

Advancements In Concrete

Utilizing IoT to Monitor
Concrete Quality in Large-
Scale Construction Projects

Powered by MultiTech

To capture data, AOMS Technologies, Toronto, Canada, developed sensors that can transmit wirelessly, in realtime, even while buried in the concrete with the help of MultiTech Conduit®. In today's ever-changing environment, building a strong concrete foundation requires monitoring everything about the material. Elements such as the concrete's temperature, strength, relative humidity and evaporation rate all require consistent tracking and monitoring to make it right.

The latest approach is to use embedded sensors, constantly monitoring the necessary parameters and sending the data via wireless technology to cellphones and tablets used by the construction crew. The availability of these in-situ monitors has been possible due to recent advances in IoT (Internet of Things); new remote sensors that work in wireless environments can capture all concrete curing data remotely, even off-site.



Problem

Creating strong concrete requires monitoring a variety of factors including temperature, humidity, evaporation rate.



Solution MultiTech Conduit®

Benefits

Using embedded sensors to constantly monitor the necessary parameters and send the data via wireless technology. The sensor hardware, cloud connectivity, and analytical software work to convert temperature and relative humidity data into information such as maturity and strength of the concrete.

To capture the data, companies such as AOMS Technologies, Toronto, Canada, have developed sensors that can transmit wirelessly, in realtime, even while buried in the concrete.

For example, AOMS LumiCon is comprised of sensor hardware, cloud connectivity, and analytical software working to convert temperature and relative humidity data into information such as maturity and strength of the concrete. Data is synchronized in real-time to the cloud and can be accessed through a secured connection on any device with internet access.

A key feature is monitoring of temperature differential in large concrete slabs using distributed and multi-point sensors. AOMS's hardware is recoverable and can be used for multiple jobs.

The embedded sensor requires a low-power wireless gateway, quick to deploy and easy to manage. In the case of AOMS, they selected the **MultiTech Conduit**, a configurable and scalable gateway for industrial IoT applications, to help get the job done. What's more, each Conduit gateway has the ability to manage thousands of LoRaWAN® (low-power, wide-area network)-compliant devices, including MultiTech xDot®/mDot™ Modules and other smart sensors and transmit their data over any cellular network.

With that being said, key considerations were ease of use, ability to collect data without being on the jobsite, recoverability and reusability of the hardware, and operation where large temperature swing and rain are factors. In addition, uninterrupted data flow, especially when large number of sensors are transmitting to a single gateway, was important.

Ready to learn more about how MultiTech products can take your business to the next level? Contact our team of experts online at MultiTech.com today!

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