Session No. 769

RFID-Based Safety Management of Powered Industrial Trucks: Safety Technology That Delivers Real ROI

Ken Ehrman
President & Chief Operating Officer
I.D. Systems, Inc.
Hackensack, New Jersey

Introduction

Industrial truck safety is regulated by OSHA because such vehicles injure tens of thousands every year—about 100 fatally. RFID technology for industrial truck management is becoming a best practice at many of the world's largest enterprises. Learn how this technology is improving safety—and simultaneously delivering significant return on investment.

RFID-based wireless technology for managing fleets of powered Industrial trucks (typically forklifts, tow tractors, and other material handling equipment) establishes total visibility of—and accountability for—both the vehicles and the people who operate them. The technology improves workplace safety (and security) and automates compliance with OSHA regulations through vehicle access control, electronic safety inspection checklists, digital impact sensing, and real-time visibility and remote control of vehicles. In addition, the technology can reveal opportunities for capital and operating cost reductions, with automated tools for measuring and boosting productivity, managing assets, and streamlining vehicle maintenance.

RFID-based industrial truck management systems generally consists of intelligent wireless devices installed on the vehicles, wireless communication nodes for connecting the vehicle-mounted devices to the local area network, and software for various levels of management to control and utilize the system from anywhere on the network.

Through Access Control, the most fundamental purpose of industrial truck management systems is to improve workplace safety and security by restricting vehicle access to trained, authorized operators, based on training certification and management discretion.

A system's vehicle-mounted device typically incorporates a link to the vehicle's ignition system. Advanced devices also store a database of unique identification numbers of all trained and authorized operators in their own memory, so they will continue to provide vehicle access control

even if they are out of radio frequency (RF) range, or the local network is down. With this technology in place, only trained/authorized operators can start a vehicle; unauthorized personnel cannot.

To start a vehicle, an employee must enter an electronic identification number on the vehicle-mounted device—typically via proximity card (with biometric identification as a supported option). For additional security, the vehicle-mounted device can require a supplemental 4-digit PIN code, which can prevent lost, stolen, or counterfeit ID cards from compromising the system.

Advanced systems can also automatically disable operator access when his/her license date (or training certification or medical clearance) expires. Such systems can also automatically identify (and disable) any operator who has logged into more than one vehicle at a time (or shared his/her ID with another operator). As a further safety and security measure, access to any vehicle can be denied manually, as from a security command centre, via RF.

Safety Inspection Checklists is another primary purpose of industrial truck management systems to ensure that mandatory vehicle safety checks are performed and documented. These vehicle inspection checklists are required to identify operating conditions that compromise vehicle safety and adherence to OSHA regulations. Paper-based checklists typically used to document inspections are prone to errors and processing delays, as well as being labor-intensive.

RFID-based industrial truck management systems eliminate the need for a paper-based checklist system. When an authorized operator logs onto a vehicle, the vehicle-mounted device automatically prompts the operator complete an electronic checklist. If the operator does not complete the checklist in a timely manner, the system can generate both on-vehicle and system-wide alerts to management, as well as automatically shut down the vehicle.

Management can define different specific checklists for different types of vehicles (e.g. diesel tow tractor, electric forklift, etc.), determine how often the checklists are required, and customize questions, responses and the “severity” of each response. Checklist questions can be updated automatically and wirelessly via software.

The system also uploads all completed checklists automatically and wirelessly in real time, enabling maintenance and safety management to: (1) have an instant, auditable electronic record of all checklists; (2) sort checklist responses by severity to make informed decisions on maintenance scheduling; and (3) view critical problems in real time on a graphical software view of the facility.

Impact and Speed Sensing the vehicle-mounted device in an RFID-based industrial truck management system typically includes a digital impact sensor to record forces exerted on the vehicle. The vehicle-mounted device logs vehicle ID, operator, time, G-force (along X- and Y-axes), direction, and location of impacts. Management can remotely select—via system software and on a vehicle-by-vehicle basis—the threshold above which an “impact event” is registered. This remote, vehicle-by-vehicle setting capability is vital, especially with a large fleet, to fine-tune sensor settings (with minimal labor) and minimize the disruption (and resulting lack of operator acceptance) that can be associated with false impact alarms.

When the impact threshold is breached, the system can immediately generate an automatic e-mail alert or page to a defined management group. The system also records and reports the details of the event. The graphical software view of the facility will also display vehicles with impacts, including the vehicle's location at the time of impact.

Industrial truck management systems can also incorporate vehicle speed sensors that can automatically trigger both on-vehicle and system-wide alerts to curtail unsafe driving. The speed of each vehicle is monitored constantly by the vehicle-mounted device, which generates an alert event if the vehicle's speed exceeds a defined condition (e.g. a peak speed of N MPH, or a sustained speeding period of more than X minutes or Y feet at N MPH).