Industry: Agriculture

Customer case study

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INSPIRING INNOVATIONS



Faster and safer harvest process

Farmers co-op improves customer relations with automated harvest system

Highlights

- Xtreme Automation built an automated harvest processing system for a farmers co-op
- The system required extensive databasing and other complicated requirements
- Xtreme trusted PLCnext Technology and other Phoenix Contact products
- The co-op's customers have been very happy with the speed and ease of the new system

Customer profile

Xtreme Automation, located in Mahomet, Illinois, is a one-stop shop resource for building automation and control system. Xtreme Automation (phone: 785-285-8288) services multiple industries, including a large number of customers in the agriculture industry.

Trever Wendler, technical sales representative, explained, "Our systems are designed for the extreme environments – whether that's dust and explosion-proof, or extreme heat, extreme cold, or just the extreme abuse that people have when it comes to working in a factory."



Figure 1: Farmers pull up to the grain bins and unload their harvest.

Xtreme Automation is the only company in the world currently allowed to use QB Technology. This proprietary technology is user-friendly and highly secure, making it ideal for farmers and factories with high turnover or temporary employees. QB Technology simplifies the process, so the average employee can operate the system with little to no training.



> "It's so easy for us to create custom programs that the sky is the limit."
>
> **TREVER WENDLER**

Challenge: Automating the harvest process at a farmers co-op

Xtreme Automation worked with a farmers co-op to develop an automated harvest processing system. Farmers deliver the freshly harvested grain to the co-op, where it gets weighed, and the moisture is tested. (Figure 1) The farmer then pulls up to the grain "pit," where the operator uses the touchscreen to select the grain's destination. Options often consist of a dryer, ground pile, or bins based on the grain type, grain quality, or moisture level. (Figure 2)

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PHOENIX CONTACT • P.O. BOX 4100 • HARRISBURG, PA 17111-0100
Phone: 800-888-7388 • 717-944-1300 • Technical Service: 800-322-3225 • Fax: 717-944-1625
Website: www.phoenixcontact.com

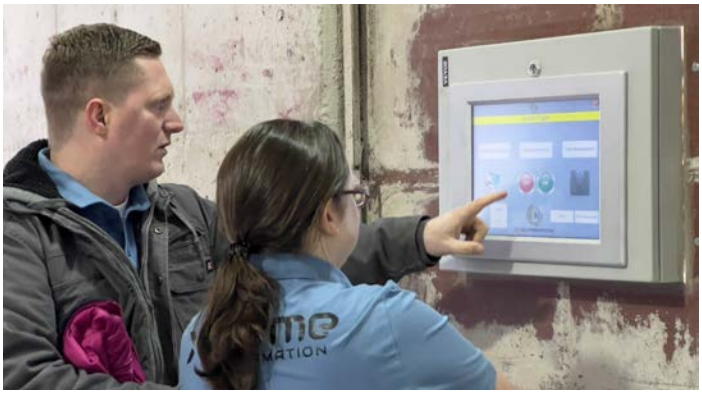


Figure 2: Operators use the touchscreen interface to select the grain's destination.

This location has two operators loading and unloading customers at the same time. Sometimes, equipment was available to share, but not always. It was imperative that these two systems worked together to monitor shared equipment, data records, and safety sensors.

This system had multiple, complex requirements:

- Extensive databasing
- In-the-field-customer configuration of drives and I/O via an HMI
- Writing data to a remote location
- And the ability to send email notifications.

The co-op also needed the system to interface with Schlagel safety monitors, the industry-standard safety devices used in the agriculture industry. Xtreme had a fairly short time frame to implement the system.

Solution: All about the database

"We were finding applications that required a web-based interface. PLCnext is a really robust PLC," Trever stated, "The fact that Phoenix Contact is a big global company with a huge network inspired me to work with them and made me very excited to become a system integrator for them."

"The PLCnext controller is all about databasing, which was an absolute requirement in the application," said Ted Thayer, principal product marketing specialist for control systems at Phoenix Contact USA.

The PLCnext Technology stores not only the grain-processing data and measuring environmental variables, but it also stores all of the customer-selectable configurations for drives and I/O. Some of the data manipulation required a high-level language, which can be run alongside the ladder logic on the PLCnext controller. The Axioline Smart Elements were an affordable I/O solution and also met the panel's space requirements.

"I love the Smart Element. It saves a lot of room inside the control cabinet, so you can use a smaller panel. It's also really nice to program with. The support is wonderful. It's a very powerful PLC," Trever said. "The industrial PCs are amazing. They hold up to the extreme dirt, dust, the sun, the cold weather. Some PCs look nice, but once it gets to 20 or 30 degrees, they start freezing up on you. These PCs really hold up well.

"Phoenix Contact told us about their extended warranty, so we didn't hesitate to use the PCs. Also, they had a Wi-Fi extender that we ended up using for a remote location."

Results: Faster and safer harvest

The team at the co-op saw the value almost immediately. On the first day of testing, the sensors detected a safety issue. The control system shut down and prevented potential injuries.

The database feature has reduced labor costs and improved efficiency. Farmers are happy with the faster unloading process, which has improved customer relations at the co-op. (Figure 3)

Trever praised his experience working with Phoenix Contact: "The sales reps do a great job of checking in regularly, seeing if there's something we're struggling with or something we might be able to use in a different application. Making sure they've got plenty of stock for us.

"The Limited Lifetime Warranty is great. I would never consider not buying Phoenix Contact's power supply and surge protection because of that warranty. We had a surge on one of our sites, and without any questions, Phoenix Contact stood behind the products, just as they said.



Figure 3: Since Xtreme Automation installed the new control system, the harvest process is safer and faster, and customers are happier.

"Whether the end product equipment is located in the middle of nowhere or in downtown Chicago or New York, we have confidence in the reliability of Phoenix Contact products." Trever concluded, "My team is so confident using the Phoenix Contact products, and it's so easy for us to create custom programs that the sky is the limit."

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