TECHNICAL ARTICLE

On-Machine Solutions Offer Time, Space, Agility Opportunities

2 days ago by Mike Chillstrom

New on-machine automation components are quick to install, save space, and get production facilities operational faster. These modular and highly scalable solutions allow companies to lower the energy and resources required to manufacture their products.

Manufacturers are always looking for ways to improve their production facilities, but they're often hampered by cost, time, and physical space limitations. A new era of on-machine automation components is changing the paradigm and removing some common barriers to upgrading machinery.

What Are On-Machine Components?

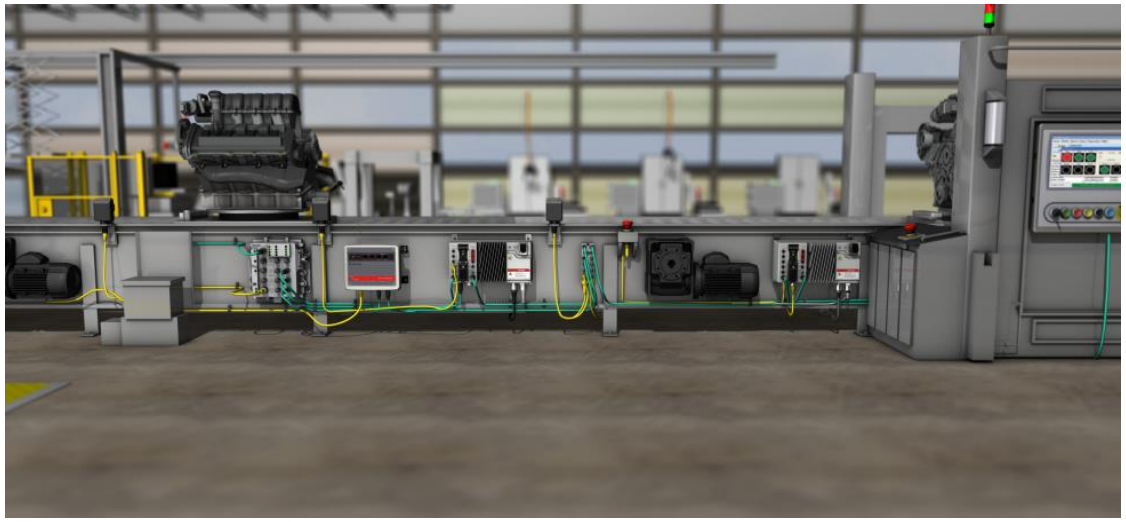
On-machine components can be any number of things, including industrial PCs, servo drives and electric amplifiers, input/output (I/O) boxes, and variable-frequency drive (VFD) motor controls. These components are designed to be mounted directly on a machine instead of being kept in a large electrical enclosure.

"On-machine solutions are less constrained by physical boundaries such as enclosure size or ridge architectures," Joe Azzolina, Rockwell Automation's senior product manager for Armor

PowerFlex, said in a February 2024 Rockwell press release.

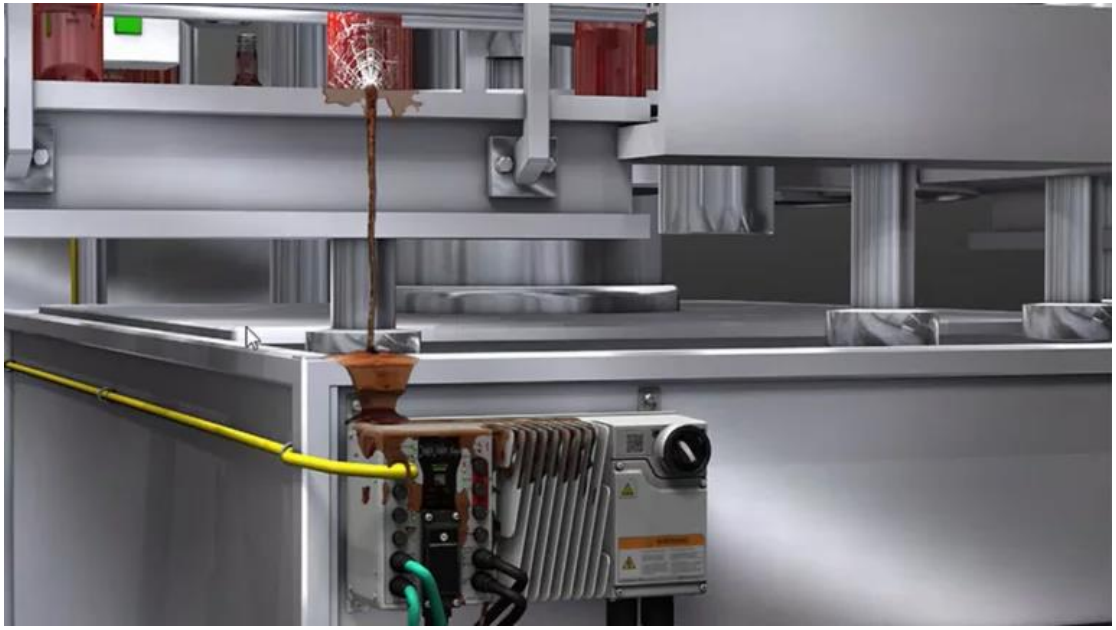
Benefits

First, on-machine solutions move controls and hardware out of a cabinet and onto the machine, which simplifies the overall machine design and saves valuable floor space in a production facility.



Rockwell Automation's Armor PowerFlex solution is located directly on the machine, eliminating the need for a standalone housing cabinet.

Second, installation is easier and requires less cabling and terminations, a substantial cost savings. In fact, cabling requirements may be decreased by 90 percent, according to Rockwell Automation. Many on-machine solutions are designed for harsh, grimy environments, where reducing installation time is most critical.



Some on-machine solutions are designed to withstand grimy, harsh environments and can be washed down with water.

Third, proactively identifying and resolving issues should be more efficient because the components are easily accessed by production workers. As explained in The International Journal of Advanced Manufacturing Technology, on-machine solutions "offer the potential opportunity to either salvage or discard defective parts at an early stage of their production, avoiding wastage of time and resources encountered, particularly in the case of high value-added parts in low production volumes."

Fourth, on-machine components are more modular, scalable, and agile than traditional systems, allowing faster and easier changeover as manufacturing needs evolve. "[On-machine solutions'] modular design is easier to achieve, and [original equipment manufacturers] OEMs and end users alike can be adaptive and build for the future," said Rockwell's Azzolina.

Value Over Lifetime

Manufacturing sometimes falls behind sourcing, packaging, and transportation when it comes to sustainability, yet on-machine solutions allow companies to lower the energy and resources required to manufacture their products.

Not only are there fewer control boxes and less cabling, but the relatively quick installation time of on-machine systems means manufacturing facilities can reach operation faster and provide more value over the course of their lifespan—something both engineers and business leaders can get behind.

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