

KEEPING CONCRETE QUALITY CONSISTENT

CiDRA's SMARThatch system leverages HED telematics to help monitor condition of concrete mix in real time. By **Mike Brezonick**

The quality of concrete is a paramount concern for concrete contractors. Only a precise mix of aggregate, cement, water and air can ensure that the concrete will withstand the daily use in buildings, roads, bridges and other key infrastructure segments. The proper amount of air is especially important, as the addition of microscopic air bubbles in fresh concrete provides enhanced freeze-thaw durability after the concrete hardens.

Maintaining that optimum balance of air and solids can be especially challenging during transport from the batch site to the jobsite. In an effort to maintain uniform material characteristics, CiDRA Concrete Systems, a Wallingford, Conn., supplier of technology solutions for the concrete industry, teamed with controls and telematics specialist HED Inc. and independent software provider Exosite to develop a technology designed to monitor the concrete mix during transit and make that information remotely.

CiDRA's SMARThatch system, designed to be installed on the mixing drum of a concrete truck, gives contractors the ability to monitor the entrained air content and temperature in real-time while concrete is being

transported from batch plant to job site. Traditionally, measuring air content has been a manual process undertaken when a truck arrives at a jobsite. Any air content adjustments that might need to be made could result in downtime at the jobsite, something devoutly to be avoided when concrete needs to be poured. In addition, as manual testing only yields information on the sample rather than the entire load and gives no indication about when or how changes in quality may have occurred.

Using the SMARThatch monitoring system, as the drum on the mixer truck rotates to agitate the concrete, CiDRA's AIRtrac sensor unit collects data on air content, temperature, drum rotation speed and volume of material. The AIRtrac sensor module is designed for mounting on the truck's mixer drum using the existing access hatch mounting frame and hatch adapter plates are available for all major drum styles, including Oshkosh, McNeilus, Beck, Con-Tech, London and Terex, CiDRA said.

REAL TIME INFO

Data from the sensor module is delivered wirelessly to a HED CANect Telematics unit, which transmits the information,



along with GPS data and other metrics, over a 4G LTE cellular interface, to a back office platform, where it can be accessed by remote users. Real time information, including concrete air content percentage, drum speed, concrete temperature and sensor battery level is also sent to a display mounted in the vehicle cab.

The CANect Telematics system incorporates a comprehensive set of tools that enabled CiDRA to configure and deploy its Airtrac monitoring solution in a way that met its customer's needs. With all of the core monitoring aspects – hardware, transmission and back office – being prebuilt or off-the-shelf, CiDRA and HED were able to



The core of the CiDRA Smarthatch system is the AirTrac system that provides non-contact measurement of entrained air and temperature of the concrete in the mixer truck drum. That information is displayed in the vehicle cab and transmitted to the cloud via HED's CANect Telematics system.

work closely to define the appropriate data collection and visualization strategies, reducing development costs and shortening time to market.

In addition to the data collection and transmission functionality, the HED Telematics unit allows for over-the-air reprogramming, enabling field-based software updates in the future.

The HED Telematics back office utilizes Exosite's platform, where data is aggregated and visualized using the Exosite's ExoSense condition monitoring application. With that tool, business owners, quality control

personnel and truck operators can view vehicle-specific dashboards with real-time and historical information that can be used to identify batch issues, enhance quality control coverage and test new concrete mixes. Users can also export historical data, receive notifications, see fleet-wide data views and more efficiently manage and prioritize activities and customers.

The SMARThatch system hardware can typically be installed on a vehicle in approximately two hours and the operating software is provided on a subscription fee basis.

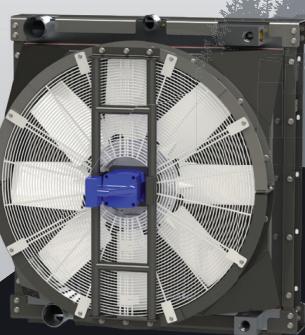
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