

Ford modernizes a tandem press line with state of the art technology

Automotive
Ford Motor Co.



UNITED STATES

Introduction

Ford Motor Company's Vehicle Operations, (Metal Stamping Division), recently requested that an existing tandem press line be updated to a state of the art control technology, (from NorPak relays). The Industrial Applications Group's Forming Applications Business segment responded to the request. A control solution comprising MODICON Momentum and MODICON Atrium PLC's in a PC Based Control configuration along with the Magelis Flex Box PC and a impressive Visual Basic HMI was provided.

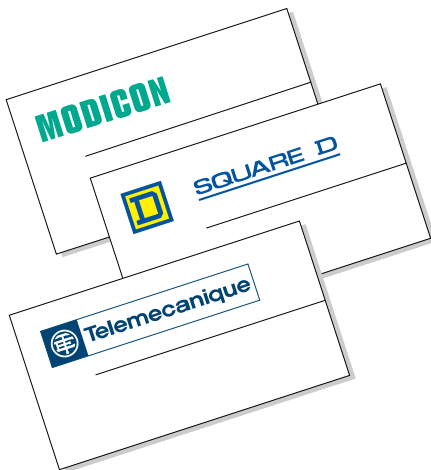


The Objective

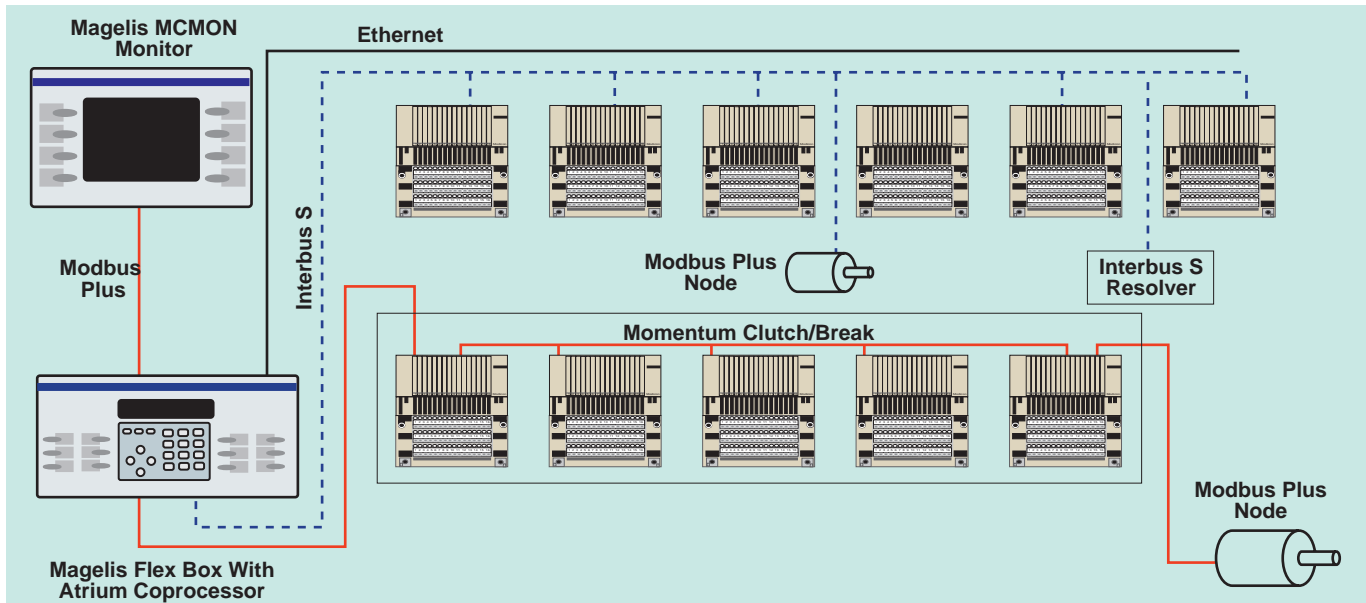
The tandem press line at Ford's Maumee, Ohio stamping plant needed to increase production capacity to support an increased demand for formed sheet metal parts. When Ford Stamping first considered updating the controls on the press line they considered many control approaches. The best control approach from Ford's perspective was one that would:

- Be futuristic, yet low risk from a technology perspective.
- Keep operator safety first
- Be reliable and flexible
- Last for the life of the press

MODICON PLCs and the Forming Applications Business expertise on press control systems in a PC Based Control package met the requirement.



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The press control solution installed at Ford Stamping's Maumee, Ohio plant consists of custom cabinets, housing six Magelis Flex Box Industrial PC's connected to the Magelis MCMON VGA monitor, mounted in operator stations on each of the six presses. Also contained within each cabinet is the Momentum Clutch Brake Control solution. Each operator station is being communicated to by way of standard video signal between the monitor and the PC, and Modbus Plus between the Momentum CBC and the Atrium Copro. Additionally all of the ancillary control is being done by way of the Atrium Copro communicated to the press mounted Momentum I/O on the Interbus-S protocol. All of the PC's are communicating by way of Ethernet for shared printer capability.

The Application

As part of retrofitting the presses, the need for more efficient and effective control was identified. The enhanced control was needed on six presses coordinated in a tandem press line. The application included the following functions:

- Clutch Brake Control
- Die Set
- Tonnage Monitoring
- Interpress Coordination
- Automation Valve Control
- Press Operation Control
- Main Operator Station

The solution

The solution provided consists of the following hardware:

- Six MODICON Atrium PLC Copro's
- Six Clutch Brake Control circuits, each with two MODICON Momentum M1 PLC's, five Momentum I/O bases, all communicating on Modbus Plus sharing I/O
- Six Magelis Flex Box Industrial PC's, all running a Visual Basic HMI package under Windows NT, with an automatic call-up to Concept programming software and AutoCAD Viewer.

- Six Magelis MCMON VGA Monitors
- Modbus Plus and Interbus-S resolvers
- New magnetics
- New Constant Energy System (CES) units
- Completed fabricated control and magnetics cabinets and panels.

This installation was the first implementation of the Momentum M1 Clutch Brake solution. A unique approach of shared I/O on Modbus Plus in the CBC circuit, where both PLC's monitor a common I/O point eliminating the need for duplicate I/O blocks. This implementation provided reduced cost and circuit simplification to Ford.

This was also the first deployment of Groupe Schneider's PressView 2000 HMI software, an impressive Visual Basic application that provides many productivity enhancing features like: automatic launching of the help file directly related to the fault displayed; IEC1131 Concept control program running the press directly to the section of code; automatic launch of the AutoCAD drawings that corresponds to the

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The solution (cont.)

section of the press control that you are viewing. Sophisticated diagnostic displays, color graphical operator prompts and press status via the video monitor, and color graphical performance and utilization reports.

The Groupe Schneider solution provided to Ford on this project was more than hardware and software.

Groupe Schneider’s engineering and sales teams, extensive distribution channel and Modconnect development partners worked together to provide the solution. The range and power of the services that we were able to supply are a direct result of being part of a global force.

The services provided were:

- On-Site Program Management throughout the process
- Pre-Inspection of the press line
- Control System Design
- Control System Programming
- HMI Software Development
- Control System Fabrication
- Control System Documentation

- Control System Installation Support
- Control System Commissioning
- Press System Launch Support
- R&M Audit support

Benefits

This press control solution from Groupe Schneider met all of Fords stated objectives:

- Be futuristic, yet low risk from a technology perspective.
- Keep operator safety first
- Be reliable and flexible
- Last for the life of the press

A recent Repair and Maintainability audit conducted at a Ford Motor Company stamping plant, concluded that the control system supplied by Groupe Schneider was the best performer of all of the subsystems on the press line.

Ford Motor Company has demonstrated their satisfaction with this solution by awarding the next press line in the same plant to the Industrial Applications Group’s Forming Application Business.