Outstanding Products Featured at LIVE! 2015

The exhibit hall was filled with some amazing new products, but Zebra's MotionWorks, Phase IV Engineering's strain sensor and Smartrac's moisture sensor were standouts.

By Mark Roberti

Tags: Innovation, Construction, Sensors, RFID Journal Events

Apr 27, 2015—As I walked around the exhibit hall at RFID Journal LIVE! in San Diego, I saw a lot of interesting new products—from very tiny on-metal passive ultrahigh-frequency RFID tags to complete real-time location systems (RTLS). Three products, in particular, stood out: Zebra Technologies' MotionWorks sports solution, Phase IV Engineering's passive strain sensor and Smartrac's Sensor DogBone tag.

The fact that I am writing about these three products should not dismiss the importance and impressiveness of other products released at the event. But here's why these three caught my eye and imagination.

Zebra's MotionWorks is an active, ultra-wideband (UWB) RTLS that the National Football League (NFL) is using to track the location and movement of every player on the field at every NFL stadium. The system can calculate how far a running back carried the ball, the speed of a wide receiver, the distance between the receiver and cornerbacks in pursuit and much more (see RFID Drafted to Track NFL Players' Every Move During Games).

Ultra-wideband is different from other types of active RFID RTLS technology because it can identify a tagged object to within inches. Most other systems can locate an item to within 10 feet, which is fine for many applications. If, for example, you are looking for a specific parts bin in a large factory or an oxygen pump in a hospital, providing location data that gets a worker to within 10 feet enables that individual to easily find the item in the area.

But for some business applications, locating an object to within 10 feet just isn't good enough. Airbus chose an UWB RTLS because it needed to know precisely where parts bins, tool chests and other assets are in very large factories. During his keynote address, Carlo Nizam, head of value chain visibility and RFID at Airbus, showed a PowerPoint slide that had lines depicting the routes workers walked during a shift. Based on this information, Airbus plans to move a tool crib to a location that will cut the distance workers have to walk.

UWB has been around for a while, but it has been largely looking for applications for which precise location data is critical. The MotionWorks platform is one example, and I have no doubt soccer, hockey and other teams will soon adopt it.

PhaseIV Engineering's strain sensor is exciting because it will allow companies to get real-time information on the health of buildings, tunnels and other structures. The device, which has a battery, can take periodic readings and record the strain on rebar in a building, bridge or other structure. The data can be retrieved through the concrete. The battery lasts roughly 10 years, but the sensor can be accessed long after that, simply by taking a reading with a passive UHF reader.

The strain sensors are being embedded into some concrete liners for the Northgate Link Extension light-rail tunnel, under construction in Seattle. The sensors will detect strain and help monitor each liner's integrity during construction, and, potentially, in the future when the tunnel is in use (see Contractors Use RFID Sensors to Measure Strain in Seattle Rail Tunnels).

This sensor will greatly improve our ability to monitor the structural condition of buildings. An engineer, for example, could go into a building after an earthquake, take readings and know instantly whether the building was safe. Better yet, engineers could pilot drones with RFID readers through a damaged building, so no individuals have to risk their lives going into a building that might collapse.

Smartrac's Sensor DogBone, a passive tag that can detect moisture levels and transmit that information without a battery, also could greatly improve our ability to monitor the conditions of buildings. The sensor is called the DogBone because its antenna looks like a dog's bone. Instead of an ordinary passive UHF chip, the DogBone features the Magnus S sensor chip, developed by RFMicron (see New Passive Sensor DogBone Transmits Moisture Levels).

Typically, when a passive UHF tag's antenna gets wet, the water changes the impedance (resistance to current) of the antenna. When the impedance of the chip and antenna don't match, the device becomes detuned and can no longer transmit back a signal as effectively. The RFMicron chip senses the change in impedance and self-tunes by matching the impedance of the tag. It can then report the amount of correction it made, when the tag is read. A big adjustment indicates more water is present. A small adjustment means only a little water is present.

The Sensor DogBone can be embedded in construction materials to identify the source of leaks and detect the presence of moisture that could cause mold, which is both a health hazard and damaging to a building. If you've ever had to deal with a leaky roof, you know tracking down the leak can be a problem. Cutting holes in walls and ceilings is costly, so the Smartrac tag is likely to prove popular.

For years, passive RFID sensors promised the ability to not just identify an item, but report on its condition. That promise is now becoming a reality. At our exhibition in San Diego, RFMicron announced some new products (see RFMicron Releases New Passive UHF Chips With Moisture, Temperature, Pressure Sensors) and showed me some innovations that will lead to new sensors at next year's RFID Journal LIVE! Stay tuned.

Mark Roberti is the founder and editor of RFID Journal. If you would like to comment on this article, click on the link below. To read more of Mark's opinions, visit the RFID Journal Blog, the Editor's Note archive or RFID Connect.