

Conquering automation complexity to deliver best-fit solution to Swedish microbrewery

Simple software, best-fit hardware and clear messaging remove the need for technology know-how from operational equation

Challenge

A Swedish microbrewery recognised an opportunity where automation could solve production hurdles. But it needed a solution that was the best fit in terms of size and technical capabilities.

Solutions

A Rockwell Automation solution was installed, which included:

- Allen-Bradley Micro800 PLC
- Allen-Bradley PanelView 800 HMI
- Allen-Bradley PowerFlex 4M variable-speed drives
- Connected Components Workbench software

Results

- Tightly integrated small-scale automation solution
- Lower total cost of ownership
- Lower component cost
- Larger and clearer HMI for production information and problem solving
- Easy to use software for modifications and updates
- Technical knowledge is not a barrier to effective operation



Brewing is an art form that relies on experience and knowledge, coupled to an innate sympathy and understanding of the ingredients and processes

Background

Over the past few years, the worldwide growth of microbreweries and craft beer brands have exploded, with many countries, especially in North America and Europe, seeing double digit expansion in the last decade.

The fascination with artisan beers has fuelled this growth, as discerning beer drinkers opt for specialist niche brews rather than mass-produced commercial brands. Supporting this rapid growth is the fact that microbreweries can be relatively easy to set up and run.

This upward trend is set to continue, too, as some of the larger brewing conglomerates snap up smaller operations, in order to maintain and grow their foothold in this sector. However many microbreweries are committed to remaining independent. Knowing that they will never be able to take on the bigger companies, they can still provide the great brews for which they have become popular.

The “problem” with popularity is that it fuels growth; and unless microbreweries can scale up production or deliver greater efficiencies – without affecting quality – they run the risk of alienating their loyal customers, while also facing the prospect of financial issues due to batch and delivery issues.

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One microbrewery that realised that efficiencies could be gained was Sälens fjällbryggeri AB, based in Sälen, Sweden. Huvudbryggare – or Head Brewer – Sofia Bergkvist realised that the bottling phase took a disproportionately long time compared to other steps in the process, and looked to incorporating an automated solution that would be sympathetic to the brewery's size and output.

For this project Sälens fjällbryggeri AB turned to Swedish company Pontum AB. Based in Handen, Sweden, the company has over 30 years' experience in the development of high-quality packaging equipment. Concentrating on quality, simplicity and flexibility, its bottling & labelling machines, feeding tables and rinsers have all been designed in close co-operation with microbreweries.

Challenge

Starting with a clean slate presents fewer challenges than many industrial applications, but in this instance there were three issues that needed to be addressed. First, the brewery was not particularly big, so any new machines had to fit within the existing real estate and not complicate or hinder any existing flows and access.

The machine also had to be simple to use. As Bergkvist explains: "We are not engineers, so it's up to me to get everything sorted. If the technology is messing with me, I'm going to be one angry brewer!"

Finally, brewing is an art form that relies on experience and knowledge, coupled to an innate sympathy and understanding of the ingredients and processes. So any automated solutions have to have negligible impact on the 'magic' that precedes the bottling process; ideally making it even better and more efficient, but without removing or detracting from the positive impact of the human factor.

Solution

According to Magnus Carlberg, owner of Pontum AB: "We need technology that makes our machines simple to use, while still satisfying the original business objectives behind their purchase. Our FK1 bottling machine was originally designed with a control system from another supplier, but the design, development and subsequent supply of the machine was hindered by the lack of support we were receiving from this supplier, so we looked at a new source of automation solutions and, as a result, started working with Rockwell Automation."

Engineers from Rockwell Automation developed a new bill of materials, based on Allen-Bradley® components, and were able to lower the total component price while also reducing the total cost of ownership for the end user. A smarter drive application was also developed – based on two Allen-Bradley PowerFlex® 4M drives, for the conveyor and cap sorter – as was an HMI solution with a tailored symbol library, which resulted in a friendlier user interface.



Bergkvist explains: "We are not engineers, so it's up to me to get everything sorted. If the technology is messing with me, I'm going to be one angry brewer!"

“Rockwell Automation also offered us a greater range of controllers,” Carlberg continues, “so we were able to get a best-fit solution that more closely matched the machine’s needs. Not only is the Allen-Bradley Micro800™ PLC more economical, it also takes up less space and requires fewer ancillary cards. We are also able to control the pneumatic system directly from the PLC.

“Our customers can make use of the Connected Component Workbench software, too,” he continues. “When any of our clients need an update, I can simply email them a programme and they can do the rest themselves. I have had clients that can’t even start a coffee machine, but can still download and deploy a programme using this software!”

Results

“We are looking to migrate all of our machines over to a Rockwell Automation control architecture,” Carlberg elaborates. “The bigger Allen-Bradley PanelView™ 800 HMI means we can develop more intuitive displays. By making the display larger and clearer, we have more room to deliver messaging for both alarms and remedial action, removing some of the technical knowledge needed to identify and remedy production issues. This type of visibility is an incredibly strong argument for this technology.”

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Bergkvist adds to this: “The HMI indicates if anything is wrong, such as running out of caps... small things like that. The most important data it shows is the exact CO₂ pressure we’re on, in the machine and in the bottles. Using this information we can control flow valves and filling levels and make other small but helpful adjustments, all based on information from the screen. All beers are different and have their own personalities. With help from the technology, we can adjust the machine based on the beer we are bottling, instead of the other way around.

“This is the first bottling machine in this young brewery, so it’s quite a big deal for us. But what I have noticed from working with another non-automated machine is that we’re not seeing as much waste beer – or “staffies” in proper technical language – in this brewery.



Automated solutions must have negligible impact on the ‘magic’ that precedes the bottling process

“I just don’t have the time and patience to figure out tech issues,” she concludes. “My experience with technology is very limited; although I can do some basic ‘hillbilly’ constructs and some normal around-the-house type fixes. However, the program that Pontum provided us with is quite idiot proof. I have not had any problems with learning it.”

Additional Information www.rockwellautomation.com

The results mentioned above are specific to Särens fjällbryggeri and Pontum’s use of Rockwell Automation products and services in conjunction with other products. Specific results may vary for other customers.

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Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846