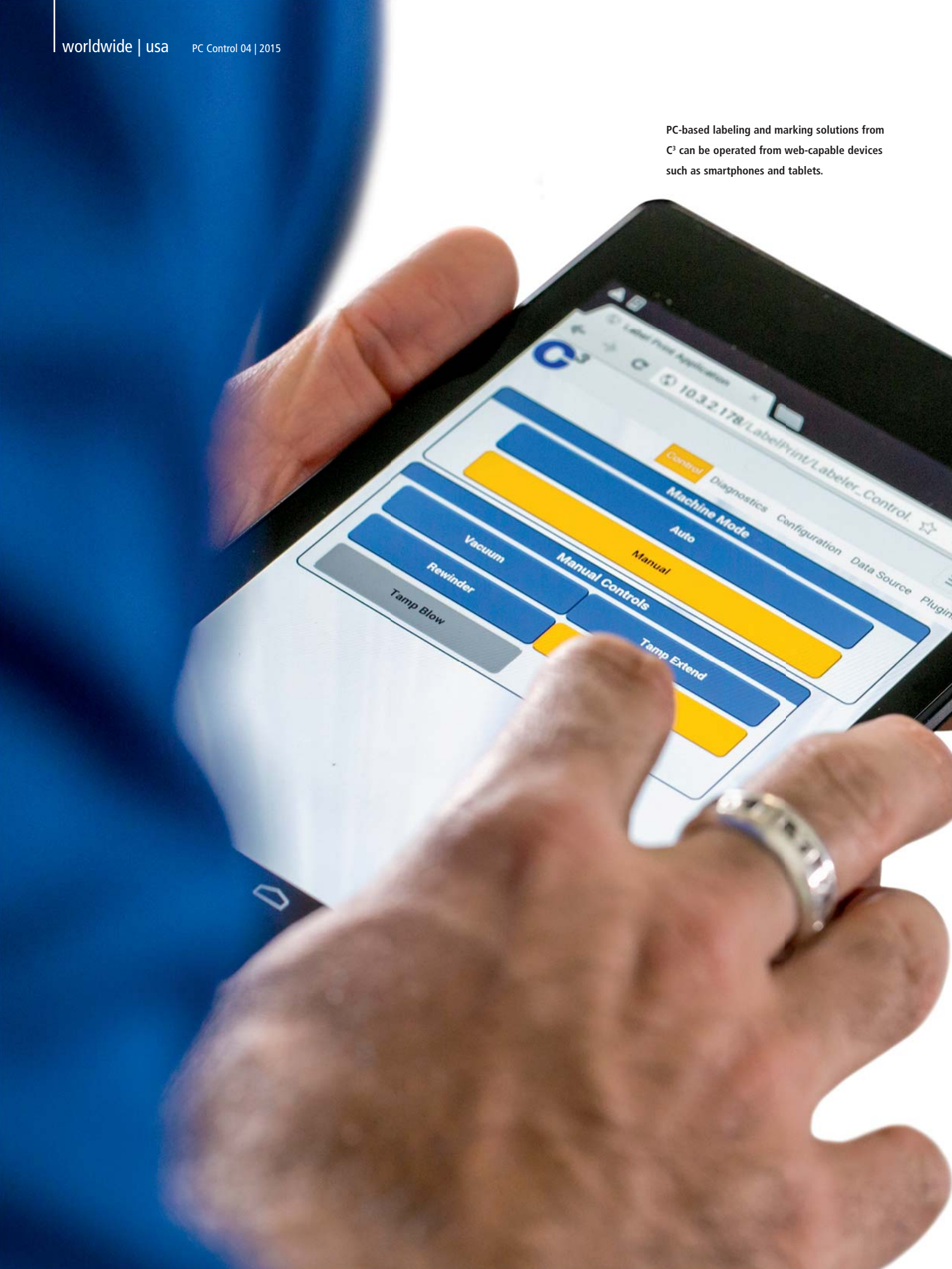

PC-based labeling and marking solutions from C³ can be operated from web-capable devices such as smartphones and tablets.

Turnkey labeling and marking solution raises efficiency and saves money

Smart Identity System connects ERP and shop floor

The development of innovative labeling and marking solutions is one of the main undertakings of C³ Corporation. Based in Appleton, Wisconsin, C³ recognized at an early stage that intelligent track-and-trace is the key to intelligent manufacturing. Equipped with PC-based control technology, the Smart Identity System developed by C³ provides comprehensive remote connectivity, enabling users to access applications via web-capable devices like smartphones and tablets.

C³ track-and-trace systems are used in many industries like foam and urethane production, the paper and packaging industry, the food and beverage industry, as well as in the finished metal products industry. "We work very closely with our customers. We want to understand the entire operation from the shop floor to the top management level and everything in-between. This enables us eliminate bottlenecks and make the whole operation more efficient," explains Joe Van De Hey, the CEO of C³.

With the company's Smart Identity System for marking products with data-intensive labels, C³ has managed to introduce a new development in the field of integration services. "Our system gives customers an accurate overview of their operation's throughput rates and effectiveness. Via remote access they can use any web-capable device to issue commands, change templates and labels, run diagnostics and access data," explains C³ application and database engineer, Drew Demerath. "The openness of the PC Control platform also allows us to adapt our labeling and marking solution to the customer's specific requirements."

PC-based control: Integrated, highly-connected control platform

The control platform of the Smart Identity System consists of a Beckhoff CX2020 Embedded PC with a 1.4 GHz Intel® Celeron® CPU, TwinCAT 3 automation software, and EtherCAT as the real-time communication system. "The Embedded PC, with its directly connected EtherCAT I/O terminals, allows us to design the system with great flexibility. This is a huge benefit, because all our applications and installations are customer-specific. The PC-based control solution also enables optimal vertical and horizontal integration. For example, linking to an ERP system is just as easy to implement as it is cost-effective," adds Joe Van De Hey. "The controller's connectivity allows you to link it to the

The Smart Identity System from C³ features extensive connectivity. Users can issue commands, run diagnostics, change templates and labels, and access data from any web-capable device.

Cloud and access it via mobile devices from anywhere as long as the customer's network is VPN-capable." C³ has also begun to implement OPC UA so that users of Smart Identity Systems can see the same data at the same time with built-in security and data encryption.

"Based on PC-based control technology we implemented a web server, a comprehensive database and a controller in a single device," says Drew Demerath. "Conventional systems can't compete with this solution because they require multiple hardware layers or separate devices. With PC Control we simply add more software layers, combine everything in a single hardware device, and sell the solution as an all-in-one, turnkey package."

Automation technology and IT convergence via TwinCAT 3

TwinCAT 3 plays an important role in the labeling and marking solutions from C³. In addition to the standard programming languages for automation applications, TwinCAT 3 offers a wide range of IT engineering tools. "The development software, the easy installation of web servers and a series of new software tools give us many options to further advance the functionality of our Smart Identity Systems," explains Joe Van De Hey. "As a result, we can embed many functions at no additional cost into the PC-based software platform, which makes the work of our developers considerably easier."

The TwinCAT 3 software libraries make it possible to implement one or more TCP/IP servers and/or TCP/IP clients within the TwinCAT 3 controller. The controller variables and/or the direct values from the EtherCAT I/O system can be recorded and saved in databases cyclically or in an event-driven manner. "With the TwinCAT 3 Database Server, C³ was able to significantly expand the history tracking and trend analysis functionalities," says Demerath. "We can see all the labels and the markings throughout a line, and it is rather easy to view what a facility has produced by the day, month or year."

C³ uses a variety of digital EtherCAT I/O terminals to connect sensors, scales, scanners and other field devices. EP6652-0010 EtherNet/IP slave terminals handle the communication with other industrial Ethernet systems. They provide a direct link to EtherNet/IP devices in C³ applications and return their data via EtherCAT.

Power through intellectual property

C³ recently installed the new PC-based Smart Identity System for a highly automated national dairy processor client. "This company can now gather data about its recipes and improve their traceability," says Drew Demerath. In the previous system, the main PLC sent requests to a computer, which then sent the print commands to the label printer. The issue was time: Since a single computer controlled all the labelers, a boxed product would frequently be missing a label because it was not printed on time. Consequently, the product had to be sent back through the system to be properly labeled. "EtherCAT allowed us to increase the labeling speed significantly," says Joe Van De Hey. "The real-time communication system makes sure that all labels are correctly printed by the time each package arrives for final processing." It also gives the company access to its entire production history. Another advantage of the PC-based solution is the system's source code protection, says the CEO: "This solution allows the customer to protect valuable intellectual property."

The hot-connect capability of EtherCAT also made it much easier to switch out print engines and consumables. "These processes could take four hours or more on the plant floor if you include the IT department's involvement with the ERP systems. With PC-based control and EtherCAT, it takes one person just about half an hour now," reports Joe Van De Hey.

Further information:

www.c3ingenuity.com

www.beckhoffautomation.com

The Smart Identity System uses a CX2020 Embedded PC running TwinCAT 3 automation software as its control platform and Windows 7 as the operating system.