

# PACKAGING STRATEGIES



ELEMATIC 3001 XL  
Wrap-Around Case Packer

Flexible machine  
for big formats.

[syntegon.com/2P](http://syntegon.com/2P)

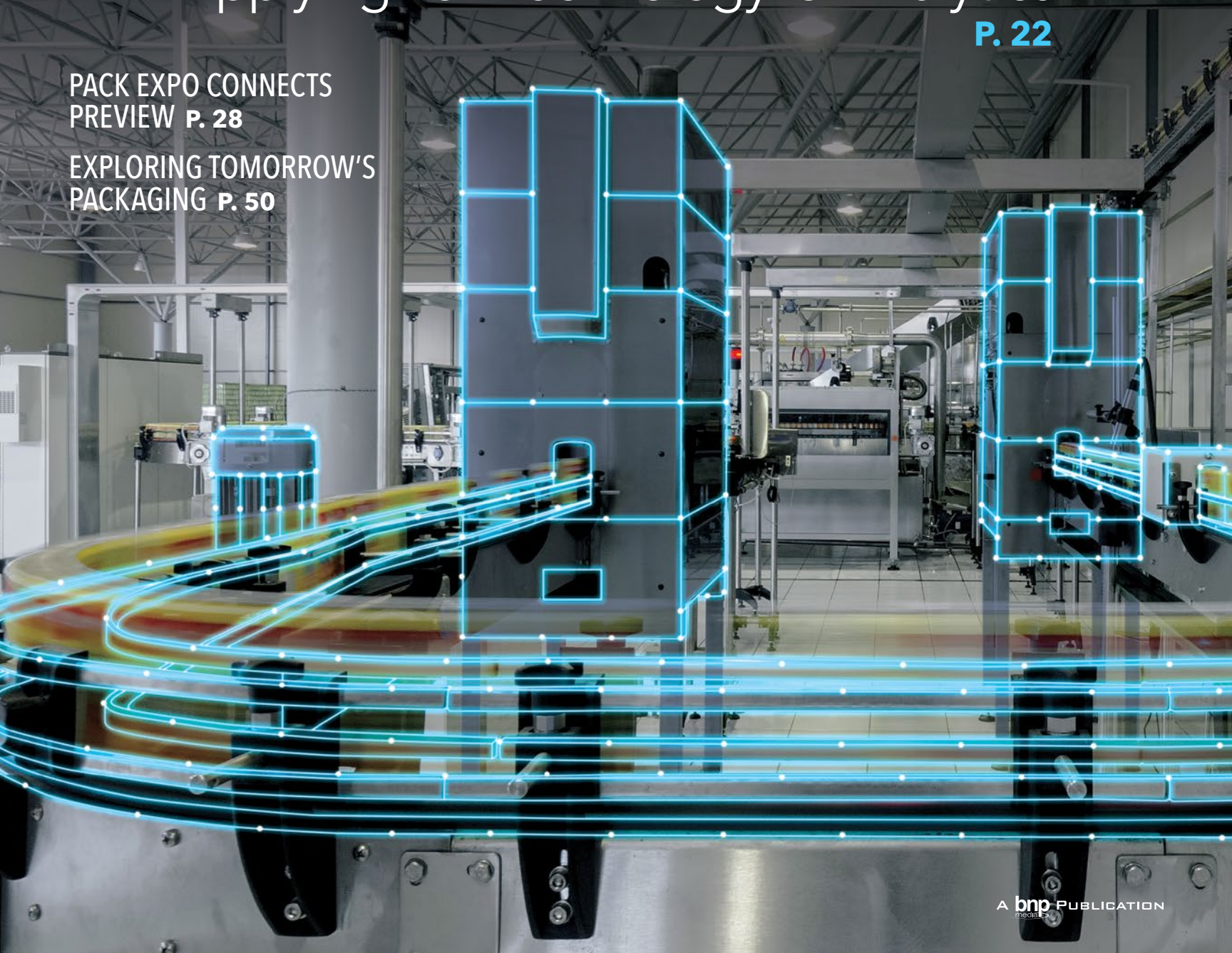
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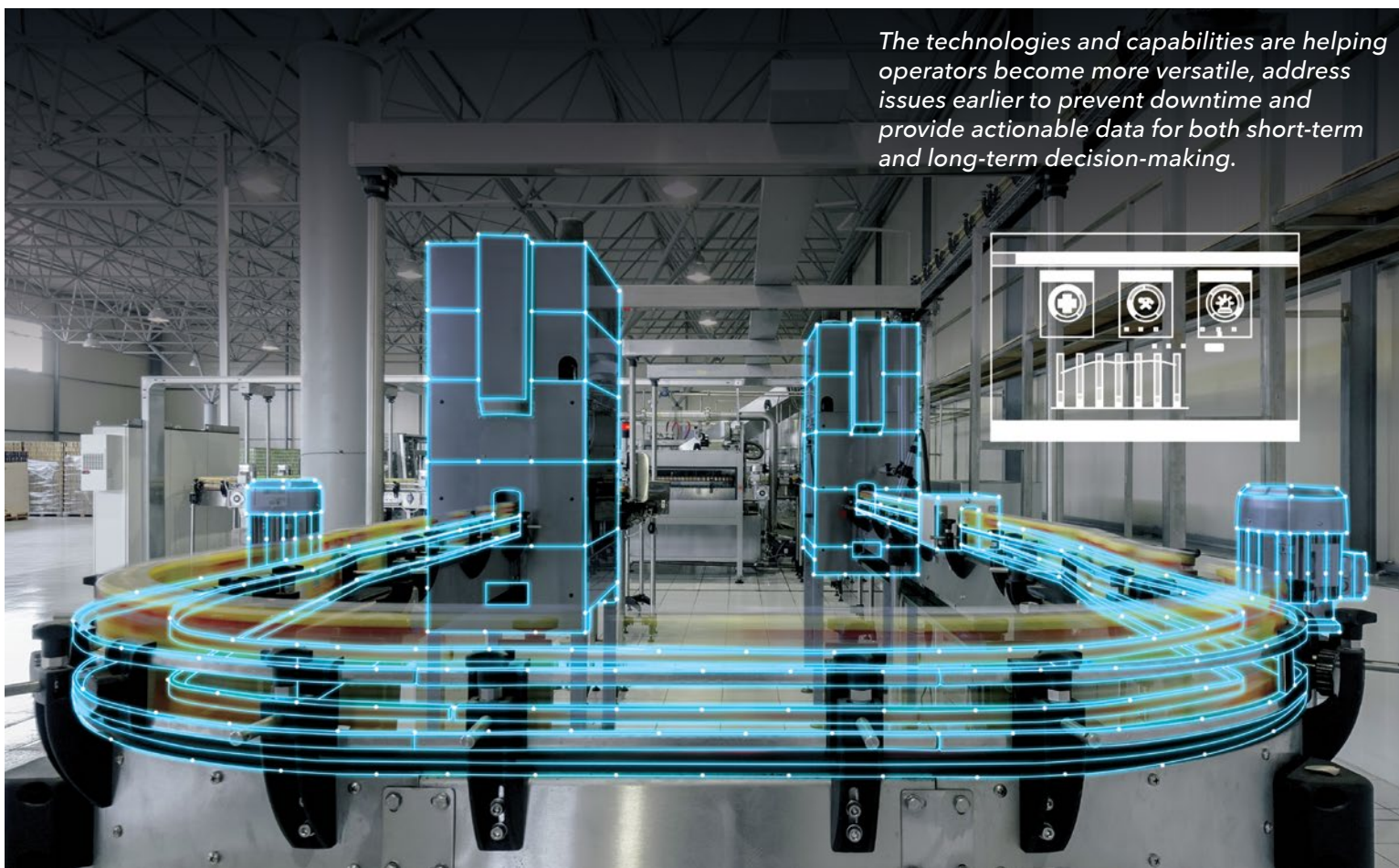
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# ACTIONABLE DATA: APPLYING IIoT TECHNOLOGY AND ANALYTICS

**Data analysis techniques can help operators spot issues faster, earlier to prevent downtime and adjust as needed to ensure efficient operations.**

**BY ZACH GUSTAFSON AND MARCUS PARSONS**



*The technologies and capabilities are helping operators become more versatile, address issues earlier to prevent downtime and provide actionable data for both short-term and long-term decision-making.*

**A**cross processing and packaging operations, manufacturers are investing time, resources and new design approaches to leverage digital technologies in their operations. The goal: Transform the efficiency, productivity

and versatility of those systems to help companies be more competitive and able to respond to fast-changing market needs.

These manufacturers are working with original equipment manufacturers (OEMs) and technology suppliers to implement complete Industrial Internet of Things (IIoT) solutions. They are using these technologies

to collect a new array of system performance data from their machines and provide them with smart, efficient ways to turn that data into actionable insights.

A broad range of automation technologies now incorporates IIoT and edge analytic capabilities, with analytics taking on increasing importance. Data analysis techniques can help operators spot issues faster and earlier to prevent downtime and adjust as needed to ensure efficient operations.

## RIGHT INFORMATION AT THE RIGHT TIME FOR BETTER DECISIONS

Access to data is the number one factor influencing IIoT and smarter factories. OEMs building and supplying packaging machines are selecting components and subsystems based on their ability to fill this need. One example of this kind of technology is the [Branson DCX Series](#) of automation power supplies from Emerson. Along with patented power supply circuitry that provides significant benefits in performance and consistency, the DCX system supports real-time data transfer via EtherNet/IP and Profibus fieldbus protocols.

In addition, DCX supports remote control and diagnostics via a standard HTML-based communication interface, so users can perform remote product setup, custom I/O configurations and system diagnostics. The series also supports the demand for higher packaging throughput via multiple power levels, tiered control levels, a standard DCX-HD (high-dynamic) option, and Balun technology, which expands the weld area and can also help increase throughput.

IIoT technologies can build upon basic automation, leveraging plant floor data from disparate sources to deliver real-time



*Features of the DCX family of automation power supplies include energy mode, a web interface for remote control, password protection, weld quality limits and an EtherNet/IP fieldbus port for control by a PLC or over a network for real-time distributed control.*

insights and guidance. Analytics techniques to provide that real-time insight include first principles, failure mode and effects analysis (FMEA), statistical models and machine learning, all to help producers avoid line upsets, quality issues and downtime.

The ability to predict problems before they occur results in less unplanned downtime, while real-time root cause analysis provides decision support for the appropriate corrective actions. Automated troubleshooting and analytics help to reduce maintenance time, increase equipment availability and improve productivity.

Emerson recently launched [Plantweb™ Optics Analytics](#), which collects and interprets operational data that is normally scattered across a manufacturing plant, using artificial intelligence and machine learning techniques to detect abnormal system behavior in a



*The Plantweb™ Optics asset performance platform gives plant maintenance a workers immediate access to a collaborative environment, providing real-time diagnostics, analytics and live remote assistance; the platform now incorporates augmented reality capabilities.*

single tool. It supports detection and provides root cause analysis in real time to recommend corrective action, which helps to shorten the decision-making process.

Augmented reality can be an ideal tool for inexperienced or external maintenance personnel who are unfamiliar with the facility. Not only can it help them quickly identify the location of an asset, but it also supports virtual collaboration with internal/external experts who can be located anywhere in the world.

## CREATING THE CONNECTED DIGITAL FACILITY

The opportunity for transformational results in packaging operations through the application of IIoT technology is real — but technology is an evolution, not a revolution. Merely applying more sensors and gathering more data will not solve persistent manufacturing problems.

The connected digital packaging facility can incorporate smart technology to enable extensive data capture of manufacturing system performance. It also leverages

technologies, like [edge computing and smart gateways](#), to simplify and speed up the delivery of that information in real time, thus enabling deep dives into critical performance data.

For example, pneumatic systems feature new, intelligent options for leveraging digital information to improve performance, insight and control of manufacturing processes.

These systems feature smart sensors, digital interfaces and edge-computing capabilities

that provide contextualized, real-time data, enabling end-users to:

- Assess how much compressed air energy machines consume versus how much is truly needed in normal operating conditions. If the machine is using too much air, there is likely a leak that can be proactively addressed to reduce costs and CO<sub>2</sub> emissions.
- Capture a more complete picture of machine health. The system can detect when valves or cylinders are due for replacement, or if they are nearing the end of their useful life, eliminating unplanned downtime.

Remote monitoring is another example of smart technology that gathers crucial information in a more efficient manner to help plants stay up and running. There is increased interest in the use of remote troubleshooting tools to identify issues without someone having to be physically in the plant. For example, [Emerson's AVENTICS AF2 Flow Sensor](#) and analytics package allows

## SPOTLIGHT

plant operators can detect compressed air leaks on machines. Maintenance can check for potential leaks and can even be alerted when the air consumption crosses a specified threshold, all through an analytics dashboard that is accessible via smartphone, tablet or computer.

Analytics present the opportunity to better understand process and equipment conditions but, to be effective, requires a more complete set of data. This is achieved by deploying additional sensors on measurements not previously monitored. These pervasive sensing applications, enabled by wireless sensors and networks, help to overcome the issues of high installation cost and disruptions, enabling new, insightful data to be gained quickly and cost-effectively.

It's important to recognize that automation technology can empower workers and elevate their productivity. However, a major challenge created by broad deployment of new technologies is the need for organizations to train and upskill workers, modify work practices and maximize the return on investment while overcoming the resistance to change from within the organization. Lean manufacturing, six sigma and value stream mapping can help to eliminate or minimize low-value tasks while maximizing focus on value-added activities.

IIoT technologies, such as intelligent devices, motion control, machine control,



*The AVENTICS Series AF2 flow sensor monitors air consumption in pneumatic systems, enabling fast action if leaks are detected. It provides actionable insights to help optimize energy consumption, prevent machine downtime and reduce costs.*

edge computing systems and analytics packages, provide the right foundation and tools to help solve unique production challenges or issues rapidly, effectively and with quicker return on investment.

Packaging operations that implement these IIoT and analytics technologies should also invest time in improving their overall processes, such as how they use these new streams of data and analytics to make real-time adjustments in production, and how they apply the data to long-term decisions about new machines, markets and types of packaging. This is the goal, and ultimate benefit, that IIoT is meant to offer. **PS**

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