

Going the Last Mile

A sensor turns the truck drum into a versatile measurement device.

By Rick Yelton

IF BERTHOLD BERMAN has his way, slump racks would be a thing of the past. That's because this Canadian engineer wants to convince ready-mix concrete producers to transform the last mile of delivery into a final mix check.

Efforts to monitor in-transit fresh concrete are not new. Several major producers have already demonstrated the success of systems that provide in-transit slump control.



The SensoCrete sensor is attached to the drum hatch. A proprietary sensor extends through the hatch so it contacts with the concrete during the drum's rotation. The system includes a truck-mounted LCD board that alerts the driver of the mix's status. The system also includes a GPS device.

But what is different in Berman's vision is the expansiveness of truck-mounted fresh concrete measurements. Berman's company has recently introduced SensoCrete, a new mobile measurement system that does more than monitor and control fresh concrete's slump. The Concrete Optimizer accurately senses the material's temperature. The system accurately calculates in-drum material volume. It also signals real-time status of the mixer's activity, revolution counts, direction, and vehicle location.

Concrete Optimizer uses a proprietary drum-mounted sensing device that, with the aid of an onboard computer, provides this information. According to the Canadian inventor, the system extends producers' control of mix quality from the plant to the truck's last delivery mile. "With a fresh material, it's important to make every delivery minute count," says Berman, who has been involved in concrete plant control technology for many years.

His effort to apply plant control technology to the truck-mounted mixer drum started about three years ago. Several of his producer-customers approached him, seeking ways to tighten process controls in their deliveries.

But their question extended beyond slump control. They sought help in trying to solve critical production questions such as, should we have returned concrete onboard before the discharge, and if so, how much? Or they would ask, how is our volume yield, and is there material buildup in the drum?"

Using a proprietary software, the system provides slump control and added water registration. All captured data is available online with seamless interface to the producer's dispatch and quality control office. The easy installation does not interfere with the truck's mechanical system.

Controlling mixing

The key component is the SensoCrete mobile unit. The onboard computer, monitored by the driver, controls the drum mixing operation. The sensor

unit, mounted on a retrofitted drum hatch, transfers data about the fresh concrete. The computer doesn't actually calculate slump directly, but nor does it rely on measurement of the truck's hydraulic system. It provides an integrated, real-time conversion that is based on the producer's ingredients.

The system provides a true payback on investment. The Concrete Optimizer can identify over and under yielding. With ongoing slump control, water adjustments are minimal, allowing tighter process controls regarding ultimate strength. The temperature sensors can eliminate overheating in winter and warn of hot loads in the summer. Producers can often salvage returned concrete while on the way back to the plant. And the computer has a keyboard and an RFID reader for electronic signature of deliveries to streamline billing.

In addition to tightening quality control standards, SensoCrete provides a new level of customer service. The driver and contractor can monitor the fresh concrete properties displayed on the truck-mounted display board that provides visual confirmation of the fresh concrete's status.

Producers say that contractors appreciate seeing with their own eyes what volume is on the truck, the temperature of the mix, and reported slump. "The system eliminates many onsite disputes over mix quality," says Berman.

To learn more about the manufacturer, visit www.sensocrete.com. Visit World of Concrete booth #N371.