

## PROJECT PROFILE

**Spang Power Electronics** provided a DeltaV™ automation system upgrade to existing Continuous Multi-Zone Kilns for the Magnetics Division of Spang & Company in Booneville, Arkansas.

Magnetics, a world leader in ferrite core production, targeted several of their “legacy” lines for upgrade. The goal was to replace obsolete controls, enhance process automation and provide system reliability for the Multi-Zone kiln system. Difficult to procure, expensive, obsolete parts constantly caused production disruptions, added expense and negatively impacted revenues.

**Spang Power Electronics** successfully implemented an off-the-shelf DeltaV™ automation control system requiring less than three days of production down time. The new automation system provides:

- Control System Redundancy
- Expanded Process Data Availability
- Enhanced Process Monitoring
- Accurate Real-Time Data Collection
- Data Analysis through Excel™
- More Precise Process Control
- Minimal Downtime for Setup & Changes

In addition to productivity gains, a suite of Engineering tools are now available for swift implementation of process improvements.

### History of Power & Automation

Six kilns were originally installed over a ten year period between the early 1980s and 1990s. For the original installations, Spang Power Controls (predecessor to **Spang Power Electronics**) provided the SCR heater controls. The kiln manufacturer supplied the kiln controls and hardwired operator interfaces. Since that original installation, **Spang Power Electronics** has evolved into a full capability automation and integration solution provider in addition to a designer/developer of digital power control products. Based on this capability, Magnetics turned to **Spang Power Electronics** to implement a modern DeltaV™ process automation solution for the ferrite core production kilns.

### The System Upgrade

Upgrading these 24/7 production lines required careful planning and precise execution to minimize downtime lost production. The obsolete control system, sub-panels and I/O wiring were overdue for an upgrade. Modules, long since discontinued, were difficult to acquire. Servicing the original controls was becoming a lost art, while programming modifications were no longer possible. Chart recorders, stand alone controllers and analyzers begged to

be integrated into a common system. The Spang heater controls, MCC and hardwired circuits were to remain intact for integration into the new DeltaV™ system.

Spang Power Electronics employed the strategy of hardware installation and testing conducted in parallel with the existing, functioning system. All new computers, Ethernet networks, UPS and power distribution were commissioned and ready, prior to production change over.

During the production shutdown, a coordinated team of **Spang Power Electronics** and Magnetics technicians worked in concert to retrofit and test the new controls.

By the third day, a fully functional test of all control loops had been completed and final process tuning was well underway.



Parts entering Double Wide Kiln

### Central Control Room

The new control room offers a central location for production operation and engineering analysis. Each kiln communicates via a dedicated industrial Ethernet network to a supervisory system. Three PC based workstations provide multiple and secured access to all levels of authorized Operations and Engineering personnel.

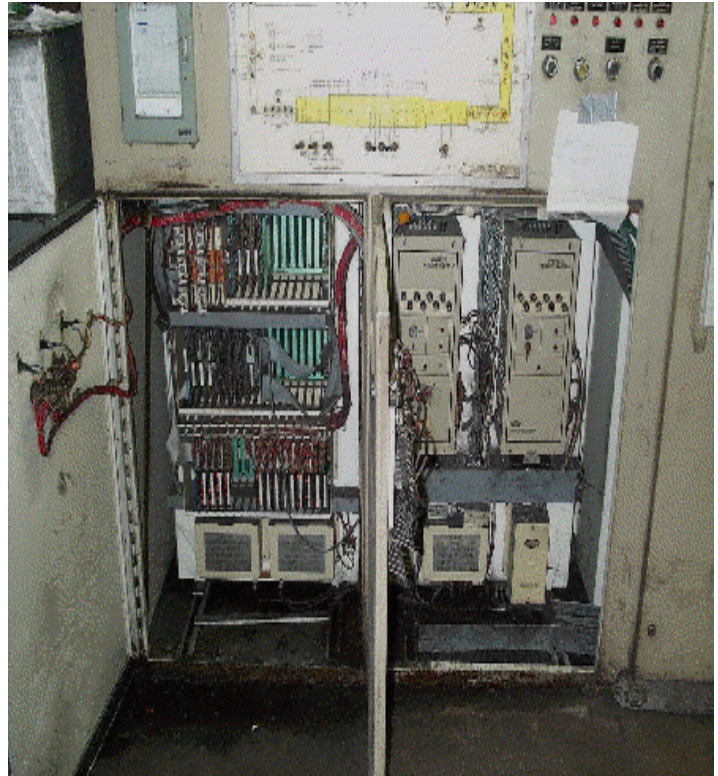
**Multi-Zone Kiln**  
**DCS Automation Upgrade**  
 for Magnetics Division of Spang & Co.

Production personnel access real-time process data, make set point changes, view alarm conditions, as well as call up historical trending of key parameters. Process data is stored in a local database for additional analysis graphically or via Excel™ worksheets.

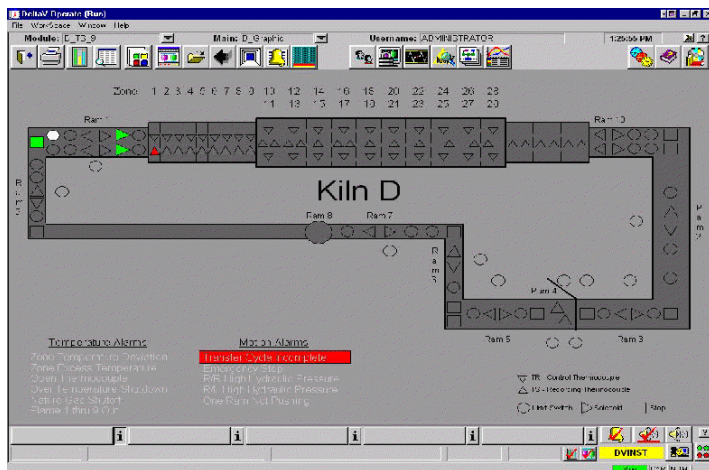
Engineering and Maintenance personnel access additional tools for system diagnostics, tuning, as well as a configuration, logic and screen design.

**Improved Reliability & Reduced Downtime**

Preventing production cycle interruptions is critical to the consistency and quality of the product out of the kilns. Long residency times for each cycle elevate the importance of this reliability. The DeltaV™ automation system is equipped with redundant processors, and DC power supplies. AC power is provided through a UPS. The system can withstand multiple hardware failures at various levels without a process shutdown. “On the fly” software modules track parts position status providing 15 times faster production restarts without additional operator intervention.



Control Cabinet – Before Upgrade



HMI overview screen

**Remote Access**

Access to the new control system is possible via the plant LAN or phone line. Process Engineers down the hall or at R&D, miles away, can tap in to access process data. Secure links permit remote access to aid in diagnostics or modifications.



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Control Cabinet – After Upgrade