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Digitalization in packaging... time to move

Machine builders and end users alike must integrate the new technologies to remain competitive and prosper

We all hear about the industrial internet of things, Industry 4.0, big data, cloud computing, edge technology and other buzz words. Sometimes, it gets overwhelming for the contract packagers and converters, as well as the machinery and equipment builders. While these terms have very different meanings, they all point in the direction of a growing trend that will reshape our industry, in the coming decades. Actually, that redirection is upon us now and the best word to summarize it all is digitalization.

From the first design of a new bag, box or pouch, to the initial concepts of a machine design or line adaptation, those of us in the industry must take a new perspective on the entire process, one that focuses on utilizing all the latest technologies.

Let's look at just three.

First, in the design stages of a new package, every factor must be considered to achieve the maximum efficiency in its production. We do not here address the package graphics or other human response triggers that play such a key role in our world. Rather, we are referring to the materials of package construction, the handling mechanics, the construction and assembly of the item, the filling or loading strategies, the closing or sealing techniques and finally the palletization, wrapping and overall materials handling of the finished goods. Gone are the days of trial and error, with endless prototypes and test runs. With computer simulation, cloud-based data analysis and the science of mechatronics, it is today possible literally to test a package's entire assembly and handling in a virtual environment.

Next, a digital twin of the machine to make the item is produced by further enhancements to the software and controllers now available from forward-thinking vendors and often their solution partners, who bring product-, market- or material-specific expertise to your company. Working as a team, the machine is entirely designed, tested and run in a production environment, before the first piece of sheet metal gets bent.

This is not a pure math model, it is an actual, running version of the machine, with all the mechanical, electrical, temp, pressure and speed factors operating in actual working conditions. Such a process anticipates the bottlenecks, changeover time delays, material strength-to-line speed considerations and other physical challenges, all in a simulation, with only a PLC running and recording the data.

Finally, you have your data streaming. What happens to it? Who should see it? How can you prioritize its importance, based on the individual needs of the dashboard viewers? Clearly, management, product designers, production supervisors, operators and maintenance personnel all view the data in different ways. We suggest you look to edge technology to capture the data with the least latency times possible. Ask your suppliers about this exciting evolution in our world. Next, use the data from the controllers and even the drives on your line to communicate machine-to-machine and to the cloud or other data portal. Packagers and converters will benefit from the line comparisons and shift performance data, all gathered in real time.

The first step on this road to digitalization is to speak with your trusted suppliers or your local solution partner, who knows the technologies available and knows your operation, whether you are a builder or end user of packaging equipment. To delay this process any longer is to risk falling behind your competition. That's one business practice that can never happen. This process need not be nor will it be an overnight happening. It is a gradual transition, one you can implement in stages, through the various software and data collection solutions now available. Start the conversation today and, most importantly, get your team onboard. Trust them to give you and your suppliers input from their unique perspectives. A better solution will result, on your journey to digitalization in your operations.

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Siemens Industry, Inc.
100 Technology drive
Alpharetta, GA 30005

For more information, please contact
our Customer Support Center.
Phone: 1-800-241-4453
E-mail: oem.industry@siemens.com
usa.siemens.com/oem-solutions