

Electronic Marshalling Concept Attacks Installed Costs

Emerson Process Management introduced their new Electronic Marshalling concept as part of the new DeltaV release. This is the result of Emerson's new process to design products based on Human Centered Design (HCD). The design looks beyond pure technology to really understand the entire process to achieve the end goal most economically. In this case, the entire project cycle was considered using HCD concepts to think about how to streamline the process. The result was the Electronic Marshalling concept supported by new products.

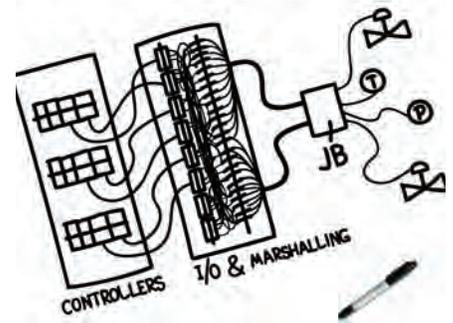


The Electronic Marshalling, along with the I/O on demand concept, is designed to simplify engineering, installation, and commissioning of systems.

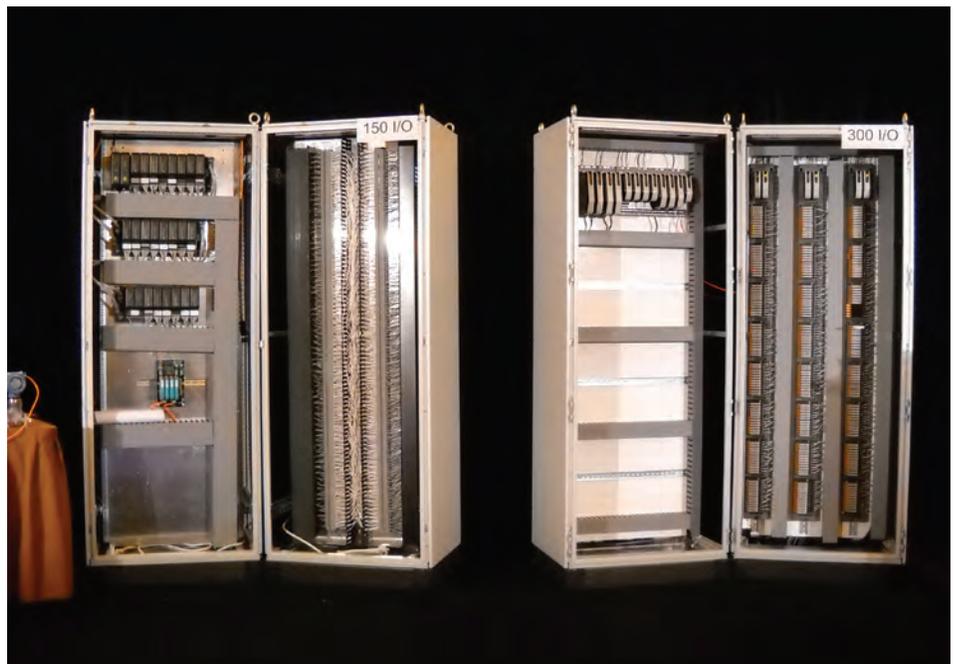
Comparisons of a traditional marshalling cabinet on the left supporting 150 I/O vs. using CHARMS on the right supporting 300 I/O illustrates savings in cabinet cost.

Significant savings are achieved in engineering, drawings, wiring, and commissioning. No traditional marshalling means elimination of a number of cost elements including terminal blocks, jumpers, wiring diagrams, cable layouts and terminations. Consider the savings of eliminating 4 terminations per point without counting shields. When I was estimating projects we used 0.1 to 0.2 hours per termination which includes

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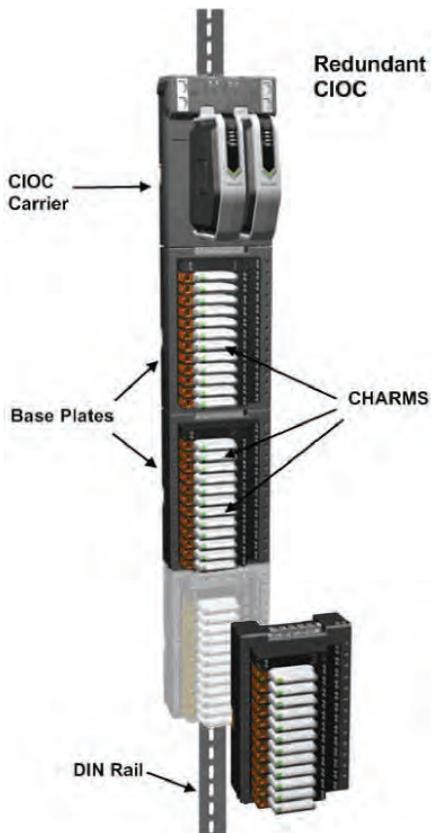


commissioning. For 1,000 points this translates to 400-600 hours of saved labor saving without considering other cost savings of using this system. Saving labor significantly lowers risk since it is the least controllable cost on a project.



Integrated Signal Conditioning & Termination

The electronic Marshalling concept is essentially a distributed I/O system with single point flexibility using CHARMS (CHARacterization ModuleS). The CHARMS are single point I/O modules that communicate over a backplane to redundant communications processors (CIOC). The CIOC's communicate over the Emerson Process PlantWEB Ethernet communications to DeltaV processors and is part of the new DeltaV S-series platform. The CIOC supports copper or fiber media and 50 millisecond I/O update times are guaranteed.



The DeltaV CHARMS I/O Card (CIOC)

The goal is to eliminate marshalling cabinets, simplify engineering and accommodate I/O changes throughout the installation cycle. The CHARMS are hot installable and swappable and the point associated with them can be assigned to any DeltaV processor.

The initial release supports 8 I/O types:

- Analog Input: 0-20 ma, 4-20 ma with HART Support
- Analog Out: 0-20 ma, 4-20 ma with HART Support
- Thermocouple
- RTD
- Digital Input Dry Contact 24 volt DC Low Side Sense
- Digital Input Namur (12 volt)
- Digital Out High side 100 ma (Powered from I/O bus)
- Digital Out Isolated 1 amp

There will be a new carrier introduced later for injecting power to handle I/O that require higher currents.

This concept allows faster deployment since changes and additions can be made easily in the field.



Project Process Change

Taking full advantage of the Electronic Marshalling concept does require a shift in thinking about project flow. If the EPC is willing to release the majority of the system design (80-90%) before finalizing the project, work can begin in the field. The parties involved need to rely on the flexibility of I/O on demand to finishing the project in the field.

New Fieldbus Offering?

Some attendees at the Emerson User Exchange conference observed that this is a new "fieldbus" offering. In a sense, this is accurate. If you squint your eyes and look at it, this is a distributed "slice I/O" system on a fieldbus network. I see this as a closed-architecture, cost-optimized fieldbus I/O system intimately tied to the DeltaV architecture, designed to create project savings while maintaining system performance. In a perfect world, open architecture fieldbus systems could achieve this, but they are not there yet.

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