Important considerations when choosing radio remote control systems: applications, technology and safety.

Highlights of presentation by Roger Pinto Managing Director Custom Controls (Date) (Event)

When implementing a radio system, select the right system for each application. **Do not make do with what it is offered to you but find the right fit for what you do and how you do it.**

The right system for you is the one that fits your application

-Even when selecting a simple push button type system you should consider things like: do you need to select between hoists when doing a tandem lift? Or you may need to have some kind of feedback from the crane, weight, alarms?

-For more complex operations you may have to decide between paddles and joysticks. What are the advantages of one over another?

-You may want to have some function enabled by a dead-man button either on the joystick or on the side of the transmitter.

-You may, once again need to receive some kind of feedback from the machine and therefore a display may be necessary.

Depending on the number of functions, the size of the transmitter will increase and you should consider the different carrying modes. The best and most expensive system is worth nothing if the operators hate it because it is heavy, cumbersome and difficult to wear.

2. **Understand what you really trying to achieve with regards to safety, productivity and accuracy – your unique needs and workflow will determine the features that you need when selecting the right remote control system for your company. i.e.**

Safety

-User ID and Access control

Productivity

-Data logs and maintenance scheduling

Performance

-User feedback for accurate control

Safety Concerns and appropriate features-Do you need to restrict whom and where the equipment is operated?

- Intelligent Rollover Bar

The use of a SMART CARD, or a similar digital ID device, will allow you full control over access as well as creating different access levels. This SMART CARD looks like a regular credit card or access card commonly used to enter restricted areas.

- User identification via HBC Smart Card

- Restriction of safety functions to authorized personnel only

- Several possible levels / access possibilities

- Function Master Smart Card

- Lock safety commands

- No additional key switch is necessary

- Operator starts with start sequence

- Master starts with HBC Smart Card

- The right SMART CARD will allow not only to start up of the transmitter, but since it contains the user ID as well it will immediately setup the system accordingly to the access level for a specific operator, i.e reduce speed operation or lock out of specific functions.

This simple device eliminates the need for masterkeys and or lockout keys previously necessary lowering costs.

Other concerns:

- Do you need to log loads, operating and maintenance cycles?

- In combination with the SMART CARD, a DATALOGGER will record operating cycles, the operator ID, how long the machine was operated…etc.

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- Real-time data logging

- Controlling traceability referring to user habits

- Machine use analysis / visualization

- Combinable with user identification

- Datalogger is connected to the receiver via CAN interface

- Datalogger contains a real-time clock

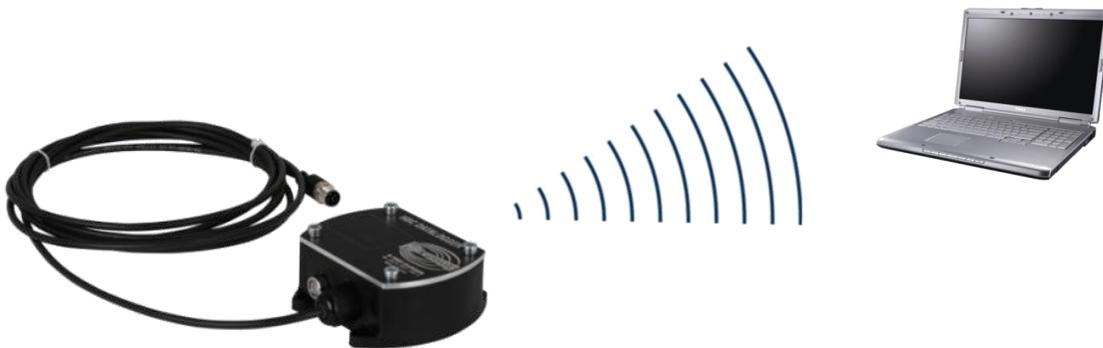- SD-card for storing user-specific data and machine operations in real-time

Do you need to log operating cycles, loads, and maintenance cycles?

- This data is time stamp allowing real time traceability of user habits and working cycles.

- The DATALOGGER will be connected to the receiver and will write the information onto an SD card, using the same tested and true technology as you can find on a digital camera, making it a very simple and robust device.

Transferring and interpreting important data from the Datalogger.

Download data via Bluetooth® to the PC

- Easy read-out from the ground

- No climbing on the crane

Additional storage capacity is being added by Custom Controls to increase the quality and quantity of important data i.e.

- Number of hoist operating cycles

- Number of overloads (status counter)

- Handled payloads in each operating cycle

- Loaded hoist time in motion and respective load

- Unloaded hoist time in motion and dead-load

Do you need to display information and or monitor machine alarms?

This is even more important when operating machines remotely, where we do not have the luxury of the "seat of the pants" feedback. The answer lies in multiple displays that separate information related to different aspect of the machines, engine, hydraulics, loads…etc.

Sometimes this information needs to be more dynamic and the use of larger screens with actual depictions of the machine are better and more efficient.
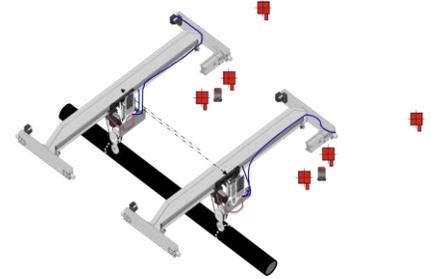
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These changes are easy to make using a "Windows like" interface. The goal is to make user friendly and simple to use.

- **Text and image elements are available by Windows Explorer**

- **Managed like a common mass storage device**

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Tandem Crane Communication: Do you need to have your transmitter operate two cranes at the same time to move heavy loads safely?

Do you need to have your transmitter running longer than the battery will last?

- **Interruption-free operation**

- **Automatic switch over from empty battery to charged battery**

Mission specific machinery often require customized solutions. As an example, Continuous Power Supply (CPS) for transmitters was engneered for this reason with the following machinery in mind.

This is a tunnel boring machine that must work unineterrupted. These types of machines are only stopped for maintenance and if the machine was to shut down for any unscheduled reason, it takes 5-7 hours to restart. Adding the CPS feature was mission critical.

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Apart from the application specifics you should also take into account your operating environment.

Environment

The environment you work in will dictate important features and/ or options decisions:

-Working in the dark will require lights to see the transmitter controls.

-Hazardous applications will require more robust solution: EXPLOSIVE, High Voltage…etc.

Explosion proof environments are strictly regulated by different bodies and we are constantly working to qualify our products to the different standards around the world and in order to do so, are constantly improving our systems.

High Voltage: if your people work on or near power lines. Sometimes they maybe hooking themselves into live lines to repair them.

- **Up to 500KV Liveline applications**

- **Electromagnetic interfearence**

- **Reliability**

-Working on livelines means that the machine has to be at the same potential or voltage as the power line that the crew is working on, it literally means hooking themselves into a line that may carry up to 500KV.

It is something quite amazing to see. As the hook is moved closer to the power line a lightning bolt jumps from the wire to the hook completing the circuit. At this point is safe for the crew to now work on the line.

The challenge for a radio system is the strong electromagnetic field that is created at the moment of "hooking" which interferes with the signal transmission potentially knocking it out.

This is where experience and various proven technological solutions come into play.

- Fail safe stop circuit technology

- Redundant decoding structure

- Diversity system technology

- Vibration alarm

- Automatic shut-off on implausible control commands

- Micro drive

- Orthogonal drive

- radiomatic® shock-off, roll-detect, zero-g

- Enabling switch

We all have a responsibility to ensure that our employees, coworkers…etc. return to their families in one piece, consequently when selecting a remote control system keep safety at the top of your requirements.

Thank you for your attention,

Custom Controls inc. has been working with HBC since 2001. HBC Radiomatic, one of the largest radio manufacturers in the world, if not the largest, with over 60 years of experience and distributor and/or partners in 50 countries worldwide you are sure to find support does matter where you are in the world.