Customer Requirements

A dam is being constructed which requires monitoring of several environmental and structural properties to ensure its long term strength and stability. The construction engineers have put forth a proposal for a large number of sensors to be used during construction. These sensors include vibrating wire piezometers, joint meters, fill extensometers and strain gauges. These sensors will interface to a data logger as part of a long-term logging solution.

The logging solution requires a large number of vibrating wire sensor inputs, compatibility with a SCADA system and potential for expansion.

dataTaker DT85G

1. A cost effective data logger expandable to 320 channels, 640 differential or 960 single-ended inputs

2. Supporting vibrating wire and other Geotechnical sensors

3. Compatible with all major brands – Slope indicator, RST Instruments, Geokon, Soil Instruments, Roctest, AGI.

4. Built-in web and FTP server allows for remote access to logged data, configuration and diagnostics

5. Rugged design and construction provides reliable operation in the extreme s of the geotechnical environment and applications

6. Modbus RTU via RS-485 or TCP/IP

7. Designed and manufactured in Australia

Hydroelectric Dam: This dam in Serbia uses instrumentation to monitor its structural stability

dataTaker Solution

Equipment

dataTaker DT85G Geo Logger x2
dataTaker Channel Expansion Module (CEM20) x6

Sensors

Vibrating Wire
- Piezometers
- Jointmeters
- Fill extensometers
- Strain gauges
Flow meters

Implementation Notes

The *dataTaker* DT85G was chosen because of its compatibility with vibrating wire sensors, its large number of inputs and its proven track record in geotechnical applications. Two DT85G loggers are each paired with three CEM20 modules allow for a total of 146 vibrating wire sensors to be intelligently distributed throughout the dam structure. This can be further expanded to connect up to 640 vibrating wire sensors.

Vibrating wire sensors were chosen due to their ability to provide highly accurate measurements that are not altered by the electrical resistance of long lengths of cable. The sensors will provide information about stress, fissuring, foundation deformation, uplift, displacement and seepage flow.

A SCADA system is used to query the sensor data from the loggers. There are two methods by which this can be done, either Modbus RTU via RS-485 or Modbus TCP/IP via Ethernet, the latter being the protocol behind the internet, which potentially allows for monitoring worldwide.