

# Go Green

An RFID-enabled mobile asset-management system can help increase fuel efficiency and decrease carbon emissions.

Aug. 20, 2007—Given the current state of fuel prices and the corporate drive toward carbon neutrality, organizations are under increased pressure to employ technological solutions to more efficiently manage their mobile assets. Some analysts are predicting fuel prices between \$4 and \$5 per gallon by the end of 2007, which would be a big hit to operating margins for any organization with a significant investment in vehicle-based resources. Add to this the push to reduce the effect of greenhouse gases on atmospheric global climate change, and it's easy to see how tools deployed to increase fuel efficiency and decrease emissions will not only add to an organization's bottom line but also make it more politically and environmentally attractive as well.

One significant area where technology can be employed to aid in the reduction of fuel consumption and carbon emissions is mobile asset management. Such solutions utilize advanced technologies, coupled with comprehensive analysis and management software providing fleet operators with real-time insight and analysis into their fleet's performance. Mobile asset-management solutions enable companies to streamline operations and maximize the performance of their mobile assets, by tracking and monitoring vehicles, machinery, trailers, vessels and cargo, as well as drivers and operators.

The more sophisticated mobile asset-management solutions incorporate aspects of GPS navigation, wireless communications technology and Internet access, in addition to equipping vehicles with telemetry sensors (wireless or wired), RFID interrogators and communication devices. The information gathered by these technologies can then be used to facilitate online interaction with vehicle fleets, work-process automation and in-depth cost analysis for critical business decision-making in real time. This type of comprehensive solution can be employed to implement best practices for advanced fleet management, real-time workforce management, communications and messaging, vehicle maintenance and diagnostics, route and resource efficiency, cost management and advanced analysis and management reporting.

Installing mobile asset-monitoring systems in the vehicle, and enabling real-time alerts through Web portals or mobile devices, keeps fleet managers apprised of exceptional conditions without having to continuously monitor every vehicle in the fleet. These monitoring devices can be connected to any electronic systems that evaluate the various components of the vehicle's operation, including the fuel sensors, odometer, tachometer, engine controller, brakes and emission computer. RFID readers capture location and activity data on the driver, from an RFID-enabled identification card, as well as on the cargo, through RFID tags on pallets or individual products. This information is transmitted to the on-board computer, then sent via cellular communications technology to the monitoring system's data center.

Mobile asset-management systems allow a user or administrator to finely tune the criteria of exactly which measurements of certain components constitute exceptional operating conditions. Information and alerts for those exceptions can then be sent to the user or administrator using the most efficient mechanism (such as e-mail, voice mail, Web site, mobile device or text message). For organizations looking to reduce fuel consumption and carbon emissions, mobile asset-management systems can offer many benefits.

A properly trained driver can be a company's best asset in the fight to increase vehicle fuel efficiency and decrease emissions. Mobile asset-management systems provide drivers and operators with the most up-to-date information and metrics in fuel-saving and emission-reduction techniques (for example, keeping tires inflated, driving the posted speed limit, limiting excess vehicle weight and so forth). Many mobile asset-management systems now have the capability to produce a customized driver score, which takes into account many of the metrics listed above.

Driver scores are associated with specific drivers through the use of the RFID card each driver swipes through a reader mounted in a vehicle's cab. These RFID cards are used to store driver attributes, which are related back to the driver score components to create a complete picture of driver performance. This scoring method allows management to boil down an operator's fuel efficiency or emission-reduction performance into one number, which can be efficiently compared with either that same operator at a different date, or across the board with other operators.

**Decrease idling times.** Drivers often allow their engines to idle, to serve as a power source for heating and air conditioning, ventilation, food preparation and storage, lighting and entertainment. Idling quickly consumes fuel allocated for the driver's delivery route, according to estimated miles traveled. Mobile asset-management systems can provide detailed reports of idling patterns, revealing situations where fuel savings and emissions reductions can be maximized, while minimally affecting operations. Based on these reports, managers could consider the following engine idling alternatives: shore power (truck stops that offer drivers 120-volt AC power stations), generators (external energy sources that provide power to run a driver's amenities) and inverters (converting a truck's 12-volt DC power into 120-volt AC power, allowing the driver to run any AC-based appliance).

**Monitor speed, generating alerts when vehicles aren't operating at peak efficiency.** It's no surprise that taking it slow can help substantially reduce fuel consumption. According to the U.S. Department of Energy's [www.fueleconomy.gov](http://www.fueleconomy.gov) Web site, highway speeds faster than 60 miles per hour greatly decrease a vehicle's fuel efficiency, accounting for a loss in efficiency of up to 23 percent for every 5 miles in excess of 60 miles per hour. Mobile asset-management technology gives fleet managers the ability to monitor the speed of all fleet vehicles at all times, and to generate alerts when vehicles are not operating at peak efficiency for the current conditions. Both real-time and report-based analysis can be used to manage driver habits and optimize fuel consumption and emissions reduction based on vehicle speed.

**Maximize load efficiency.** Carrying excess weight places unnecessary strain on a vehicle's engine and greatly affects its fuel efficiency. With sensors (both wired and wireless) and RFID tags in place, fleet operators know exactly how much cargo a vehicle is carrying at any given time. Removing as little as 100 pounds from fleet vehicles can significantly improve fleet gas mileage. Mobile asset-management systems can assist in maximizing load efficiency and creating situations where less equipment is stored in each vehicle.

**Provide expense-management capabilities via gas-card integration.** Many fuel providers offer savings to frequent users via gas cards or corporate accounts. Repeated monthly savings can become significant, and fuel-card information can be automatically integrated into mobile asset-management systems, providing implicit expense-management capabilities without any user intervention.

**Offer valuable intelligence on when to upgrade to fuel-efficient vehicles.** Data generated from mobile asset-management systems can pinpoint those areas in a fleet that would most benefit from upgrades to such technology as hybrid vehicles. Fleets leveraging hybrid technology have reported saving thousands of dollars per vehicle.

**Maintain up-to-the-minute diagnostic status.** Mobile asset-management systems can be integrated directly with a vehicle's on-board diagnostics (OBD) electronics system to provide real-time alerts and analysis of diagnostic trouble codes (DTCs). These systems help fleet maintenance managers maintain up-to-the-minute diagnostic status on fleet vehicles, while alerting them when exceptional events are triggered anywhere in the fleet. A well-maintained vehicle performs better on the road, decreases maintenance costs, improves fuel efficiency and reduces carbon emissions.

**Provide real-time tire pressure data.** Proper tire inflation not only improves gas mileage (saving as much as two weeks' worth of fuel per year) and reduces emissions but also yields several other benefits, including improved vehicle and braking performance, as well as an increase in tire life. Wireless tire sensor technology can be integrated into today's mobile asset-management systems, providing real-time tire pressure data to fleet managers.

**Optimize routes and scheduling.** Truly integrated mobile asset-management systems can provide GIS and schedule feedback data that can be fed back into routing and scheduling software systems, dramatically improving the performance of these systems. This routing optimization can add significant accuracy to existing map data from the major map data providers. Such intelligence has tremendous benefits for customer service. With a fully integrated operations and mobile asset-management solution, fleet operators can see, in real time, when an RFID-tagged package has left the warehouse and been loaded onto a truck and delivered. They can also be provided with accurate delivery times based on stops, routes and travel speeds.

**RELATED\_ARTICLES** As illustrated by the above list, advanced mobile asset-management technology can help an organization get its arms around its fleet vehicles and extract valuable information regarding vehicle performance, driver performance, expense information and so forth. This advanced technology can improve cost management (via gas-card integration) and enable drivers and operators to optimize routes, helping to eliminate thousands of unnecessary miles per week. Less time on the road ultimately translates into less wear and tear on vehicles, improved fuel consumption, reduced emissions, decreased expenditures and increased productivity.

Careful analysis of performance data also enables customers to make informed decisions regarding vehicle selection for future purchases. An increasing number of organizations are coming to the conclusion that investment in mobile asset-management solutions pays off not just in reduced fuel consumption and costs, but also in moving toward carbon neutrality and other environmental considerations.

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