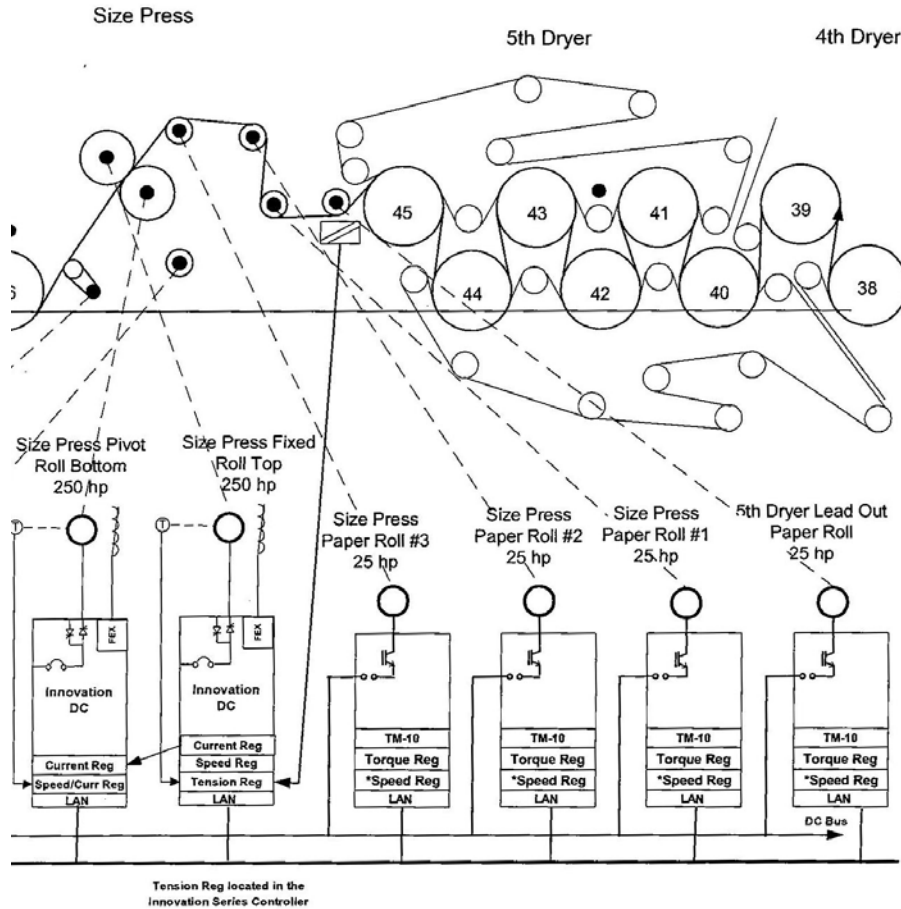


Large Paper System Factory Acceptance Test Completed

by Paul Blaiklock

The factory acceptance test for a large paper machine control system was recently completed in TM GE's Salem facility. The drive system upgrade added Digital Front End (DFE) electronic controls to existing DC Siltron drives, added a new AC drive for the fan pump, and new TM-10 AC drives for additional low horsepower applications. All these 47 drives are coordinated by an Innovation Series master controller, which communicates with the drives and the plant distributed control system (DCS).



Section of Machine Showing both AC and DC Drives

The factory acceptance test used the actual touch panel operator screens, the HMI computer, and the master controller to be used at the mill. Forty-three digital drive and motor simulators were connected to the master controller so the entire control system could be dynamically tested in the lab.



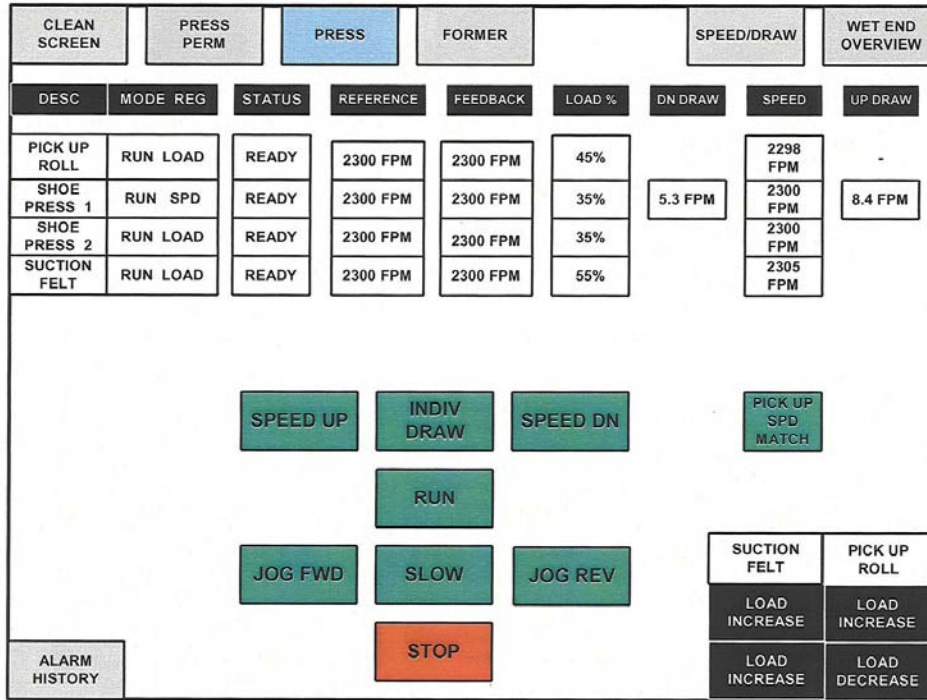
Test Lab showing Drive Simulators and HMI Screens

Customer representatives from the mill witnessed the acceptance test and ran the system from the operator panels to confirm correct operation.

The test objectives were:

1. Demonstrate the functionality of the drive system by running the system in its various modes and observing the drive status information on the touch panels and HMI screen.
2. Demonstrate the functionality of the touch panel push buttons and status indicator lights by changing setpoints, starting and stopping motors, and increasing and decreasing speeds.
3. Demonstrate the functionality of the toolbox configuration tools
4. Demonstrate the functionality of the HMI engineering and maintenance tools

A typical microprocessor-based operator panel is shown below. These panels are all connected to the master controller by ISBus, a high-speed serial communication link, which provides instantaneous response to operator and controller changes.



Touch Panel Screen with Indicators and Operator Controls

Pump control panels were also tested and witnessed as part of this factory acceptance test. These bypass panels contained four motor soft starters, and were wired up to a test motor so the actual equipment could be demonstrated. In addition, the communication link between the controller and the existing PLC was tested in the customer's plant.

A similar factory acceptance test was conducted later in the week on the winder control system. This test included simulators for 10 AC and DC drives and three operator panels, and was witnessed by the winder OEM. Following successful testing of these systems, all the equipment was shipped to the mill for installation. As a result of the extensive factory testing, problems with the drive system during commissioning are not expected, and machine startup will be on schedule.