

Telematics - what's all the fuss about?



We have all heard anecdotal stories about the benefits of telematics. One I heard last week was about a farmer who received a text message one Friday lunchtime saying his brand new telehandler was outside the pre-set 'geofenced' area. Far from being stolen, it turns out that the operator had used his machine to get the Friday lunchtime fish and chips in the local village. However being spotted outside of the area posed a few questions. It turns out the driver didn't like the local 'chippy' and for years had been driving seven miles to the next town without telling anyone - always blaming queues at the chip shop or traffic jams when questioned about how long it had taken.

Stories like this show us how clever telematics technology is, however many users still do not see the relevance, the expense or like the idea that 'Big Brother' is watching your every move. In spite of all the sales patter many fleet owners still ask 'what tangible benefits do I get?'

The technology for tracking and geofencing vehicles has been around commercially for more than 20 years but in recent years the technology and information provided has increased exponentially - much like the development of the smart phone

and tablet. However, such is the rate of development many users, owners and rental companies are unaware of what is possible and the level of detail and sophistication that an increasing number of manufacturers are capable of providing. Within our sector many manufacturers and rental companies have already invested heavily in this technology including companies such as Hiab, Manitou, Genie, Skyjack, Haulotte, Manitowoc, Tadano, Link-Belt, Bronto and JCB along with rental companies including Boels, which was the first European company



to adopt JLG's Clear Sky system on 740 JLG platforms it purchased in January 2018, and also uses Trackunit and Skyjack Elevate, while the world's largest rental company United Rentals is going all out to have the latest telematics systems on its more than 150,000 strong telehandler and platform fleet and last year signed a 'partnership' deal with Trackunit, to include its 'Manager' system along with Trackunit Go and Trackunit On.

While the costs of developing the systems or adding them to an existing fleet retrospectively involves a massive investment, the benefits for manufacturers, their distributors, rental companies and end users can be huge. For example a simple "the machine won't start" call from a customer may now be diagnosed remotely, and typically it might be that the emergency stop button has been left engaged or the battery has not been charged, all of which can save several wasted hours of downtime for the customer and a steep call-out cost to send a service engineer just to identify simple problem. Real issues can also be diagnosed before the engineer leaves the depot, allowing them to load up the necessary parts or tools.

JCB updates LiveLink

JCB has added new features to its LiveLink telematics system which it launched 12 years ago and now has more than 250,000 machines across 195 countries actively using the system, with all of them being monitored in real time, giving operators and fleet managers instant access to data through an online portal and mobile app.

New JCB Uptime Centres use LiveLink to monitor machines globally and inform fleet managers of impending problems, including breakdowns. The company began managing customers' machines through LiveLink in 2010, and in 2016 began rolling out its Uptime centres starting with the one at headquarters in Rochester, UK. Since then further centres have been opened in Pune to cover India, California and Georgia for the USA, Singapore for South East Asia with plans for a sixth centre in Sao Paulo, Brazil to cover South America. More recently dealers have been able to set up their own centres to manage customer machines via a new 'Dealer dashboard. It is currently in use with 10 dealers worldwide, with a further 15 dealer centres due to be added by year end.

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JCB's Machine Health Monitoring System uses predictive algorithms to forecast the likelihood of a machine failure

It also continues to develop its telematics software and analytics, launching three new products this month - 'LiveLink Tag' which allows customers to track fixed items such as telehandler attachments, a brand new Operator app that makes daily checks easier and the 'LiveLink Fleet' management tool allowing customers to access the live machine information directly.

So how does it work?

The Uptime Centres bring together JCB parts and technical staff, to diagnose issues when they are flagged by the system, so that they can be dealt with through the dealer network. Among the new features on the interactive Uptime Dashboards is the 'Machine Health Monitoring System', which uses predictive algorithms to forecast the severity of the error codes transmitted by the machines and the resulting likelihood of a failure. These are then converted into a health percentage for each machine enabling the staff to identify machines most at risk and then recommend preventative action to prevent unplanned downtime.

The central Uptime map allows users to zoom into any machine all of which are colour coded to indicate its status. By clicking on the unit icon it brings up information on the machine, the customer and dealer. Different colours indicate various alert stages - purple means it has a minor alert which may include some diagnostic codes from the machine. Opening this alert window

may show faults such as water contaminated fuel, which might not yet have caused an issue, while machine performance data can also be viewed. Other issues include safety related items, such as seat belt use on telehandlers, travelling at excessive speed with boom telescoped or excessive overriding of the longitudinal load moment control.

The LiveLink Fleet portal also provides a raft of data that allows rental companies to add value for its customers, for example by providing information on efficiency and sustainability by monitoring and storing fuel consumption and carbon emissions data. The system can also be used to order replacement parts, view manuals and technical information and request servicing or urgent assistance. JCB says that the management system can also be used with machines from other manufacturers, to avoid the need for more than one system.

Skyjack and Genie have also launched major developments in their telematics system this year.

Skyjack Elevate

Skyjack's Elevate system has been developed with Trackunit, following an agreement signed in 2017, with the fruits of their collaboration coming on stream last year. The company predicts that this year more than half of all machines its ships will be equipped with active Elevate systems on board.

Ownership of the data collected is increasingly becoming an issue, given the commercial sensitivity of some of the information collected. Skyjack president Brad Boehler clearly states his company's view on the subject: "Technology has moved to a point where our customers are storing their entire businesses in the cloud. Telematics isn't a throw in, it's becoming a core piece of our customers' business systems. They are paying for this product and get to have it



Skyjack's Elevate system has been developed with Trackunit



Skyjack's solenoid self check on a smart phone

on their terms - that means their data."

Skyjack says that so far the feedback from the system indicated that the biggest issues include battery management, both onsite and at the rental depot and operator unfamiliarity - such as trying to use machines with the emergency stop pushed in, the battery disconnect on while it was plugged into the



JLG's smart phone remote control uses a QR reader

socket or without resetting the breaker. All of these are simple enough to fix, to the point that they do not require a call out and can be sorted in a phone call if the advisor has access to the information. Skyjack service technicians now have a single, live updated input called 'ready to operate' which allows them to see the status of the machine while still on the phone with the operator and whether or not these items were in the right position to operate the lift, or if the batteries have been recharged.



LiveLink fleet is available to use on a smart phone.



This year Skyjack will move towards an analytical dashboard and with Elevate will have an advanced battery management tool to eliminate more service and operational problems with analysis of battery charge history, battery life percentage and problematic charging behaviours across a fleet, in order to help prevent such problems arising in the first place. Customers will be able to receive a report on their smart phone on battery life with an analysis of battery pack health and remaining life. Launched along with its new ANSI electric scissor line it will also remotely flag when a machine is being overloaded and provide a true utilisation figure of how long it is actually working, allowing rental companies to work with their customers to use the machines they have on rent more efficiently.

Skyjack is also trialling a number of innovative autonomous solutions to perform a series of tasks carried out by aerial work platform and telehandler operators.

"At the ARA we demonstrated a remote systems check of an SJ3215 scissor carried out from Australia. While it was pretty cool, it was only an illustration of the sort of work we have been doing that will lead to more advanced autonomy, which could provide major benefits to our customers," says Boehler

Genie Lift Connect

Genie has also invested heavily in telematics developing its Lift Connect telematics system since the initial launch in 2015. The latest version - available next year - features a new Access Control keypad allowing users to programme codes and operator ID cards preventing unauthorised

machine use. It focuses on providing information that allows rental fleet and service managers to use access dashboards to quickly prioritise what should be worked on first, by viewing the entire fleet, creating and setting filters to view important information, see what is due for maintenance, set geo-zones and related alerts to better track usage and near real-time reporting on machine status, faults and utilisation.

Fleet managers can benefit by viewing all machines on the map - all of them colour coded to highlight which machines have alerts - while providing the ability to drill into clusters to view individual machines, obtain fleet reporting and analytics, search directly for individual asset numbers or models and reports to understand equipment utilisation and provide that information to rental customers, giving them a greater insight on their usage. Equipment can also be remotely diagnosed of course, saving time and money, as well forming maintenance plans and identify parts required to complete a service or maintenance call with a single site visit.

Senior product manager Christine Zeznick says: "Lift Connect is designed to provide our customers with the ability to share more information than other offerings available in the industry, no matter what the size their aerial lift fleet. And with the Access Control Keypad feature, customers also have the option of accessing all this data, with personal data protection, at any time from any place. As time goes on, the data from Lift Connect will become more and more powerful. Initially, this information will be descriptive, focusing on



Genie launched its Lift Connect Telematics system in 2015



what's currently happening with a machine including its hours, where the machine physically is and if it has any fault codes. Over time, data can be leveraged on a larger scale and used for predictive and prescriptive activities, such as predicting service calls in the field and proactively prescribing maintenance and service based on how the equipment is actually being used."

Genie understandably claims that the latest version of its Lift Connect system - launched earlier this year - provides more data than any other player in the industry, accessing data from any Genie CAN bus-enabled machine including fault codes, sensor data, fuel level, battery life and charger information.

Although manufacturers telematics systems are evolving and changing so rapidly at the moment, as soon as one gets a lead, others catch up or overtake. The key challenge is how well all the data is pulled together, how accessible and easy it is to use and the company's policy on data usage and ownership.

Data ownership and usage

Much of the information that the latest systems gather is potentially commercially sensitive, for example providing the exact location of every machine in a rental company's fleet - highly valuable to its competitors, fleet and individual machine utilisation levels and safety abuses. A classic example of the latter is where a contractor continues to work with a tower crane when wind levels have exceeded its safe working limits. This information is increasingly communicated to the owner - and in some cases the manufacturer - both of whom then need to decide how to deal with that information.

Systems that monitor machine usage have been in use by some

companies for more than 25 years, particularly in Germany, initially downloaded via a wired connection to a laptop. Using this information to generate extra charges has been tested in court and is now accepted as a perfectly legal commercial practice. The fear of some rental companies has been that end users will avoid those companies that monitor usage and charge for extra hours used - such as weekends or night shifts - and service calls caused by misuse or neglect. Others might avoid rental providers that can see and record unsafe use of their equipment such as overloading or continuing to work in high winds.

The world is changing and telematics appear to have finally come of age, with good companies - both large and small - beginning to seize on the huge range of actual and potential opportunities that this technology offers. It is truly transformational.

There is so much going on in this area that we will provide additional coverage later in the year.



Manitowoc released a free diagnostic mobile app to its customers to increase uptime.