dataTaker

Case Study

Duplicating Real-World Conditions

Case Details

CSIRO Manufacturing & Infrastructure Technology (CMIT) was asked to develop a best practice method for testing the cure and strength of structural concrete in the field. Ideally, test samples should be cured under the same conditions as the structure in the field. The aim being to allow for formwork to be removed and construction advanced at the earliest possible time, as soon as the concrete has reached adequate strength. Normal testing requires large margins for error due to variations in ambient conditions between test and field site locations.

Key Requirements

Remote communications
Inter-logger connectivity

dataTaker Data Logging Products

1. Cost effective data logging solutions
2. Capable of measuring and logging DC voltage, current and resistance sources in addition to digital signals
3. Suitable for small to large scale applications
4. Rugged design and construction provides reliable operation under extreme conditions
5. Designed and manufactured in Australia to the highest quality standards

Construction Progress: By reproducing real-life curing conditions in a lab, the concrete strength could be accurately estimated faster than conventional methods.

dataTaker Solution

Equipment

dataTaker DT800 data logger
dataTaker DT50 data logger
PSTN Modem
GSM Modem
Water Bath
Heating and Cooling System

Sensors

Thermocouples

Implementation Notes

The poured concrete structure uses thermocouples and a *dataTaker* DT50 to record actual field temperatures, the DT50 is connected to a GSM modem. After each concrete pour, a number of test samples are transported to the CMIT laboratory for immersion in a water bath. The temperature of this bath is monitored and controlled by the DT800. Reference temperature set points are obtained from the remote DT50 via a PSTN modem connected to the DT800's Serial Sensor Channel and the GSM modem connected to the DT50.

At regular intervals the DT800 contacts the DT50 and unloads measured data from the last period. This data is checked for errors by the dataTaker data logger program and then used to set the temperature of the water bath holding the test samples.

Software provided with the loggers is used to chart the field and test sample temperatures for reference in the laboratory.

The process adopted gives accurate replication of site conditions and provides data suitable for improving management of the curing process.