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American Eagle Puts RFID on Ground Fleet

Topics/Verticals: Operations, Asset Tracking, Aerospace

The regional carrier is outfitting hundreds of pieces of aircraft ground support equipment with active RFID, sensor and GPS technologies to improve safety, lower costs and optimize operations.

By Beth Bacheldor

Mar. 10, 2009—American Eagle, the sister carrier to American Airlines, is implementing an RFID-, sensor- and GPS-enabled system that the regional airline says will help better manage its fleet of ground support equipment (GSE) at the Dallas/Fort Worth International Airport. The system's provider, I.D. Systems, reports that not only will the solution improve the GSEs' security, it should also help American Eagle reduce operating costs, as well as improve its flight operations by ensuring aircraft are efficiently maintained, loaded and unloaded.

According to Kenneth Ehrman, I.D. Systems' president, COO and director, the airline is outfitting several hundred of its GSEs with I.D. Systems' AvRamp Wireless Vehicle Management System (VMS), which includes active RFID tags known as Vehicle Asset Communicators (VACs). Each VAC has a GPS unit attached to it, in order to track a vehicle's location. That location is then communicated via a 900 MHz signal to I.D. Systems' interrogators and antennas, which can be affixed to buildings (a reader is typically installed indoors, while the 6-inch-wide, external antenna is mounted outside, on the building). The VACs offer a read range of between a half-mile and a mile, the company reports. At the Dallas/Fort Worth airport, which spans approximately 7 or 8 miles, I.D. Systems plans to deploy about 10 to 20 readers on various buildings, Ehrman says. The implementation, which is just getting underway, is expected to be completed by late spring or early summer of this year. American Eagle declined to be interviewed for this story.

In order to use any of the vehicles, American Eagle's employees will need to wave their RFID-enabled 13.56 MHz ID badges close to a reader that is also part of the VAC. Both the badges and interrogators comply with the Near Field Communications (NFC) RFID standards. If the tag recognizes the unique ID number encoded to a worker's badge, that person will be able to start up the ignition.

Sensors affixed to the GSEs will feed data into the VAC, which will then transmit that information to a reader via a proprietary air-interface protocol. A motion sensor, for instance, will tell the VAC whether a GSE is moving; if a GSE idles for too long, the tag will shut off the ignition. "The data we have shows that the amount of idle time, when a vehicle is running but not moving, is occurring about 30 percent to 90 percent of the time," Ehrman says. "If vehicles are left idling for that much time, you are talking hundreds of dollars in fuel costs." In addition, he notes, by reducing idle times, American Eagle will be able to diminish its carbon footprint and, thus, help the environment.

Each GSE will also have a speed sensor that can be utilized to alert both the driver and management. Excessive speeds, which can cause accidents, are a major concern to airline operators, Ehrman explains. According to the International Air Transport Association, 109 aviation accidents occurred in 2008, involving more than 500 fatalities. "Seventeen percent of those accidents were attributed to

ground damage at a cost of $4 billion a year," he says, "and speeding is certainly part of that statistic."

The alerts to the driver are both visual (via an LED screen that's part of the VAC) and audible. Alerts communicated to management will be sent via the RFID network to Web-based software designed by I.D. Systems. American Eagle will be able to log into the software, on a server hosted by I.D. Systems, to access data culled from the AvRamp Wireless VMS.

Additionally, the AvRamp Wireless VMS will enable the airline to track GSEs in order to keep them out of harm's way—alerting drivers, for example, if they take a vehicle into a restricted area, such as an active runway, and in some cases automatically shutting the vehicle down. The system accomplishes this by using what's known as "geo-fencing"—in essence, an electronic map of boundaries that can be stored on the VAC, defining off-limits areas.

Impact sensors installed on the GSEs will report to the VAC whether a vehicle has been involved in a collision. "No one wants to report an accident," Ehrman says, "because they don't want to get into trouble, basically." In fact, in May 2007, ground workers covered up an accident in which a vehicle damaged a McDonnell Douglas DC-9's fuselage, according to media reports (see Report: Fuselage Damage on Northwest Flight Could Have Come From Baggage Handlers and DC-9 Depressurised After Ramp Crew Covered Up Tug Strike).

The Northwest Airlines jet was allowed to depart, and depressurized as it climbed through 20,000 feet. The pilots had to perform an emergency descent to 10,000 feet, then divert from the plane's flight path and land. Fortunately, no one was injured during the incident. "If our system had been installed," Ehrman notes, "it wouldn't have been up to the discretion of the driver and ground crew whether to report it."

American Eagle will also take advantage of the AvRamp Wireless VMS to monitor and track maintenance checks on each of its GSEs. Every time a driver starts up a vehicle, the VAC will walk the driver, via a series of prompts, to check the vehicle's basic mechanics. If there is a problem, the driver can instruct the tag to automatically notify the maintenance crew.

The AvRamp Wireless VMS is the latest evolution of a solution I.D. Systems tested at an RFID trial at Newark Liberty International Airport, intended to track baggage-loaders, fueling trucks and other maintenance vehicles. That trial, as well as one at JAXPORT, the Jacksonville, Fla., seaport, was part of a $4.1 million program funded by the U.S. Transportation Security Administration (TSA) to test RFID technology (see TSA Endorses RFID for Airport Vehicles).