

Exceeding Expectations

Meticulous Planning/Phased Migrations Enabling:

- No Unplanned Downtime
- Simpler, More Robust System
- Profitable Bottom Line

“ Our Paper Machine Is Unreliable Due To Its Obsolete Control System. We Need Help Modernizing Our Systems So We Can Prevent Unplanned Downtime.”

What Our Client Said

Our paper mill produces a large amount of liner board material for the shipping industry. Lately, we have been running into a significant amount of downtime in our stock preparation process and paper machine due to issues with our obsolete control systems. Our Foxboro DCS system is unreliable, and our PLCs are no longer supported by the manufacturer, which makes it nearly impossible (and prohibitively expensive) to obtain replacement parts. Our aging MCCs are becoming increasingly unsafe and cause a great deal of concern throughout our daily activities.

What We Heard

We need the pulp and paper expertise of LSI to improve the reliability of our paper machine and reduce production downtime by modernizing our control system and updating our MCCs. This is not a problem that will be solved with a few simple upgrades. This is a major project that will require extensive system design and reconfiguration. We need the final result to be a dependable, easy-to-maintain control system that improves stock preparation efficiency and overall machine reliability.

What We Did

The project began with LSI's experienced pulp and paper team creating updated piping and instrumentation diagrams (P&ID) based on existing configurations, operations, process control and engineering. The project was to be completed in several distinct phases, so the planning process was critical. When the plant shut down for its regularly scheduled outages (an eight- to twelve-hour period every six weeks and an annual five-day outage), LSI was able to work on-site and integrate improvements into the system. LSI's team started by upgrading the existing Foxboro DCS to DeltaV, as well as building an entirely new DCS system inside a new rack room. In addition, all controls leading to the paper machine and stock preparation area were rewired using junction boxes, making future upgrades much easier. Six PLC5s were upgraded and interfaced to a single redundant ControlLogix system that utilized existing cables and completely replaced the back panels, improving system reliability and reducing downtime. Finally, LSI's engineers reconfigured and upgraded all eleven of the facility's 480VMCCs (which contained 125 motors and dozens of power panels), improving the system's overall safety and reliability. Throughout the project, a total of five thousand I/O were used, thirty percent of which were spares meant to accommodate future expansion.

LSI provided:

- Systems integration
- The upgrade and interface of six PLC5s into a single redundant ControlLogix
- Total of 5000 I/O
- ControlLogix configuration
- Foxboro DCS upgrade to Delta V system
- 480V MCC upgrades (a total of 125 motors and dozens of power panels)
- 30% spare I/O and field wiring via junction boxes to accommodate future expansion
- Mechanical engineering
- System development
- Operations training
- Electrical design
- Instrumentation design
- Construction support

The Results Speak For Themselves

System simplification increased reliability

LSI reduced the total number of PLCs by combining multiple PLC5s into a single redundant ControlLogix system. This simplified maintenance, troubleshooting and the PLC code. This also reduced the number of interface I/O and interface communications, one of the reasons for difficult maintenance and increased machine downtime.

Automation reduced operator intervention

The automation of multiple redundant systems in the stock preparation process has improved reaction times and removed instances of operator intervention during adverse manufacturing conditions or equipment failure.

Training improved operator competency

LSI provided a development system complete with simulations designed to help with the training of operators and maintenance personnel during the time leading up to implementation. The system now allows for training on an ongoing basis.

Improved troubleshooting

LSI's integrated fusing (and the corresponding drawings on faceplates) has reduced troubleshooting times during daily outages as well as when issues occur on system startups.

Better product equals better outcome

Updated control system, control schemes and design improved the consistency of the stock being produced, resulting in higher quality, better throughput and less unplanned downtime. These results provided financial payback, while the improved controls also reduced sheet breaks and chemical costs.

"We were all pretty skeptical when this project began, fully expecting to hate the new system. But we were wrong! Operating this new system has been easy and straightforward. The changes have helped us a lot. It's been awesome!"

– *Stock Prep / Paper Machine Operators React To The New System*

Let LSI listen to your challenges today, and we'll work together to write a success story for you.

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LSI listened,

then developed a custom solution that was a perfect fit for the mill's unique operation. By combining new and existing hardware with updated process controls and experienced engineering, LSI created a functional specification and design that exceeded customer expectations.

LSI's approach to the design and configuration of new hardware and controls increased reliability, reduced unplanned downtime and reduced troubleshooting complications. LSI's experience in the pulp and paper industry allowed this project to run smoothly and finish on time. The client was pleased with the outcome of the project, and plans for future collaborations are ongoing.