall, the plant was not equipped to handle the deluge, so the combined overflow of rainwater and sewage was forced to be emptied directly into the lake. Therefore, to minimize this water pollution, the district needed to measure the flow rate at various points in the system and correlate this with rainfall. Workers needed an all-in-one system which could continually monitor the channel's water levels and flow and support data collection via a USB stick download since ethernet communications could not be continuously maintained, and the device would be moved too often to make other types of hard-wired communication feasible.

Installation

As a flow rate monitoring solution, a dataTaker DT82E Intelligent Environmental Data Logger was packaged in a waterproof enclosure with a bracket that allowed it to be installed in a manhole, mounted on the sewer wall or used outside. One of the dataTaker's analog inputs was connected to an ultrasonic height sensor with a 4-20mA output to measure the water height in the channel as the water flowed to a certain depth. A tipping bucket rain

gauge was also part of the package which was then connected to the digital/counter input of the data logger. The rain gauge provided a pulse output for every hundredth of an inch of precipitation. Along with the water level data gathered from the ultrasonic height sensor, the data from the rain gauge enabled users to get both an indication of the channel's flow rate and observe the relationship between precipitation rate and flow rate.

Usage

Designed to handle environmental monitoring applications, the dataTaker had robust functionality and ow power consumption. The DT82E model features up to 6 universal analog input channels supporting many analog sensor types. The logger also features 4 bi-directional digital channels, 4 high-speed counter channels, and an SDI-12 channel. Data from the ultrasonic height sensor and the rain gauge were collected via a USB stick directly from the logger.

User-friendly software was included with the dataTaker in the form of a built-in dEX graphical interface. Data transmission was simple–users just grabbed a USB stick once a month, plugged it into the logger, and pressed a button. The data was saved in .CSV format for analysis using Microsoft Excel.

Benefits

The wastewater management district benefited significantly following installation of the dataTaker DT82E data logger. The dataTaker's flexible measurement capability, local storage, and easy data download proved to be very cost-effective. Using this single solution, operators were able to measure both the 4-20mA output from the ultrasonic height sensor and precipitation measured by the rain gauge. This enabled the district to determine the channel's flow rate at a high accuracy, view the time between rainfall events and flow changes, and document the extent of the subsequent changes in the channel's water level. This data gave users an idea of how water flowed through the collection system which subsequently helped identify critical areas that required attention. The end result being targeted modifications to the system and reduction of sewage overflow and pollution in the lake.

For further information on the dataTaker DT82E Environmental Data Logger, flow rate monitoring, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Application Specialist at **(800) 956-4437** or www.DataLoggerInc.com.