SIT.
GOODBOY.

While everyone was teaching old dogs new tricks,
we decided to teach an industry.

Set max boom height.
Set sensor limit threshold.
Enable. Disable.
Set engine speed.
Creep mode.
And more.

TAKE CONTROL. WHEREVER YOUR EQUIPMENT IS.

one i3 | ZTR™

+1-519-452-1233 | telematicsinfo@ztr.com | ztr.com/solution/telematics

Remote control technology revolution

It is now possible to operate cranes or other machines at a distance - such as in this port application.

Until recently, if you raised the subject of remote control in relation to lifting equipment, almost everyone would be quite clear about what you meant, namely a cable tethered or wireless control console that provides the operator with the ability to operate a crane or work platform from a distance - a short distance. However, that is beginning to change as we enter the brave new world of the 'Internet of Things' (IoT), a technological change that is quietly slipping into the control systems of many cranes, aerial work platforms and telehandlers.

The range of functions this new technology allows can smack of 'Big Brother' at times, especially when negatively applied or utilised. However the benefits can be significant and even 'game-changing' as it shifts the balance between the rental company and end user, or even manufacturer and rental company/end customer.

Remote controls as we know them

Before we go any further into the meaning of 'remote control' it is worth spending a little time updating the latest trends with the more traditional form of remote controls/ remote controllers. Remote controls are increasingly being specified on aerial work platforms, cranes and telehandlers. On certain types of equipment - such as loader cranes, spider lifts, spider cranes and self-erecting mobile tower cranes - they have almost become a standard feature. The new eight tonne Jekko SPX1280 telescopic spider crane launched earlier this month and featured in our news section doesn't even have a set of regular controls, everything is operated by the unit's radio remote controller, rather like some televisions, for which the loss of the remote renders them almost useless.

HBC Radiomatics Technos.

Bespoke solutions

The Jekko controller is one of a new breed of remote controls that manufacturers are installing which are fully integrated into the crane's control and electrical system. It's a trend that differs radically from the more traditional radio remote control solution, where a manufacturer purchases an 'off the shelf' remote controller/transmitter and receiver from one of the major producers, such as Hetronic, HBC-Radiomatic, Autec, Ikusi and Scanreco, etc… and adds it to the machine as a mere afterthought or an accessory. Many manufacturers are now working very closely with electronics and control system suppliers which are able to provide a wide range of modular components along with the expertise that enables manufacturers to design and build their own bespoke remote control systems, which fully integrate with the host machine's systems.

This approach also enables a display screen on the remote controller to show exactly the same information as an operator would see in the cab, while the machine's information and data can be accessed from almost any location - such as the rental company or contractor's office - from a mobile phone.

The new in-house designed radio remote controller for the new Jekko SPX1280

Hetronic's 'off the shelf' Nova remote controller.

Moba allows manufacturers to pick and mix modular components to create a bespoke controller

Moba triple housing

Moba operand

This increasingly includes the ability to input information into the machine or even operate it from another country. The custom design and build approach has been available for many years, but the costs of designing and building a bespoke system, not to mention the production volumes required has been way too expensive for small or even medium-sized manufacturers in the past.

More recently, companies have begun offering a modular custom-build approach using standard components for lower, or even one-off volumes, at a much more affordable cost. Moba Automation is a good example of such a supplier, having entered the well-established market for mobile equipment controls late in the day. The company realised that it had to offer something different if it was to make any impression on the market, designing a fully modular product line from the ground up, with the strategy to offer a custom-built product at a price closer to an off the shelf controller. Moba's control systems and sensors have been adopted by several truck mounted lift manufacturers, but mostly for fixed console applications, rather than wireless remote controllers.

Sensing the reality

Most new cranes and aerial lifts also include an increasingly large number of function sensors and controls, some driven by regulation, some by customer demand. These include outrigger position sensing enabling the machine to sense the exact position of the outriggers and confirm that they are properly loaded - carrying weight. The sensors feed that information into the central processor which quickly calculates a unique load chart or working envelope for that specific set up/configuration. On a tracked machine, the same thing happens, but with the system sensing the position of each track - in terms of width and extension - along with the angle of the slope the machine is sitting on before carrying out its calculations.

Other factors being measured and sent to the processor include the superstructure slew position, amount of counterweight installed and the weight on the hook or in the platform. The data is all displayed on the remote controller as well as on the in-cab display.

The remote controllers display screen contains all the information, needed including actual outrigger set-up and slew position.

The benefits of remote controls

Remote controls have always offered substantial benefits for the operator in terms of both productivity and safety. We have covered this in some depth in previous issues of Cranes & Access, but it is probably worth providing a brief review. With some types of equipment, such as loader or spider cranes, a remote controller enables the operator to act as rigger/slinger and banksman as well as the operator. This can eliminate the risks of miscommunication or slinging of the load that the operator would deem to be substandard, while being able to more easily place a load precisely as he keeps a close eye on it. This is particularly beneficial when placing a load into what would otherwise be a blind spot forcing the operator to rely purely on spoken commands from a banksman. Remote controls are also helpful on large equipment such as when setting outrigger mats and cribbing, or when installing counterweights, enabling the operator to confirm first hand that all is well.

There can be a downside to this especially on mobile cranes. When the operator is out of the cab, they lose the 'feel' of the machine - the 'seat of the pants' effect. In a recent case, an operator was using a remote controller to install the counterweight on a large crane lifting it from the trailer at a greater radius than had been planned due to a last minute change of circumstances on a job with a critical timeframe. What the operator failed to notice was that the crane - set in rigging mode - was losing stability and the front outriggers were already well off the ground. If he had been in the cab he would almost certainly have felt the crane's movement as the front end lightened. Thankfully, in that case, passers-by noticed the issue and alerted the operator. Perhaps the outrigger sensors should detect and warn on this issue, even in rigging mode, or as on many loader cranes a chassis inclination sensor could be included to provide an additional warning?

Liebherr set-up

Remote controls allow the operator to stand where he can best see the lift

Introducing a revolutionary battery for the Cranes & Access market…

Superior Lead Carbon AGM Gel

LEOCH
DEEP CYCLE BATTERY SPECIALISTS

A TRIBRID COMBINATION OF LEAD CARBON, AGM & GEL

Enter the **Superior Lead Carbon AGM Gel** battery boasting the following elements:

Carbon = To overcome Partial State of Charge & Sulphation

AGM Double Separators = To prevent Acid Stratification

Gel Electrolyte = To maintain plate moisture in both hot & cold temperatures

Huge benefits for the Access Market

- Fit & Forget – maintenance-free
- Fast Recharge: to 80% in less than 3.5 hours and ideal for opportunity charging
- 1,000 cycles @60% DOD
- Wide operating temperature range
- Available in a range of group sizes
- Works with AGM chargers
- Non-hazardous: suitable for airside applications

Reduce downtime and increase your productivity!
For a **FREE TRIAL** of the Superior Lead Carbon AGM Gel battery don't hesitate to contact us.

For enquiries please contact:

Chris North on:
M. 07736 167 623

DBS Leoch Ltd
E: chris.north@dbsleoch.co.uk
www.dbsleoch.co.uk

DBS LTD
LEOCH
your battery **power partners.**

LEOCH
Part of the Leoch Group

Use your mobile

At the ARA earlier this year JLG demonstrated a new type of remote controller for its aerial lifts, particularly its slab scissor lifts. The system uses an app installed on a regular smartphone. The operator or driver simply approaches the machine and scans an RFQ code on the machine, which then activates a control on the app on their phone, enabling them to drive and steer the machine, to load it, drive through doorways, or manoeuvre it into a storage or charging bay.

Even more remote

Remote control is a term that also covers the increasing ability to not only monitor a machine from a distance - via GSM, Satellite or even Wi-Fi and Internet - but also to control and operate it from a distant location. So far this has largely involved actions such as shutting down the functions on a machine - once it has been stowed, of course - for reasons such as non payment of invoices, or to restrict a machine's use to the hours contracted such as weekdays only, or even to limit a platform's working envelope or crane's load chart to what has been requested and therefore paid for, ending the days when a crafty customer orders a 40ft boom, knowing full well that the rental company only has 60ft units in stock, or ask for a 50 tonne crane when they know that an 80 tonner is really required.

The JLG app

Other features include remote troubleshooting and, in some cases, remote repairs or updating of a machine's systems or firmware from anywhere with a good internet connection.

Automated deliveries

We are on the cusp of having the ability to move into a whole new era, with new opportunities that could completely change how a fleet is managed and operated.

Earlier this year, Skyjack demonstrated the remote operation of one of the scissor lifts on its stand at the ARA show in California. A Skyjack Australia employee Rory Pullen operated the machine, from his desk in the Melbourne office.

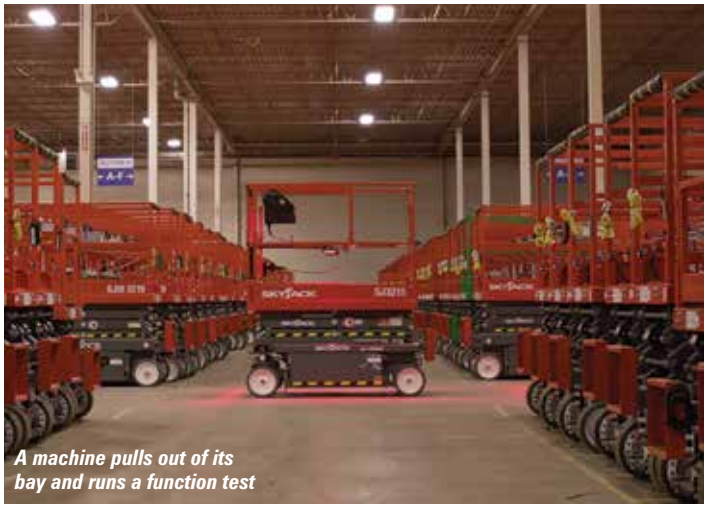
The demonstration also showed how it is also possible to instruct the machine to do a full pre-use check/cycle from such a remote location, and also to load or unload itself from a particular delivery truck at a rental company's yard and drive into its storage and charging bay or the reverse.

There has been much discussion about self-driving cars and trucks in the public domain, which will make it feasible - in principle - for a customer to order a particular machine online, which is then confirmed and booked by the hire desk clerk/dispatcher. The system then instructs a rental ready machine in the warehouse to pull out of its storage bay, run a self-diagnostics test and then load itself onto a designated truck.

It would not be beyond the wit of man to have the truck equipped with some form of mechanised retaining locks or clamps which then secure it to the trailer or truck bed. Once the vehicle is fully loaded, it sets off on a pre-planned delivery route, which the customer can track on their mobile device. Once the truck arrives on site, the machine unloads itself, does another cycle check, before asking the customer to insert a training card to prove they are employed by the customer that has booked the machine and they are trained to operate it. The machine then takes the operator through a tutorial - asking them to confirm that they have understood it all and that the handover is completed. The truck can then head off to its next drop off point.

This may sound a little fanciful and way off in the future, and might never happen as other things change, or perhaps there will be pushback

With the order placed a machine is picked remotely



A machine pulls out of its bay and runs a function test

The self-drive machine then heads for the loading bay...

...and loads itself onto the waiting truck

Rory Pullen operating a scissor lift in California from Melbourne, Australia

A Volvo self-driving truck

against such impersonal service. However, the technology is already available and many aspects of the scenario described can and are being adopted now, helping some early adopters to use them to help provide greater productivity and improving returns on the current poor rental rates.

ZTR ramping up advanced telematics

ZTR Control Systems says that it has noticed a sharp increase in the number of machine manufacturers talking about such advanced control capabilities. As a result, it has been designing telematics solutions that enable customised solutions tailored to specific machines with its new ONEi3 platform. The company says it can respond dynamically, depending on the machine type, to present the right controls and options for the customer in a common interface. ZTR has been working with Genie, among others, to develop its systems to enable a whole range of exciting new developments.

ZTR's Martin Roath said: "In the elevating work platform industry, we are seeing greater adoption and interest in remote IoT-enabled access control and management solutions. This allows specific operators with codes or access cards to enable or disable machines or restrict operations to certain times of the day. While this is valuable and interesting, a somewhat overlooked trend exists where machine manufacturers want to leverage IoT solutions for more complex operations."

"For example, this could be a simple remote command to start or stop a machine, or remotely setting RPM to control the flow rate of the discharge from a pump. The ability to remotely set a machine's personality is an exciting development for aerial lift applications. Imagine the ability to set up a reach limit for a boom to comply with a rental agreement, and remotely supporting a customer by instantly diagnosing and updating key operational parameters on a lift, without having to drive to the site."

Case study

Mobile management software for service engineers

Fireward is an automatic fire suppression specialist that has installed BigChange's App-based mobile workforce management software program JobWatch, to provide real-time visibility and control of the company's field service operations. All field-based service engineers have been equipped with rugged tablets to replace all physical paperwork and deliver what it describes as a 5-in-1 business solution incorporating Customer Relationship Management, job scheduling, tracking, invoicing and management reporting elements.

All service engineers carry rugged tablets with Job Watch app

Chelmsford-based Fireward specialises in the installation, maintenance, and repair of fire-suppression systems for mobile equipment and installs, maintains and services Reacton Fire Suppression and detection systems. The new software has, it claims, enabled it to provide a faster and more responsive service with engineers using their tablets for everything from risk-assessment and post-fire reports to job checklists and vehicle inspections.

The company's service fleet is also fitted with BigChange trackers, providing its office-based customer-service team with full visibility of engineer locations with a record of arrival and departure times from site, the location and condition of equipment on the call out, and other key factors related to assessing the risk of fire. The tablets are used to record time and location-linked photographs. They are also able to capture a customer's signature on screen, providing immediate proof of every job completed enabling a more streamlined invoicing process that results in fewer billing queries.

Chief executive Edward Barnes said: "Fire is often overlooked as a cause of disruption and as a serious risk to the business itself. The immediate physical damage is only part of the problem caused by a fire, the costs of operational disruption and reputational damage often far exceed the cost of the original damage. Without adequate protection, it can take just a matter of minutes to bring a company to its knees."

"We were pleased to discover BigChange at a show in 2016. We had been through a long and unsuccessful process trying to get three different systems working for our business and all had failed. Due to the ease of set up, we were able to implement the system ourselves in just two weeks. We now have a system that supports our business model and provides many benefits in terms of efficiency, productivity and customer service."

"JobWatch has not only enabled us to do five times more services a month, but it has also allowed us to freely expand our business where we are now installing 1,200 new systems in a year. Our engineers work remotely across the UK so they need to have the ability to effectively manage their stock levels without causing downtime and potential loss of business. With the help of the JobWatch tablet, they are now able to track and replenish their van stocks with ease, as well as having the ability to record and review all stock movements, as well as parts and equipment used during the process of installation, maintenance and servicing of our fire-suppression systems.

Information is available in real time on the office app