

Total control

Wireless remote controls are now an accepted every day method of controlling a wide variety of electronic equipment from the TV and computer mouse to keyless car ignition. Lifting devices have for many years used this technology which is now also spreading to the aerial work platform business. Mark Darwin takes a look at the benefits as well as the latest developments.

Wireless remote control of equipment is now virtually standard equipment in several areas, particularly for the control of loader cranes and self erecting tower cranes but it is being increasingly used with aerial work platforms and spider cranes replacing hard wired remotes.



Liebherr's state of the art mobile crane control system, Liccon2 incorporates a sophisticated yet user-friendly on-board computer system with a new generation control system and a new colour touch-screen display below the joysticks along with a revolutionary BTT-Bluetooth mobile control unit complete with its own display.

But while very reliable, wireless handsets are often a problem for rental companies in that they are easily lost or damaged. Robert Bird UK managing director of self erecting tower crane company Ladybird Crane Hire says that remote controls are all too often damaged by users and are expensive items to replace. The damage is related more to



Operators can position themselves at a safe distance.

operator neglect and abuse than a fault with the handset.

The sudden growth of remote controls has been as a result of a number of factors. They are of course less expensive than they once were, and the benefits of increased safety, while making it easier to operate the equipment are increasingly

appreciated by contractors and transport companies. Operators can position themselves at a safe distance from the machine and close to the load being lifted. The ability to move around freely allows the operator to safely handle the dual roles of slinger/signaller and crane operator, not only reducing labour costs but also improving safety. A highly experienced operator is always happier when he can personally check the slinging, but when he is stuck in a cab it is only practical on large a specialised load. By staying with the load he also dispenses with the need for a signaller reducing the possibility of a misunderstanding in communications. The downside that is occasionally argued is that with the operator being well away from the crane he will not sense when something is going wrong with the machine's stability or able to keep an eye on other factors such as tailswing. This is not usually an issue with loader cranes or small tower cranes, but it



is a consideration that must be taken seriously.

A good operator will always position himself where he can keep an eye on both the load and the crane thus having dual feedbacks of interrelated factors.

For the aerial work platform operator the remote control is particularly useful for the loading and unloading the equipment from trailers - always a potentially dangerous situation. This has always been the case with scissor lifts, where the control box is typically removed for moving through doorways or loading. On booms though it is rarely done. Many years ago Peter Hird, the UK based rental company, fitted plug-in wired remotes for the loading of its Genie boom lifts. The idea which the company believed was a major aid to safety never caught on. Perhaps wireless remotes would revive this idea?

Other than this remotes are becoming a more popular item on truck mounted lifts, particularly for set-up and stowing, though they are mostly still hard wired.

Radio remote controls have become more reliable over the past decade and they are easier to install as manufacturers now group wiring systems together. And as interface



components such as sensors and electro hydraulic valves mature they become more easily adaptable for wireless controls not only at OEM

level but also for dealers.

In any type of wireless system there is the potential for interference from other sources. In radiofrequency devices, interference can be caused from the ambient noise floor (radio frequency noise in the near vicinity). This is overcome either by reducing the distance between the remote and the controller on the machine, or having more output power to be stronger than the noise floor, reducing multi-path areas, spread spectrum and proprietary software control of the wireless systems themselves. This noise can be generated by other RF devices, generators, spark plugs and other electrical equipment. Another type of wireless system - infrared - has its own type of interference such as sunlight and artificial light and may need to use light filters to enhance a certain frequency or impede the unwanted frequencies.

The use of a remote control may be the safest way to operate a crane but does not automatically make the equipment safe. Operators must be fully trained before they pick up the remote control system - in the same way as the possible disastrous consequences if someone untrained were to operate the crane from the cab. Operators must also make sure that they can always see the operated equipment. A machine will always respond to the remote whatever the operator is looking at.

People are naturally cautious of new technologies but as they prove themselves are happier and more confident. By being used more and more, remote controls can only grow in the future.

On the right frequency

The use of radio control systems for cranes, loader cranes, concrete pumps and other machinery is now becoming so widespread on large construction sites that the problem of two operators using the same channel - a frequency conflict - is now a major issue.

Repetitive shutdowns of the radio control system would often be the result however several companies - including Autec and HBC-Radiomatic - now have systems that solve this problem.

With radiomatic AFS and radiomatic AFM, HBC-Radiomatic's system selects a free radio channel automatically for uninterrupted operation.

The company has also added a manual frequency switch on many of its products where the operator has to press the designated push button,



and the radio control system will immediately switch over to the next frequency. If this frequency is already in use, the operator can again switch over to another frequency with an additional push of the button. A total of 16 frequencies are available for the manual frequency switch.

This frequency switch is now a standard, no charge feature for all HBC radio control systems with quadrix, eco and technos transmitters as well as

micron, linus and spectrum series transmitters. These systems are still available with fixed frequencies if required.

Automatic channel searching

Italian producer Autec recently launched its Automatic ACS channel search available on its Modular series of joystick or push button controllers which changes frequency automatically and seamlessly without stopping the work cycle. A wider radio spectrum - up to 256 available frequencies - is now available and gives a range of between 100-150 metres with clear line of sight.

Within the Modular range two new push-button handsets include the MK06 and the MK08 and are certified for functional safety by according to EN 954-1 by TÜV Süddeutschland.

Along with the usual ergonomic shape, the new 6 and 8 push-button transmitters are compact and allow the use of different actuator types - pushbutton, toggle switches, rotary switches - and also a removable key.

Another version of the MK06 has a graphic display that shows data collected from sensors, status and alarms from the machine.

Controlling multiple machines

Versions with programmed relationships between controllers,



Autec's sales and marketing director Domenico Didone showing off the new ACS system at the SAIE exhibition in Bologna.

such as master/slave or take/release are also available and allow the joint control of different machines or the control of the same machine with two units. In a master/slave relationship, each transmitter is matched with its own receiver. The control status is fail-safe which means that the safety functions are always active, even if a failure occurs.



Since the mid 1980s American company Hetronic has specialised in safety radio remote controls and claims market leadership with 300,000 units in the field. It also claims to be the first company to introduce a fully proportional radio remote control to the hydraulic crane industry over 15 years ago. For England, Scotland and Wales the product is distributed by Redditch-based Hetronic Ltd - a division of AW Systems in Belgium - which opened earlier this year. Hetronic Ltd is a subsidiary of Oxbridge plc which is also responsible for sales in the Belgium and Luxembourg markets via its subsidiary AW Systems.

The company has a wide variety of radio remote controls particularly designed for the hydraulic crane market. Currently its Nova and Nova L models - which can be used in a variety of applications - are doing particularly well.

Built from a heavy duty, impact resistant, specialty plastic compound, the lightweight Nova L offers room

for up to six fully proportional paddle levers and digital functions. The ease of manipulating the paddle levers make the unit a favourite among loader crane and overhead crane operators.

Leading loader crane manufacturer Palfinger is one company that offers customers an alternative with the choice of Hetronic remote controls as well as Swedish Scanreco products. With the Paltronic 50 system, the easy-to-use check-back module (LED) is offered as standard and at no extra cost.

Using the 'Paldiag' crane software the operating levers can be assigned control functions according to individual requirements. Likewise, it is possible to define the maximum speeds of the individual functions and the start/stop acceleration ramps can be individually programmed.

In the interests of safety it is possible to select 'two-hand combinations' per function. This means that the crane operator has to activate at least two buttons in order to be able to carry out certain manoeuvres. In addition, the maximum speed of the different crane movements can be reduced in three stages.

The new control system also gives enormous advantages in the event of an incorrect diagnosis of a fault.

The new Jump handset from Ravioli



This remote control setup at Palfinger's training centre in Salzburg, Austria is used for training service engineers.

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