Remote Industrial Wastewater Monitoring
Granada, Spain
Case Study

TELEDYNE ISCO
A Teledyne Technologies Company

Expertise in Sampling

6712 Sampler Benefits:

- Light weight, compact, and robust
- Environmentally sealed controller (IP67) with data logging
- Powerful peristaltic pump (8.3 m lift)
- Non-contact liquid detector ensures accurate sample volume
- Plug-in modules for flow, pH and other parameters (analog input)
- SDI-12 and rain gauge connection and logging
- Versatile programming for unique applications
- Remote access via GSM

6712 Full-size sampler installation in manhole

A 6712 full-size automatic sampler from Teledyne Isco, Inc. is at the heart of portable systems that remotely monitor water quality from industrial sites in Granada, Spain.

Full-size portable sampler at a remote site

Project Background

EMASAGRA is a water and wastewater service company managing distribution networks and treatment plants in the municipality of Granada, in southern Spain. In the area there are several industries connected to the main sewage network system, such as perfume manufacturers, breweries, pharmaceutical industries, and dairy industries. These industries could potentially contribute to a major part of the pollutants received by the wastewater treatment plant.

As a consequence, the municipality created new environmental regulations to monitor the discharge from the main industries. The new regulations set limit values for several water quality parameters such as pH, ORP, conductivity, and temperature. These parameters must be monitored continuously in order for the company to quickly identify and act on potential issues. Water samples must be taken regularly at discharge points and analyzed in a laboratory.

Challenges in Discharge Monitoring

It would have been very costly to install stationary monitoring stations at all of EMASAGRA's many potential measuring points, and some sites did not have access to AC power.

EMASAGRA wanted a compact solution where one system would be able to take water samples (24 bottles), measure water level/ flow and water quality, store data and also have alarm dialout and remote GSM communication capabilities. The system needed to be rugged and durable, and fit directly into a manhole.

"Your Source for Samplers!"

System Options:

- Stationary or portable
- Pacing by:
  - Time
  - Non uniform time
  - Flow
  - Event
- Large selection of bottle configurations in glass and PE (from 1 x 20 liters to 24 x 1 liter)
- Communication:
  - GSM
  - Analog output (4-20 mA)
  - ASCII data output
  - 3 x I/O ports
  - Dialout alarms
- Flowlink 5.1 software:
  - Data analysis
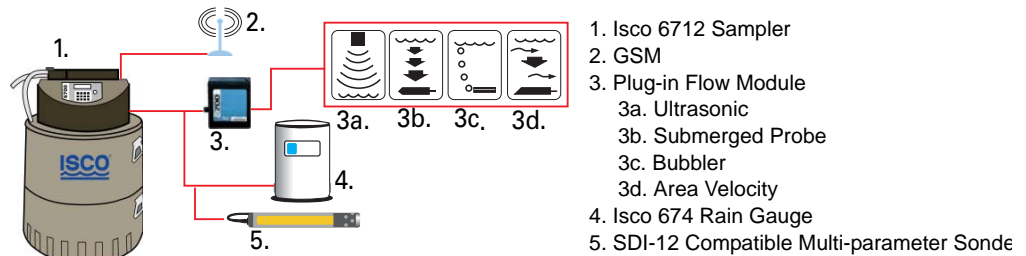 - Diagnostics
  - Graphs/ tables
  - Editing

6712 FR refrigerated sampler

The Portable Monitoring Station

The solution recommended by Instrumentación Analítica, the Spanish dealer for Teledyne Isco, Inc. was a portable monitoring station with remote control and communication. The best candidate for such a job is the Isco 6712 full-size automatic sampler. This ruggedly built sampler is light and compact, with an environmentally sealed controller (IP67), and can easily be placed in a manhole.

The controller has data logging capabilities and a non-volatile ROM memory. An extensive range of programming modes let EMASAGRA select the most suitable sampling routine(s) for its applications. The built-in SDI-12 interface made it easy to connect a multiparameter sonde for direct water quality measurement. Level and flow measurement were added with the ultrasonic 710 plug-in module. Finally, a GSM modem was connected to remotely trigger the sampler, reprogram the controller, download data, and set up dialout alarms based on sample events exceeding limit values or sampling errors. EMASAGRA is currently operating several portable stations and is considering adding more.
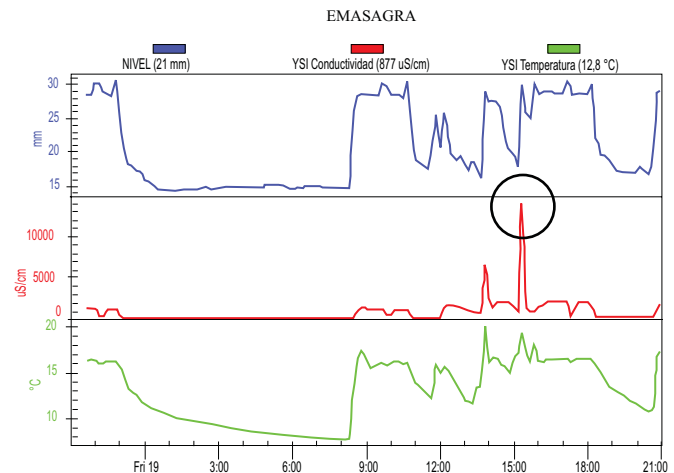

1. Isco 6712 Sampler
2. GSM
3. Plug-in Flow Module
   3a. Ultrasonic
   3b. Submerged Probe
   3c. Bubbler
   3d. Area Velocity
4. Isco 674 Rain Gauge
5. SDI-12 Compatible Multi-parameter Sonde

Configuration example: stormwater monitoring using 700 Series flow module

Customer Feedback

José María Ogando from EMASAGRA expresses the great value of being able to see the level/ flow and water quality data in real time at the control centre of the wastewater treatment plant. "*The Isco 6712 remote monitoring system is really a very powerful tool to control sources of pollutants in the sewerage system. We receive SMS messages when any of the measured parameters gets outside of the allowed limits in industrial wastewater discharge. Then I can remotely control the sampler and trigger it to take a single sample or to start a pre-defined sampling program. If an industrial site is questioning our water quality data, we can give them the water sample and tell them exactly at what time it has been taken. Then they can ask any other laboratory to analyze the parameters questioned.*"

Data from one monitoring station, which was down-loaded remotely via GSM and Flowlink 5.1 software.

The black ring indicates an event where the conductivity limit was exceeded. Based on this event, an alarm was sent and a sample taken.

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