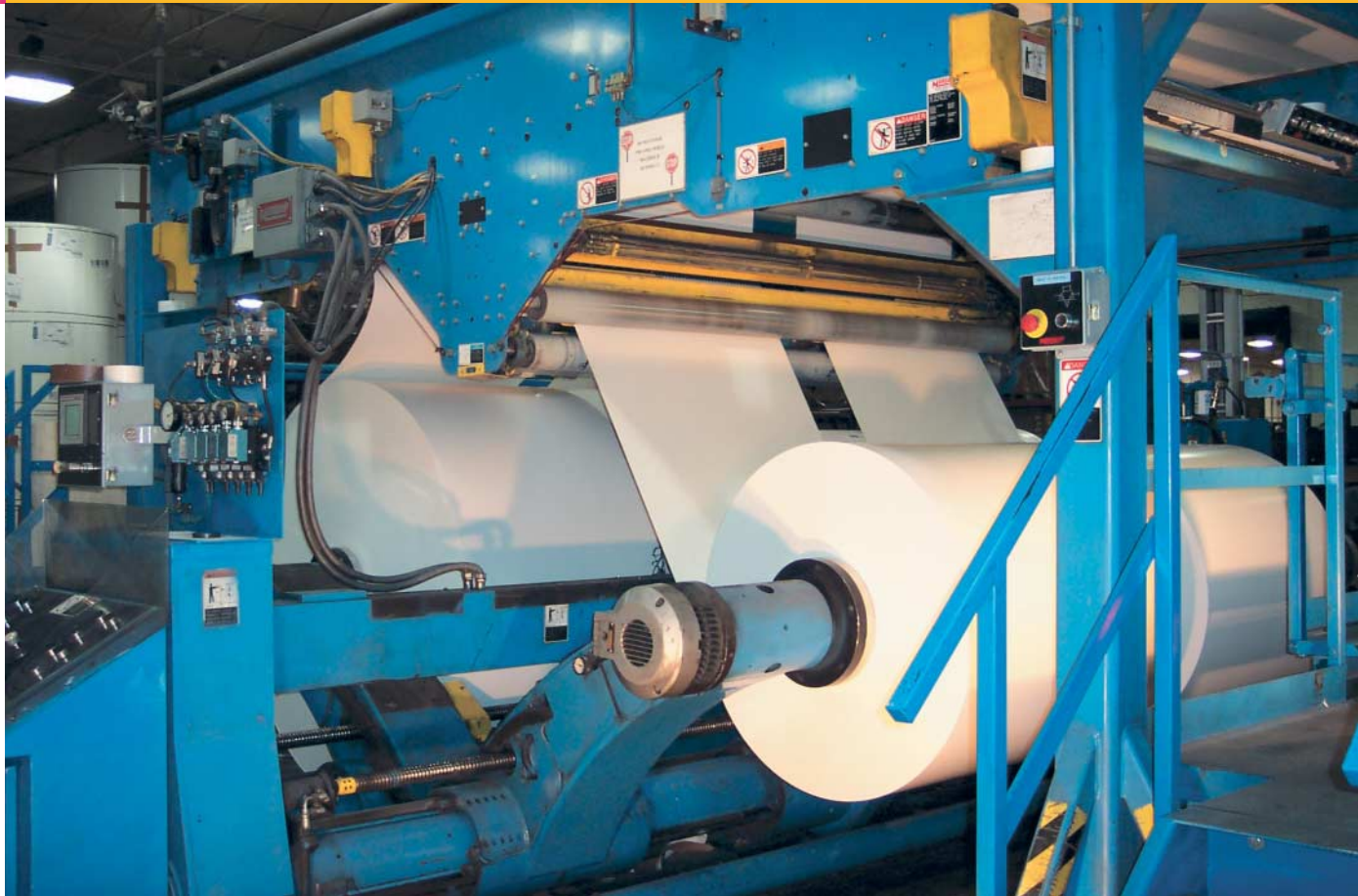


PC-based control for paper processing facility



→ Printing and converting OEM, MarquipWardUnited eliminates costly proprietary PLCs on dual rotary knife sheeters and achieves 30% increase in throughput while reducing installation time for its machines by over 30%. PC-based control systems from Beckhoff are used as a new generation of control equipment.



Using Lightbus as their I/O fieldbus, MarquipWardUnited increased sheeter machine production speeds from 1,100 feet per minute to 1,500 feet per minute.

MarquipWardUnited, a division of Barry Wehmiller and located in Madison, Wis., is a leading manufacturer of off-line and on-line dual rotary knife sheeters for the printing and converting industries. Sheeters precisely cut and stack paper, plastic, tinfoil laminate and tag board from rolls at extremely high speeds. Rolls of material are run through tension systems and cutters, with sheets of the material in various sizes stacked at the end of the process for end-use.

Customers demand PC-based control

According to Tom Miske, senior engineer of controls, MarquipWardUnited's motivation to redesign their machines' control systems had its roots in the company's commitment to listen and act upon their customers' feedback. Thanks to a major redesign of the control system away from PLCs using PC-based controls, Mar-

quipWardUnited was able to offer their customers the open system they were asking for. The simplified architecture greatly reduced the number of system components, installation costs, and engineering effort. Miske's team was also faced with the challenge of replacing more traditional machine components that were considered obsolete and were being phased out by their manufacturers.

"The sheeter machine market is cutting edge and very receptive to innovation," said Miske. "End-users want to save as much money as possible, but at the same time, need solid technology that's open and easy to understand, along with user-friendly operating features. Many of them, being knowledgeable of modern Industrial PCs, asked us 'why do you have to use PLCs? They're expensive.' In fact, several customers told us after we introduced the new control system that if the solution wasn't PC and Windows based, they wouldn't be looking at



Due to customer demand for streamlined, cost-effective technologies, Tom Miske and MarquipWardUnited were faced with the challenge of replacing PLCs with Industrial PCs.

MarquipWardUnited.” After a search and comparison of several PC-based systems, MarquipWardUnited concluded that TwinCAT from Beckhoff provided the best automation control system using Windows that met all their requirements. “We feel that the engineering that goes into Beckhoff products is superior to anything we have seen. From a hardware standpoint, it’s much simpler to implement. In addition, TwinCAT offers plenty of scope for further developments. The flexibility and power the technology has is impressive for the cost-effective price.”

Going the speed of Lightbus

Beckhoff components used by MarquipWardUnited include a C6240 Industrial PC running TwinCAT IEC 61131-3 software, 15 inch Control Panels for operator interface and Lightbus I/O with a Lightbus PCI card inside the PC. “The dual rotary knife on our machine needs to run at extremely high speed,” Miske said. “Lightbus was one of the only fieldbuses available to us at the time that could handle our millisecond signal transmission requirements.” The speed of Lightbus has helped MarquipWardUnited increase sheeter machine production speeds from 1,100 feet per minute to 1,500 feet per minute.

“Beckhoff is truly OEM-friendly. We got high quality support on the technology side and didn’t need much on the programming side. The IEC 61131-3 programming standard was instrumental in allowing us to do a higher level of programming language than LADDER. Programming PLCs with LADDER limited our engineering opportunities,” Miske said.

Controls that adapt as quickly as you can

Having a technology migration path was an important ingredient in MarquipWardUnited’s decision-making mix. “We are a vertically integrated company and typically have had to invent most of the components on our machines. We were looking for an off-the-shelf, open system so we could connect to different systems if necessary. We needed something that was simple enough to use, but at the same time, gives us a technological and competitive edge – we found it in Beckhoff,” he said. “IEC 61131-3 is a standard that ensures if things change you can program on other hardware later and can always support older hardware.” Virtually every sheeter is customized in one way or another. “Because of our control flexibility, openness and power, MarquipWardUnited is able to meet a multitude of different requirements at a reduced cost.” The switch to Beckhoff technology has meant lower costs for MarquipWardUnited on several levels. How-



The MarquipWardUnited control system features a C6240 Industrial PC running TwinCAT software and a Lightbus PCI card that connects to high-speed Lightbus distributed I/O.

ever, this also translates into an approximate 60 percent cost savings for MarquipWardUnited’s customers when critical spare parts are needed for their machines. Besides system component savings for all parties involved, there has been a dramatic reduction in factory wiring and field installation labor. “With fieldbus and distributed I/O, we can factory test the system, then unplug the modules for shipping so all of the wires don’t have to be field terminated. We figure this would have taken about three days” Miske said. “It now takes just one day.”

→ MarquipWardUnited www.marquipwardunited.com

→ Beckhoff USA www.beckhoffautomation.com