

Managing Your Mobile Construction Assets

The transportation industry and other organizations routinely use Global Positioning Satellite (GPS) technology to monitor trucks and other vehicles.

With the most sophisticated systems, each vehicle is equipped with a monitoring device which collects and transmits data to low-orbiting satellites which immediately transmit data to a network operations center where it is accessed by client asset managers via the internet.

A vehicle's location, planned travel routes, travel speeds, hours of use, stop reports, idle time, maintenance alerts and other information are available in a variety of report formats 24 hours a day, 365 days a year. Each vehicle can be queried at any time for real-time status and location updates.

Providers of GPS management systems and those who use them to manage mobile assets say benefits include increased operational efficiency, improved productivity and safety, and control of fuel and maintenance costs.

However, today's GPS systems aren't just for trucks, buses and passenger cars – they are highly effective for managing many other types of assets, including the types of construction equipment operated by utility providers and contractors.

"Benefits of GPS systems are not limited to mobile assets," says Cliff Henley, chief executive officer of Fleet Management Solutions, Inc. (FMS). "They also apply to construction equipment such as excavators, loader backhoes, trenchers and horizontal directional drills."

A machine can be equipped with sensors to monitor its primary power source; separate engines and motors; fluid levels; oil and hydraulic fluid pressures, operating temperatures, including high-temperature alerts; and other functions. For equipment that remains on a job site over the course of a project, the system can immediately notify the owner if it leaves prescribed boundaries, a valuable theft-recovery tool.

Technology changes

For those who have not investigated the capabilities and costs of GPS systems recently, there have been significant changes in technology over the past few years. Today, owners of construction equipment have several options to consider.

Daniel Lee, vice president, sales, for FleetBoss Global Positioning Solutions, cites four basic categories of systems:

- Live/active systems that are internet or software based;
- Passive systems without monitoring fees

that can download to a supervisor's laptop;

- Hybrid passive/active systems that combine active and passive data into one database; and

- Self-powered GPS devices with 20- to 30-day battery life that are capable of tracking indoors using both cellular GPRS (General Packet Radio Service) and GPS technology.

Lee says that FleetBoss offers a portfolio of products including each of these GPS fleet management categories.

"Active systems use a cellular component transmitting on a GPRS and GSM (global system for mobile communications) network," says Lee. "The cellular components are self contained in the hardware – there is no cell phone."

A typical FMS satellite-based system includes a GPS receiver, satellite modem, antenna and access to FMS FleetCentral, Henley says, "Our systems offer multiple analog and digital inputs/outputs for added features such as in-cab, two-way text and e-mail messaging, display terminals, or remote vehicle diagnostics. Data is transferred from the vehicle, machine or other asset through Orbcomm or Iridium satellites to a FMS Network Operation Center and from there to FMS FleetCentral where it is immediately available to clients, who log on through a secure internet connection to manage their fleets.

Properly used, Henley says that equipment operation and diagnostic information will make routine maintenance more efficient and breakdown alerts will enable faster repairs – benefits that can boost overall profitability. GPS helps identify under- and over-utilized equipment so it can be redeployed for improved efficiency and productivity. Records of precise hours of operation translate into more accurate billing.

Lee says that construction organizations utilize GPS in a number of ways, including monitoring asset location, security and maintenance.

Although tracking machine locations are not comparable to tracking over-the-road vehicles, Lee points out that an organization



can own hundreds of equipment pieces that may be scattered over numerous job sites.

Often, Lee says, "there is the need to locate a specific piece of equipment – either from an office or in the field – to arrange transfer or status, and that is a standard GPS benefit; satellite mapping can pinpoint an asset's location within 100 meters. New to the industry is GPS hardware capable of tracking an asset inside a building or warehouse.

Invisible fence

Assets can be secured using the standard GPS "geofence" feature.

"An invisible border can be drawn around a job site, known as a geofence," says Lee. "When the asset containing the traffic device leaves the geofence border, the asset can alert organization management via e-mail or cellular text message."

GPS systems can track and report important engine equipment operating functions and report them back to the office to monitor maintenance schedule requirements.

“Select GPS hardware devices are equipped with inputs and outputs capable of measuring ignition on/off, fluid flow rates, doors open/close, etc.,” he continues. “Remote shutdown of any powered equipment can also occur using any computer with internet access.”

So, what does it cost to initiate and operate a GPS system?

Costs, says Lee, vary with the type of system and vehicle hardware, installation and number of inputs/outputs, and whether installation is hired or done with organization personnel; power source used; memory capacity of equipment and monitoring requirements.

“For a professional, internet-based system, costs range from \$400 to over \$1,000 per asset for hardware,” says Lee. “The range in price is attributed to device type (self-contained battery versus power by vehicle) and features (data collection, data transfer, data interpretation). The only other start up cost could include an optional environmental container to host the hardware.”

Lee provides two examples of operational costs.

- Monitoring inputs and alerts that report every two minutes from devices powered by the asset would cost \$1,700 per month; and

- For 50 pieces of equipment with devices also powered from the unit to report location and monitor secured geofences with outdoor-indoor monitoring would cost \$60 per month per asset, or \$3,000 per month.

The bottom line, asks Lee: “Would you pay \$35 to \$60 per month to secure an asset worth \$25,000, \$60,000 or much more?”

Before construction equipment owners can evaluate costs and benefits of any fleet management program, they must consider important factors such as whether to monitor their entire fleet inventory or just a portion of it. In addition, they must decide what categories of equipment will be monitored. Some GPS users restrict monitoring to construction equipment with replacement values higher than a defined dollar amount.

Dropping costs

Henley advises those who previously ruled out fleet management because of startup costs to evaluate today's systems which employ new technology.

“Satellite hardware pricing,” says Henley, “has dropped by as much as 50 percent over the past two years, as have monthly subscription, communication, hosting and satellite air time costs. Those reduced costs have improved what was already a very attractive return on investment for customers.”

Manufacturers and marketers of GPS asset management systems emphasize that their products apply to small- and medium-size companies as well as large corporations and government agencies that own and operate equipment. Henley says FMS has clients ranging in size from a few to thousands of assets.

No matter how big or small a fleet size, before construction equipment owners can evaluate costs and benefits of a fleet management program, they must decide what inventory should be monitored, says Henley. All company operated trucks, or only some? What categories of equipment? Some GPS users monitor construction equipment with replacement value higher than a defined dollar amount.

There are options and many brands of GPS systems to consider and comparing systems is not an easy task. A good approach is to narrow choices down to those which appear to best fit an organization's need and budget, then request a demonstration and proposal from each.

FOR MORE INFORMATION:

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