Integrated Monitoring and Control for New & Existing Pivot Systems
After three years of development and literally thousands of man-hours, Pierce Corporation is pleased to present the latest iteration of our fully-programmable ControlMaster smart panel -- the Evolution Series.

Why the effort?

Simply put, we at Pierce recognized it was time to raise the standard on monitoring and control of systems and resources by creating technology that represents an evolutionary step forward from others in the industry.

What makes the Evolution series a leader in this market?

First, our engineers have designed the panel within a robust, durable custom housing manufactured to our specifications by Hoffman Enclosure. In the door is a standard-sized HMI interface slot for ease of retrofitting. Inside, the design incorporates standard DIN accessory rails. As a standard feature, all electronics within the panel are compliant with rigorous CE safety standards and are UL approved.

In addition, we have engineered custom programming logic allowing for 9 separate water-application programs with up to 24 steps per program. Nine separate field or end-gun programs, also with 24 sectors per field. Start, stop and restart on any step without restarting the entire program cycle.

Electronic compass, providing repeatable, accurate heading data to the panel.

Industrial-grade, off-the-shelf components can integrate with most other systems in operation.

Evolution Series - Fieldwork for the 21st Century.
**Slave Panel**

**Designed for both complex and simple cluster control applications.** The slave control can manage a single pivot within a cluster, or a pivot that is programmed from a remote location, i.e. the edge of a field. *(See diagram).*

- Panel contains an electro-mechanical interface to override the HMI (Human-Machine Interface) and connects directly to the PLC. It also contains the PLC for the control of the pivot and communication with the cluster control point. It does not include the HMI interface - this would be located at the cluster control point.
- Program/interface of multiple pivots with up to 9 field water programs and 9 accessory programs (end gun, etc.) per pivot, each with up to 24 steps.
- Analog inputs for pressure control, flow control or other required options. The unit’s PLC controls the pivot only.
- Uses standard internet protocol suites (TCP/IP) as its communication protocols.
- Fully compatible with many brands of SCADA (Supervisory Control and Data Acquisition) using .CSV file outputs.

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**Remote Control Unit**

**Designed for simple cluster control applications.** *(See diagram).*

- Panel contains an HMI (Human-Machine Interface) with a back-reflective LCD screen and web browser controls allowing programming of cluster pivots from a single cluster control point.
- Program/interface of multiple pivots with up to 9 field water programs and 9 accessory programs (end gun, etc.) per pivot, each with up to 24 steps.
- Analog inputs for pressure control, flow control or other required options.
- Uses standard internet protocol suites (TCP/IP) as its communication protocols.
- Fully compatible with a SCADA (Supervisory Control and Data Acquisition) system to allow cluster to be merged with a larger farm complex.

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**Master Control Unit**

**Designed for complex cluster control utilizing multiple pivots and multiple accessory applications.** *(See diagrams).*

- Panel contains an HMI (Human-Machine Interface) with a back-reflective LCD screen and web browser controls allowing programming of cluster pivots from a single cluster control point.
- Electro-mechanical interface to override the HMI and connect directly to the PLC, plus a master PLC for communication with cluster pivots as well as cluster devices.
- Program/interface of multiple pivots with up to 9 field water programs and 9 accessory programs (end gun, etc.) per pivot, each with up to 24 steps.
- Analog inputs for pressure control, flow control or other required options.
- Uses standard internet protocol suites (TCP/IP) as its communication protocols.
- Fully compatible with a SCADA (Supervisory Control and Data Acquisition) system to allow cluster to be merged with a larger farm complex.
Sample Installation Diagrams

1. Stand-Alone Pivot Panel

Diagram 1

- Mobile or Fixed Industrial WIFI Radio
- Laptop or PDA with Browser
- Pivot Panel
- Industrial WIFI Radio
- Stand Alone Control Unit
- Compass
- Remote Control Unit with Slave Panel(s)
- Medium Range 2000 to 2 miles

2. Remote Control Unit with Slave Panel(s)

Diagram 2

- Compass
- Pivot Panel
- PLC
- RS-485 Radio
- Slave Control Units
- Local Control Fertilizer Water
- Short Range 200 to 1000ft
- Laptop or PDA with Browser
- Optional local Wireless
- Remote Control Unit located at road side
- WIFI Radio
- RS-485 Radio

3. Master Control with Slave Panels and SCADA

Diagram 3

- SCADA Station
- Polling Server
- Network Switch
- Ethernet Connection
- Network Radio
- PDA with Browser
- WIFI Radio
- Master Control Unit
- Slave Control Unit(s)
- RS-485 Radio
- PLC
- Existing Fertilizer Panel
- Water Control Stage 1&2
- Fertilizer Pump
- Mach 1 thru 4 Manual Control At Pivot
- Existing Wire Link or Custom Radio Link
- (Modbus Master to Slave)
Remote control applications intended to be used with any Evolution Series Equipment will require Telemetry Systems and additional software.

- **Electro-mechanical interface to override the HMI**
- **Multiple failure-protection redundancy, ensuring water on high-value crops can always be maintained**
- **Navigation-grade compass provides repeatable, accurate heading data to the control panel**
- **Multiple-line, back reflective LCD screen**
- **Browser touchpad**
- **Multiple communication ports for a variety of interface applications**
- Remote control applications intended to be used with any Evolution Series Equipment will require Telemetry Systems and additional software.
In spite of the advancements our engineers have made developing our Center Pivots, Linears, and Micro Irrigation Systems, they have never lost sight of the fact that ag commerce still relies on the effort and ingenuity of those willing to work the soil.

Since 1932 Pierce has partnered with the American Ag Producer. Today, the scope of our products is worldwide, and through the innovations in electronics and coating options, extends beyond agriculture to include chemigation and wastewater management.

Now, as we look to the future, our pledge remains the same… to provide reliable, inspired engineering that will ensure the success of our customers.