Telematics for Intelligent Equipment Management

Telematics provides a competitive edge to business.

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1. Synopsis.

Internet-based reporting and documenting systems provide more effective control over construction and rental practices. Telematics is a remote asset management tool that allows construction companies to manage all on-site construction assets from one central location. The benefits of telematics include enhanced real-time communication between equipment and business systems; improved productivity; managing asset use; improved safety; reduced maintenance and fuel costs; and greater theft recovery.

2. Telematics Basics.

In the construction or rental markets, the importance of control can't be overstated. Successful construction firms have solid control over their costs, means of production, deadlines and quality of results.

Increasingly, construction companies are under pressure and are being asked to meet tighter deadlines, while delivering high-quality results within decreased budgets. In elemental terms, the expectation is for good, fast and low cost – all three, no exceptions.

The jobsite has become the arena for evolutionary change fueled by technological advances. These advances include machine control technology, real-time communication, ergonomic machine design, and instantaneous information available to everyone from the machine operator to the CEO. The market is experiencing the convergence of details with the bigger picture. All of this and more affect the construction firm's world.

Clearly, better information and more effective communication are at the heart of what construction companies need to succeed. These companies are seeking a competitive edge that will provide better control over time, improved productivity, and quality that builds loyalty.

Ultimately, the better control a company has, the greater ability it has to reduce costs and make money. With remote asset management technology, construction firms have the control they want. Telematics provides control over their world, regardless of how many machines need to be monitored or where the jobsite and machines are located.

Although the term "telematics" has become a catchall for much of the information-based developments and systems being seen in the marketplace, they are not all the same.

3. A Tested, Proven Technology.

Some advanced systems offer a complete end-to-end solution, including hardware, carrier management, Web and mobile interfaces, pushed data reports, alert callouts, and other features that help simplify the complexity of the telematics program delivery.

Look for a telematics system that can provide the data and remote diagnostics needed to troubleshoot problems, manage repairs, and prevent further down time. These systems help construction companies know what issues affect a machine located on a jobsite, so they can bring the right tools and parts to correct the problem. Because each service dispatch costs money, the goal is to resolve all problems on the first trip.

SAE J1939 data and fault codes, Modbus data and alarms, and other types of data can be communicated to a main office, field office, or an individual's laptop, tablet or smart phone.

Part of an advanced end-to-end solution involves multiple communications protocols (3G, CDMA, satellite) and industrial protocols (J1939, CANOpen, Modbus) available with a standard package. A well-designed telematics system can deliver crucial end-to-end equipment monitoring capabilities that can integrate with the following supporting programs.

Equipment Health
- Visual health status
- Alert management and notification call-outs
- Equipment diagnostics
- Additional analog and discrete I/O monitoring

Integration
- RentalMan, SCADA Operations Centers, JD Edwards, AEMP, SmartEquip, Wynne Systems, SAP, and various maintenance applications
- Web services
- Custom ERP integration
- AEMP standard

Location
- GPS mapping
- GPS land marking
- Geo fencing reporting and alerts
- Location history

Utilization
- Run-hour based maintenance management
- Usage triggered notifications
- Daily usage summary
- Site comparisons
- More utilization reports available

Security
- Unauthorized use notification
- Geo zone violation triggers

Reporting
- Custom reporting
- Contract management
- Data exporting
- Smartphone apps
- Online browser gadgets
- Ad-hoc or scheduled report delivery
- Alert notifications via e-mail and text messaging
- Fuel consumption
- EPA emissions
- Tier 4, NESHAP

Advanced telematics systems provide critical information needed to make better, more informed business decisions about logistics, location, utilization and more – in a single operational view. These systems can integrate with a company's existing third-party monitoring hardware.

The richness and depth of the online applications are designed to enable smart decisions based on real-time equipment information. These applications provide users with a regional or fleet view of alerts, as well as the ability to drill down to view details on one machine.

4. Using Telematics in Your Business

For many construction firms or rental houses, gaining a better handle on equipment maintenance can be a compelling reason alone for adopting telematics. A major benefit of a well-designed telematics system is replacing labor-intensive and mistake-prone manual data collection.

Look for an advanced system that is designed to automatically monitor engine hours, and software that can easily be configured to send out alerts when machines are due for maintenance. This feature dramatically reduces the chance of machines failing, and diminishes the likelihood of warranty claim rejections.

Telematics systems are designed to enable users to maintain machines within a much tighter window of specified service intervals. Using the system's location capability, service technicians no longer have to search for the machines they have been sent to service. The system shows them right where the machines are located.

All completed maintenance tasks are recorded. When a construction company wants to sell a piece of equipment, they can produce a report showing that all OEM-recommended maintenance was done on time throughout the life of the asset. This can help the company obtain maximum sale price and provide the buyer with confidence about the equipment they are purchasing. Having access to complete maintenance data can also be helpful in warranty claim disputes, to determine whether maintenance was completed.

For many construction companies, it is common practice to gather machine run time data to calculate current job costs. This same information, as well as other historical job cost information can be invaluable for reference in creating and costing out bids for future jobs. The data-gathering process can be expensive, labor intensive and subject to clerical errors. In some cases, companies make best estimates of machine use even though they might be wild guesses.

A telematics system can provide daily usage information and the reports are available with a few simple keystrokes, or the system can be configured to automatically send an email on a defined schedule. In addition, with integration into the company's software, the cost of human data entry can be eliminated.

5. Benefits/Return on Investment.

Look for telematics solutions that are carefully engineered and designed to provide the right information to the right person at the right time. These systems can increase uptime and equipment efficiency while reducing operating costs. Specifically, telematics solutions help construction firms with:

- Logistics – Improve equipment uptime by providing run hours, location, and increased operational awareness to understand when and how equipment is actually being used.
- Location – Advanced systems automatically notify you when equipment enters or leaves a site. Additional security features might include a motion sensor and internal backup battery, allowing detection and reporting of unauthorized machine movement – even when the machine is turned off and/or moved while on a trailer.
- Equipment Availability – Knowing when assets are idle or underutilized can help managers locate machines that are needed elsewhere. Also, keeping up with preventative maintenance service intervals will reduce risk of equipment downtime.
- Lost Machines – When equipment fleets grow or construction firms become busy with several jobsites, machines can become "misplaced." When a backhoe or other piece of equipment goes missing, employees must be sent on a search-and-rescue mission, eating up payroll and gas. With an advanced telematics system, users can locate their machines at the touch of a button.
- Curfew – Used to alert managers of unauthorized machine use. A good telematics system can be configured to provide a text message and/or email alert when a machine is running outside of normal hours of operation.
- Off-Site Control – Includes remote start/stop and throttle control.
- Remote Anti-Start – Prevents thieves from driving unattended machines onto a transport or off a jobsite at anytime, day or night.
- Proactive Maintenance Schedule – Scheduling maintenance based on run hours can save time, parts, and expense by avoiding unnecessary maintenance.
- Utilization Tracking – Making decisions based on documented, actual equipment use.
- Remote Inspection – Reducing service trips by remotely and accurately capturing run hours and equipment data.
- Remote Diagnostics – Knowing what the issues are, and bringing the right tools and parts on the first trip.
- Misuse Protection – Receive alerts when abuse creates faults and alarms.

6. Telematics Features.

A typical remote monitoring system includes a TCU (telematics control unit) – the base hardware, as well as the wiring harness and an antenna. This kit includes all the requirements for basic equipment integration and data communications. In addition, there may be requirements to customize the package to include analog and/or discrete sensors, environmental packaging, and other features the user may require.

Look for a manufacturer that can provide installation support in various ways. Well-designed systems feature ease of installation that results in little need for on-site training.

Every remote monitoring system kit should include a detailed and customized installation manual, as well as 24/7 toll-free support for all customers. High quality manufacturers also provide training on both the Web and mobile user interfaces.

7. Conclusion.

Remote asset management technology helps management obtain the critical data needed to maximize productivity and make better decisions. Site supervisors and construction firm's top management have struggled with effectively allocating resources. Telematic systems provide the ability to verify when a machine is in use and document it for billing purposes. This usage tracking ability can also help companies reduce the need for equipment rentals.

Telematics can provide timely and accurate information with automated reports of engine hours. This information can help construction companies better utilize service technicians to schedule maintenance at the right time. When service is required, technicians can identify the exact location of machines. In addition, knowing where assets are at all times can help reduce theft.

Remote asset management technology is the latest tool for maximizing time, increasing productivity, and ensuring greater profitability for construction and rental companies.

To learn more about telematics, visit www.ztr.com.

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