

# Solutions in Action



Allen-Bradley GuardLogix Safety Controller



Allen-Bradley Kinetix 6500  
EtherNet/IP-Enabled Servo Drive



Allen-Bradley PowerFlex AC Drives



PCMC makes functional safety an integral part of the design process across its portfolio and in upgrades.

Safety is a critical factor across the industrial landscape. But while reducing risk on the plant floor has been a constant for more than a century, safety standards have undergone a global transformation in recent years.

“In the converting industry, the changes have been extraordinary,” said Jill Thiede, strategic accounts manager, Paper Converting Machine Company. “Today, our focus is twofold: making equipment that runs 3,000 feet per minute more efficient – and enhancing the safety of that equipment.”

To meet this challenge, Paper Converting Machine Company (PCMC) makes functional safety an integral part of the design process across its portfolio and in upgrades that support legacy equipment.

A global leader in tissue converting, packaging, flexographic printing and non-woven technology, PCMC boasts an extensive installed base with an active equipment life that can extend beyond 50 years. Headquartered in Green Bay, Wisconsin, PCMC is a Barry-Wehmillers company.

For decades, machine builders approached safety as an “add-on.” A machine was designed first, and guarding and other safety components were applied later. Still prevalent today, this method enables an OEM to achieve safety compliance, but often at the cost of productivity.

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SOLVE.

"These installations meet regulations, but oftentimes the entire machine must be stopped to changeover the equipment or perform maintenance," said Jason Stover, senior electrical project engineer, PCMC.

Contemporary functional safety standards, including IEC 62061 and ISO 13849-1, plus the latest control and software capabilities enable OEMs to design safety into machinery.

"It's really a change in philosophy," Thiede said. "Now, we can design an integrated safety system that reduces machine hazards and associated risks – and improves overall efficiency and productivity."

For example, PCMC can divide a complex converting line into safety zones corresponding to specific risks or hazards. The system can be configured to safely remove power and allow maintenance in one zone, while keeping the rest of the line up and running.

To achieve safety functionality, the PCMC equipment is built on a Rockwell Automation® integrated safety solution based on the Allen-Bradley® GuardLogix® platform. Depending on the application, the machinery can also include Allen-Bradley Kinetix® 6500 servo drives for coordinated drive control and Allen-Bradley PowerFlex® 525, 755 and 70 AC drives for variable speed control.

The Kinetix and PowerFlex drives include built-in safety functionality via the Safe Torque-off feature. Safe Torque-off capability removes rotational power from the motor without powering down the entire machine. As a result, equipment can be brought to a stop more safely – and restarted more quickly. The robust safety solution also incorporates POINT Guard I/O™ and other safety-rated components as required.

PCMC applies Allen-Bradley PanelView™ Plus 6 graphic terminals for local monitoring – and an industrial computer running FactoryTalk® View human machine interface (HMI) software at the main console or in the control room. The system is typically integrated on an EtherNet/IP™ network.

In any installation, PCMC follows a rigorous, systematic design process that includes defining functional safety requirements early on, and verifying and validating the safety system when it is complete.

"Our process begins with a risk assessment, which helps define which hazards are present – and what we can do about it," Stover explained. "First and foremost, we design the hazard out of the machine if at all possible. If we can't design it out, we look at protective measures that can reduce risk."

PCMC believes the need for thorough validation and documentation has increased as safety control architectures have become more robust.

"In an old hard-wired system, you could easily see the safety functionality in an electrical schematic," Stover said. "Now, much of that functionality is hidden within the programming of the safety controller. Proper documentation is essential to enable the validation of any future enhancements to the system."

PCMC provides its customers with safety documentation during equipment installation – and also electronically stores the documents to support PCMC equipment throughout its lifecycle. All PCMC engineers are thoroughly trained on machine safety – and in addition, the company employs a dedicated safety engineer. PCMC also offers machine safety training as part of its aftermarket services.

"As control systems evolve, we will continue to call on Rockwell Automation functional safety experts to complement our in-house expertise," said Stover. "We feel we are well positioned to evolve our design philosophy in line with regulatory requirements and advances in technology."

#### For more information:

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