

# Remote CSO Water Quality Monitoring

Thornton, UK

## Case Study



Expertise in Flow



2105G Interface Module

### Benefits and features of the 2105G:

- Stationary or portable
- Long battery life (15 months at 15 minute storage intervals)
- Rugged, submersible enclosure (IP 68)
- Easily combined with 2100 series flow meters or stand alone
- Data logging (79MB)
- Variable rate data storage
- GSM/ GPRS modem
- Landline modem
- Inputs:
  - SDI-12
  - Modbus
  - Analog (4-20 mA) via converter
  - Rain gauge
- Outputs:
  - Modbus
  - Digital pulse for enabling or pacing a sampler
  - Analog (4-20 mA) via 2108 module
  - Alarms

*The 2105G Interface Module from Teledyne Isco, Inc. is the heart of a CSO monitoring project in Thornton, UK. It provides continuous updates of multi-parameter sonde data to a central server. The automatic water sampler is remotely controlled via the 2105G Interface Module, based on rain events and water quality data, thus ensuring that correct samples are collected. The system reduces health and safety risks, saves time, and lowers battery, labor, and laboratory costs.*



*A typical remote CSO monitoring station with a Teledyne Isco Avalanche refrigerated sampler, multiparameter sonde, and 2105G interface module.*

### Project background

Nearly 90% of all UK sewers are combined sewers, which include storm water and sanitary wastewater. If the resulting volume during a storm exceeds the system's capacity, it is forced to overflow into local receiving waters. A combined sewer overflow (CSO) can directly impact the chemical and ecological status of the receiving water. OFWAT (the Water Services Regulation Authority in the UK) has decided that, in the investment period of 2010-2015 (AMP5), UK water companies need to invest > £1bn "to limit pollution from combined sewer overflows and storm tanks" in order to meet EU environmental standards.

### Challenges of CSO monitoring

CSOs occur only during storm events. In order to identify and reduce CSOs with potential environmental risk, it is necessary to continuously monitor and control a number of sites over a period of time in order to capture the right events. Traditionally, CSO monitoring is costly and labor intensive. Sites are often located in remote areas, and storm events can occur during weekends and nights. Money is spent on lab analysis without knowing whether the right event has been captured. Sites visits are based on fixed time schedules to perform maintenance, change batteries, and collect water samples, even if such visits are ultimately unnecessary. There are also health and safety concerns with CSO monitoring, since monitoring points are often not easily accessible in a secure way during storm events.

*"The Future of Flow!"™*



## Flowlink Pro Software

### Benefits and features of Flowlink Pro:

- Installs on any Oracle or SQL server
- Large database
- Multiple users
- Fast transfer and low cost with pushed data
- Remote access to data via Internet (Web UI)
- Alarm server message as e-mail or SMS
- Automated tasks
- Graphical and tabular reports
- Data editing
- Secure

Because of the many challenges, it is important that the CSO monitoring equipment has features that eliminate costly efforts such as unnecessary site visits, standby operators, and needless lab analysis. The remote monitoring system must be able to integrate and log data from different types of equipment. Continuous remote data transfer and full access to programming and control ensures the right data is cached at a limited cost and in a secure manner.

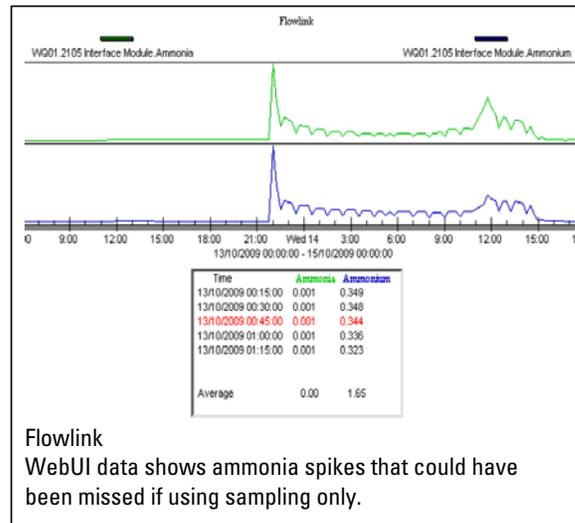
Environmental Monitoring Solutions (EMS), Teledyne Isco's distributor in the north UK, was approached by water and wastewater service company IETG for a CSO monitoring project in Thornton, UK. They suggested the 2105G Interface Module as a solution, because it met all the requirements of the project.



Remote CSO monitoring site

## Teledyne Isco 2105G Interface Module solution

The 2105G Interface Module is a powerful solution for integrating different monitoring equipment, including external units with SDI-12 and Modbus (4-20mA) input. It records all data with variable data storage options, which ensures maximum information during events such as overflow conditions. The 2105G can take intelligent actions such as enabling and pacing automatic samplers and can generate alarms. Operators can be informed when the sampler is started, if events are occurring or if maintenance is needed. All conditions are user selectable and variable data storage or alarms can easily be selected through a combination of several conditions.



Flowlink WebUI data shows ammonia spikes that could have been missed if using sampling only.

A GSM/ GPRS modem allows for the continuous update of data fed to a central server. Data is easily accessible through the Internet via a WebUI. The remote access allows for programming and enabling of portable refrigerated samplers without being on site. Operators can therefore evaluate potential events before sampling, or before sample collection and analysis, eliminating unnecessary site visits, lab analysis, and battery consumption. The 2105G is robust (IP68) and conserves battery power, allowing installation in harsh field conditions over long periods of time without the need for constant maintenance.

## Customer feedback

*"We now have 60 units of the Teledyne Isco 2105G Interface Module. The units are a very robust and reliable piece of equipment. They give us easy access to water quality information via Flowlink Pro, and enable us to act on this information and capture the right events. Using the pass-through functionality, we have full programming control over the samplers. The system has helped us with tremendous cost savings and reduced health and safety risks. Cost reduction for labor and laboratory analysis is essential for such large scale monitoring projects. Remote monitoring and control is the future of CSO monitoring."*

—Mr. Neil Scarlett, Development Director, IETG

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