

# Working in Harmony

Machine Builder Speeds Time to Market and Expands Global Reach with Support from Rockwell Automation

## Solutions

### Machine Builder Support

- Rockwell Automation Global OEM Technical Consultant (GOTC) provided engineering support
- Rockwell Automation and distributor, Werner Electric, assisted throughout the design process

### Integrated Machine and Safety Control

- Allen-Bradley CompactLogix programmable automation controller manages all machine functionality
- EtherNet/IP industrial network provides remote machine access
- Allen-Bradley PanelView Plus Compact operator interface provides access to machine information
- Guardmaster MSR safety relays and Allen-Bradley SensaGuard safety switches help reduce potential for injury

## Results

### Improved Time to Market

- Decreased development time through domain expertise of Rockwell Automation GOTC and Werner Electric specialist
- Reduced commissioning time with reusable engineering design

### Reduced Engineering Time

- Reduced engineering time on future machines by 70 percent
- Enabled engineering staff to repeat 99 percent of electrical design

### Enhanced Market Value

- Improved market acceptance of equipment using widely accepted controls
- Met global design specifications, allowing entry into European market



Harmony balers leverage integrated machine and safety control from Rockwell Automation.

## Background

Since 1970, Harmony Enterprises has been helping manufacturers recycle scrap material with its advanced line of balers and compactors. The role of a standard baler in a bottling plant is straightforward – to keep the production area safe and clean by gathering and compacting scrap packaging materials. Typically, beverage companies implement fast production changeovers to keep pace with the variety of beverages they produce each day. When a line switches over from one type of beverage to another, there are often a few units between the loads that do not meet specification and are not properly labeled. A machine operator must remove these units from the line and put them into the baler where the liquids are removed and the plastic or aluminum material is compressed into tight bales. The manufacturer then pays to have the bales taken away or, in some cases, sells the bales to a company that recycles the material for new cans or bottles.

LISTEN.  
THINK.  
SOLVE.



An Allen-Bradley PanelView Plus Compact HMI provides onsite access to machine information.

But the role of a Harmony baler in its customers' bottling operations goes beyond simply compacting scrap materials to adding real value in the end user's operations. Because Harmony balers are designed to eliminate 98 percent of the liquid in a bale, the end user can sell higher quality scrap material to the recycler. This helps the end-user customer earn as much as three times more per pound of aluminum than manufacturers who sell lesser quality scrap bales. By increasing their recycling revenue, many Harmony customers enjoy an astonishing three-month return on their equipment investments.

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Over the years, the Minnesota-based company has earned a reputation for providing this kind of innovative, value-add solution. This reputation has helped expand Harmony's business into new customer segments and global markets. In 2010, Harmony received its first order from a large, multinational beverage company to design a high-capacity baler for one of its bottling facilities.

## Challenge

Harmony's new customer asked that the machine be delivered in three months. Harmony engineers were up for the challenge of meeting the end user's time-to-market request, but they knew they would be pressed for time given how much they needed to learn about the end user's design requirements.

Harmony had been using Allen-Bradley® MicroLogix™ programmable logic controllers (PLCs) for many years. While these PLCs had always provided the right level of control for standalone applications, Steve Cremer, president of Harmony Enterprises, and his team knew that the needs of this end user required a higher level of control and integration. Cremer also knew that changing the controller used in the standard machine design could be time consuming, but was excited about the opportunity to expand his team's expertise beyond standalone machine control into an integrated control platform.

Harmony also wanted to design a new piece of equipment that would further enhance the company's reputation for being on the leading edge of technology.

"We weren't just concerned with meeting the requirements that our end user has today," said Cremer. "We want to design equipment that will still lead the way five years down the road and beyond."



Harmony engineers will use the repeatable electrical design and programming instructions to deliver 75 of its H60XL horizontal balers to a new European customer in less than two years.

## Solutions

As they began designing the new Harmony Enterprises SSG2 horizontal baler, they turned to the global OEM technical consultant (GOTC) team at Rockwell Automation for engineering support to identify the right controller for the manufacturer.

“Our team had to learn a lot of information and complete a lot of work in a short period of time,” said Cremer. “I knew that by working closely with Rockwell Automation, we would have direct access to the expertise and extra bandwidth we needed to deliver our equipment as planned.”

One of the automation specialists from Harmony’s local Rockwell Automation distributor, Werner Electric, also worked alongside the team to help gather all the machine specifications, recommend automation solutions, and provide assistance throughout the design process.

Knowing that the end user’s existing manufacturing operations were primarily controlled by Allen-Bradley ControlLogix® controllers, the team decided to implement an Allen-Bradley CompactLogix™ programmable automation controller (PAC) on the new machine to provide consistency and simplified integration across the plant. With the CompactLogix PAC, Harmony could take advantage of a wider range of capabilities, including integrated motion over EtherNet/IP™ – leveraging the same configuration, networking and visualization environment as the larger-scale ControlLogix system.

The CompactLogix PAC manages the machine, motion and safety functionality in a single controller that is ideal for midrange, standalone applications. Because Harmony engineers were using this control platform for the first time, the Rockwell Automation GOTC and Werner Electric specialist assisted with programming and configuring the controller. The controller programming software helped ease this task since it provided a library of code that could be easily modified and reused on future units.

Another reason the GOTC recommended the CompactLogix PAC is because the end user wanted the equipment to be easy to monitor and maintain. As part of the Rockwell Automation Integrated Architecture™, the controller operates on the EtherNet/IP communications network. This allows the end user to tie the equipment into the corporate Ethernet network, giving personnel, as well as Harmony engineers, the ability to remotely access, diagnose and service the machine. Further easing maintenance, the machine also features an Allen-Bradley PanelView™ Plus Compact human-machine interface for onsite operator access to machine information. The easy-to-view screen displays machine status and necessary maintenance tasks so operators can sustain higher levels of production.

*“Harmony may be a small company headquartered in a small town, but this partnership has helped us grow into a truly global company.”*

The Rockwell Automation GOTC and Werner Electric specialist also provided electrical panel design support. This included sizing all the electrical devices, and advising on the optimal panel layout and wiring practices to reduce panel size. Rockwell Automation and Werner Electric invested nearly 500 hours of engineering support on the panel design, software programming and machine commissioning efforts – time that would have otherwise fallen on the shoulders of Harmony engineers.

Finally, the GOTC advised on appropriate safety devices for the new SSG2 baler. They installed Allen-Bradley Guardmaster® MSR 127 safety relays and Allen-Bradley SensaGuard™ safety switches which help reduce the potential for injury by triggering the equipment to shut down if personnel open a door to a guarded space or get in the way of moving parts. By leveraging Rockwell Automation expertise of international regulations, the engineers were able to meet international safety standards including ISO 13849 and IEC 62061.



## Results

Not only did Harmony meet the end user's time-to-market request, it also was able to extend the benefits of the Rockwell Automation and Werner Electric support, and expedite design times on the next equipment order it received from a large manufacturer in Europe. In fact, Harmony's engineering staff was able to repeat 99 percent of the electrical design.

Additionally, the previously developed instruction set within the controller programming software allowed Harmony engineers to reuse common instructions, saving considerable time and improving consistency between units. This repeatability reduced the hours Harmony would have spent on engineering by approximately 70 percent and will help the company deliver 75 horizontal balers to its new European customer in less than two years.

The Rockwell Automation solutions have also helped Harmony Enterprises gain worldwide acceptance of its new baler design. Because of widespread end-user preference for the Logix Control Platform, Harmony is able to attract new customers with its familiar control system. Also, because the safety elements of the new baler meet international safety standards, Harmony can leverage the same design with new customers around the world. Finally, the global supply-and-support network of Rockwell Automation helps Harmony's customers receive post-sale support no matter where in the world they are located.

"Rockwell Automation solutions have really opened doors for us to the European market and the rest of the world," said Cremer. "Harmony may be a small company headquartered in a small town, but this partnership has helped us grow into a truly global company."

*The results mentioned above are specific to Harmony Enterprises' use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.*

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