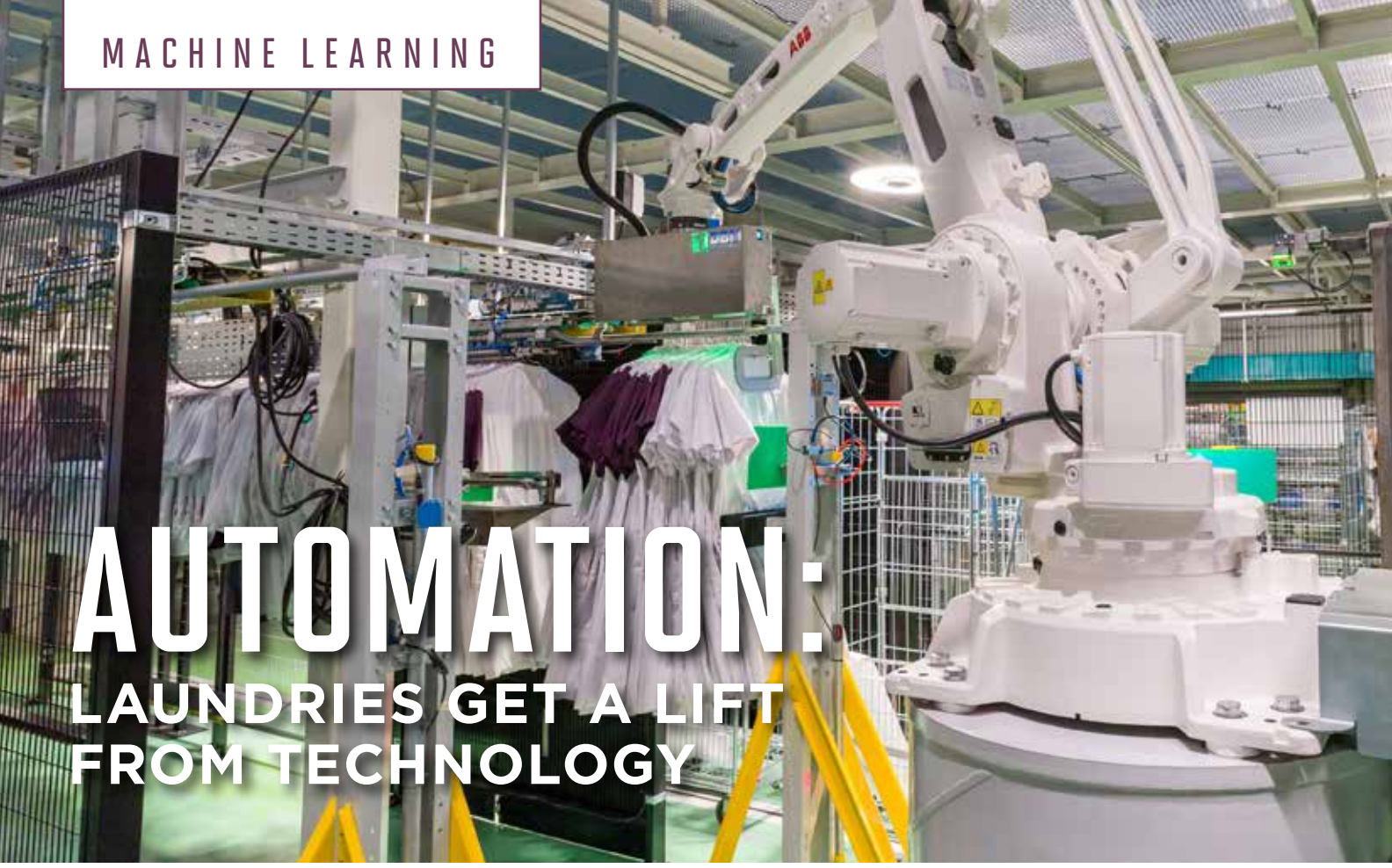

AUTOMATION: LAUNDRIES GET A LIFT FROM TECHNOLOGY

Operators outline laborsaving innovations that are enhancing quality, conservation and service

By Jack Morgan

Advances in commercial and institutional laundering typically have come in incremental steps. Rarely, such as with the adoption of tunnel washers in the early '70s, has the industry experienced revolutionary change. Today, as robotics/artificial intelligence (AI) and enhanced automation gain favor, the industry could experience a similarly dramatic transformation that helps save labor and the environment, while ensuring quality and service through technology.

Rising labor costs are a factor in driving automation as companies across North America and Europe seek a competitive advantage and lower costs. "The automation in the laundry is the future for manufacturers and for the laundries themselves," says Fabian Krause, managing partner of Coberger, Handtuck and Matten Service (CHMS GmbH & Co. KG), Rodental, Germany. "The problems associated with finding employees are getting worse. So every new development which makes doing the work easier or automates a process helps." Another European launderer, Rentex, Bolsward, the Netherlands, has moved farther than most laundries we've heard about to automate processes. The robotic technology they're using to move garments around the plant is particularly striking.

MATERIAL HANDLING MOVES

Last November, TRSA aired a webinar ("Windows on the Future of Laundering" click **bit.ly/HiTechlaundry**) on trends in laundry automation. The presentation included a segment on Rentex, a linen, uniform and workwear laundry located about 90 minutes northeast of Amsterdam. Gerard van de Donk, CEO of ABS Laundry Business Solutions, says ABS handles the software communications side of the Rentex system. Three other equipment companies work together to oversee the movement of cartloads of garments for distribution to customers. These include JENSEN Group, which employs a Metricon system to sort garments. Two other partners pull the carts on a tracking system and move the goods, using a custom-made robot that's designed to perform repetitive e-motion tasks, such as garment-container loading. The process is designed not only to save labor but to create a plantwide automation system that boosts productivity and throughput with a coordinated application of cutting-edge equipment. "The integration of such technologies in the industrial laundry industry is not just about replacing manual labor," van de Donk says. "It's about creating a synergistic environment where machines and software systems collaborate to optimize operations. The collaboration results in significant time savings, reduced labor costs and minimized human error—all of which contribute to a more efficient and profitable business model."

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INNOVATOR

TILTING WASHER/EXTRACTORS

Jelco van der Duim, production manager for Rentex, acknowledged the significant costs associated with his company's advanced material-handling equipment, but he notes that it offers numerous advantages. "Obviously it's an investment, but definitely worth it," he says. "It ends up saving us almost two people a day. But that was not the only consideration for entering into this project with our suppliers. Especially ergonomically, this is a great advantage for our employees. No more repetitive actions with hanging the clothes in roll containers. By using AGVs (automated guided vehicles), which pull a train of four roll containers, we make the work a lot more pleasant and efficient."

A key driver for the project is also the correct registration of roll container numbers for transport," van der Duim adds. "The robot scans the roll container by means of a QR code. We link the exact contents of the roll container, which is loaded by the robot to the container. This way, we know exactly what is being transported in which roll container. This also makes it clear to our customers what the exact contents of the roll containers are." The ultimate goal is to have the ability to link all data (from the laundry, transportation and the customer) to monitor the entire process. "We believe in the power of data, and the resulting insights further optimize the process and the logistics process, so that our customers can meet their needs even better."

As for North America, this scale of advanced automation is virtually unknown in laundries, although it's common in other businesses such as Amazon that process and store large quantities of finished goods. On the issue of innovations in material-handling technology, Shane Suda, VP of operations for Bay Towel Inc., Green Bay, WI, noted that he's not aware of any comparable use of robotics by laundries in North America. But he added that, "In the world of manufacturing and warehousing, I'm seeing a lot more AGVs specific to material handling."

Tom Abbett, business development leader for Spindle Robotics, Woodridge, IL, says that while the type of laundry automation in use at Rentex is rare in North America, that's likely to change soon due to shifts in technology. "They're going to hit North America," he says. "I mean, Amazon uses them every day, right?" Abbett adds that Spindle is in talks with DBM and MoveXX, two Netherlands-based manufacturers that partnered on the Rentex automation project, and others. Abbett recently joined Spindle to help the company expand robotics in U.S. laundries. While coy about specifics of the company's talks with software and hardware companies, he says a "democratization" of robotics will soon make the systems more affordable for laundry operators.

He likens the evolution of robotics in North America to the advance of personal computers in the late '90s when Bill Gates designed his software to work with any hardware system, while Apple went proprietary. Spindle is working on something similar for robotics. "We're investing in the software," Abbett says. "And the systems… and helping people be informed and make sure that the robot systems can mesh with their plant." He adds that it won't matter what manufacturer of robot you use once you have compatible software.

While the advances in robotics deployed by Rentex are important, they're not the only area where technological innovations are helping laundry operators improve productivity and ergonomics. Another is the soil-sorting and feeding/finishing sides of the business.

TEXTILE HANDLING INNOVATION

While manufacturers at trade shows regularly display prototype "robot sorters," automation generally has made limited headway in the area of soil sorting and finishing/feeding in North America and Europe. That too is changing, but recent advances have centered on incremental progress among several laundry operators we interviewed for this article. "On the soil-sort side, we moved away from counting to a bulk-sorting operation two years ago and we have seen large efficiency and throughput gains," Suda says. "We are also in the early stages of experimenting with robotic towel sorting & bagging."

Harry Kertenian, CEO of Magic Laundry Services Inc., Montebello, CA, describes the system he's installed at the hospitality launderer's new plant in San Bernardino, CA. "This is a fully automatic 65,000 square foot (6,038 square-meter) facility," he says. "It's being built out in phases. Phase I is already done." That portion of the build-out includes four ironers, four towel holders and one tunnel washer with 16, 185 lbs. (84.kg.) modules. Kertenian expects to complete the installation of a second tunnel this month. The plant is now processing roughly 50,000 lbs. and a day and soon will ramp up to 100,000 lbs. per day of bed and bath linens from hotels and resorts in San Diego and the Palm Desert region east of Los Angeles. While the system has high-tech equipment from Kannegiesser ETECH, the initial sorts are still done manually. The system uses a computer-graphic image of the item that employees drop into chutes. These lead to slings below the sorting deck. When the slings are full, they move automatically via a rail system. The finishing side features the movement of textiles via clean-side rail equipment as well. There's also a Vectura system from Kannegiesser that guides the textiles, tracked by customer from initial sort all the way to packout, thus saving labor. All sorting systems on the clean side are equipped with "pickers" that break up knotted textiles, thus making it easier for employees to reach for pieces to feed into the folders or feeders that lead to any of the four ironers.

Garo Jekmeian, senior vice president of Magic Laundry, notes that the new plant also has an advanced

textile- scanning capability on its finishing equipment that incorporates AI into its gathering of data on stains, holes and other problems in flatwork. The Quantex system from Kannegiesser automatically analyzes these defects and makes the information available to laundry management. "The camera—paired with the software—uses AI to catch stains, tears, wrinkles and misfeeds," Jekmeian says. "It uses machine learning as it takes dozens of pictures to start building a profile to allow the user to calibrate when to reject the linen. This gets tied into the Vectura system we have for smart conveyors."

While the use of AI is limited among most of the operators we spoke with, a growth area is the use of cameras in the plant to coordinate data that can help operators detect unsafe conditions or staff behavior when an AI-powered system "sees" hazards on the floor (see related article, pg. 35).

ENSURING PROPER MAINTENANCE

A question that operators frequently grapple with when considering investments in advanced technology is, "Can my maintenance team handle the routine upkeep or troubleshooting of these systems if something goes wrong?"

Paul Jewison, the general manager of Textile Care Services, Rochester, MN, who is currently engaged in a $10 million plant upgrade, says the situation is easier today, as suppliers based abroad have either improved communications with tech specialists overseas, or they've established teams in the North America that can visit laundries that need help. "I think that 99% of the time the suppliers are handling things," Jewison says of service issues today. "If they're from Europe, they handle it with their service people in the United States." Even operators with suppliers based in Asia report that they can get assistance via phone-based audio/video hookups with specialists from companies such as Sea-lion, which is based in China. Operators have told us that technical specialists from Sea-lion and other global suppliers also make regular visits to laundry clients in North America. John Lowrey, general manager of Wash Cycle Laundry, Lynne, MA, says he's satisfied with Sea-lion's installation of wash aisle and finishing equipment at the plant that opened last year. "From my perspective, the support that they gave us when we started up, in addition to when we have any issues, we can call them at 1 in the afternoon, our time, which is 1 a.m. there, and within a half an hour we have one of their engineers." Lowrey and his team use "WeChat," a popular Chinese social media messaging application that allows the supplier to advise maintenance staff to address equipment issues via audio/video as needed.

Jewison notes that another area of improvement with overseas suppliers is the ease of online ordering of parts for

various systems. Online availability of parts is now routine, and response times are generally prompt and reliable, he says. "The big companies like JENSEN, they've done a much better job of getting their parts available online for ordering," he says. "I think that process has greatly improved over the years. You can really just log in and bring your machines up by the serial numbers and the parts list. You can just make your order and give them a PO (purchase order) and electronically knock it out without having to call somebody and walk through it. That's gotten a lot better."

Two other issues center on proper training and treatment of maintenance staff so that you get experienced, motivated people with the skills and knowledge they need to work with today's technology. "I think we're very fortunate," Jewison says. "We've got a lot of long-term employees, and I think that they're very normalized to working on these feeders folders, tunnel washers and things." The industry does have a concern in that today's maintenance people increasingly require diverse skills, he adds. "I see it as a challenge in the industry because you're looking for people that have backgrounds in electrical pneumatics, hydraulics, plumbing, boilers, all this stuff. So it's always going to be a challenge to find talented folks to keep this going."

Suda adds that today's operators must target maintenance staff that can handle modern systems, including those with advanced electronics. "As equipment technology has changed, we have certainly needed a different caliber of maintenance technician," he says. "We just recently hired two electro-mechanical techs to handle such equipment, as well as planning for the future of higher-technology installs."

Surprisingly, laundries like Rentex find that even with advanced technology like its robotics system, maintenance still requires a team effort in which plant maintenance people do basic work and suppliers pitch in via phone/video or in person as needed. "The maintenance of the robots is low," van der Duim says. "Our technical department is trained to solve common disruptions themselves. In addition, it is possible for the supplier (DBM) to log in remotely and watch the event. We use cameras for this, among other things, to be able to monitor the installation in the event of a malfunction. The robot itself is subjected to maintenance annually."

RFID—FLATWORK MIGRATION

While hardly new, the use of radio frequency identification (RFID) technology continues to expand. This includes the availability of data, as well as the placement of RFID tags, not only in garments, but also in flatwork. Preston McElheney, president of Halifax Linen Service, Roanoke Rapids, NC, was an early adopter of this technology. RFID continues to pay dividends for his company. "It is amazing to me today to reflect on the changes this industry has gone through, especially in recent years with radio frequency," McElheney says. "We can talk about new tunnel washers or a new finishing ideas, but the real push today is the data." Speaking of his own hospitality/food and beverage/healthcare laundry, McElheny is now analyzing trends that his RFID data reveals. "We have realized the integration of RFID and the understanding that underlying data can tell a very accurate story regarding the 'health' of an SKU or the 'health' of a client," he says. "We have been pushing extremely hard over the past year to develop our data sets in a way where these stories speak for themselves. Remove the emotion from the equation, and you can provide a true win/win scenario to the client, to the employees and to the vendor partners. I'm in my 19th year of radio frequency, we are chipping our next color of napkin after testing our initial color for 15 months (crazy, but it works)."

In Halifax's case, today's RFID technology has matured to the point that it holds a preeminent place in the company's business strategy. "We live in a very competitive environment, McElheney says. "Cost efficiency as well as top-tier service experience is the expectation. I think Halifax is on an amazing journey at this point. We are not 'building' the RFID systems, but rather we are exploiting what story the data is telling us. Some good, some great and some downright ugly," he quips. "I tell people often, 'We are a software company that just happens to produce textiles as our 'widget.'"

While helpful for rental laundries like Halifax, RFID has a limited impact among those that deal mainly with customer-owned goods (COG). "We have the RFID system," Kertenian says. "But only at the hotels that use it." In any event, Magic Laundry's Vectura system provides information on accounts, so there's less need track textiles via RFID.

Jewison too mainly processes COG textiles, especially with TCS's close ties to the Rochester-based Mayo Clinic. "My model probably is quite a bit different than most people because my biggest client is Mayo Clinic," Jewison says. "You know, they buy their own scrubs, and I just wash and return them. That's how they're managing this. So I haven't had a reason to invest in the technology because, literally, all my customers buy their own scrubs."

While tech strategies vary from company to company, one area that is a concern for all—particularly amid today's rising utility costs and concerns about carbon emissions—is the need to save energy and water. Technology is assisting the companies we contacted to rev up their savings on these resources.

CONSERVATION WATCH

As a European operator dealing with both European Union (EU) and German regulations on energy use and CO_2 emissions, Krause says he's pleased with the savings he's attaining with

the LAVACascade system from Lavatec Laundry Technology Inc. The system is designed to save at least 50% on natural gas by recirculating heat generated by dryers. The equipment uses a three-tier system to enhance dryer efficiency, according to Lavatec. Phase I features high heat in the laundry load. In phase II, the system recaptures waste heat to maintain a consistent temperature. In phase III, the system ensures proper cooling. Each phase only takes a few minutes. The equipment is designed to save time and labor, as well as energy. Krause confirms that the system lives up to its claims, and he's considering additional efforts to save water as well as energy. "Our LAVACascade drying system is surely a big step with gas savings of 50%," he says, adding that, "We plan to install the 'HYDRO' water treatment system from Christeyns. With this system, you can reuse about 80% of the wastewater and save a lot of fresh water and energy."

Kertenian says he's attaining similar savings on water with a Kemco Systems water-recycling system with reverse osmosis equipment that he's installed in the San Bernardino plant. "We recover a good 80% of our incoming water that's recycled through there." Magic Laundry also performed a strategic feat by locating its plant near a geothermal well. That means their company—along with other entities including hospitals and the county jail—are accessing this underground resource from local authorities. The water is pumped out from underground with zero "hardness," i.e., mineral content. "We don't need to soften any water," he says. Even better, it's preheated and thus saves on natural gas. "It comes in between 110° to 120° coming out of the bedrock of the earth."

Jewison too is focused on saving energy and water in his newly refurbished plant. He soon will install the Vis-Tex™ system from Gurtler Industries Inc. on all three of TCS' new tunnels. The Vis-Tex technology uses UV light and an advanced oxidation process to treat press water for improved cleanliness and stain removal. Jewison estimates TCS' overall water use is currently just under .5 gallons per lb. Adding the Vis-Tex system to the tunnels could lower that figure significantly, he says. "You put the Vis-Tex system on, it will recover up to 50% of that water," Jewison says. With Vis-Tex, he predicts TCS' gallons per lb. rate will range from .27-.29.

'IMAGINE THE POSSIBILITIES'

While robotics appears to offer huge opportunities for laundries to save labor and improve efficiencies, the prospect of expanded AI use is another potential source of progress, beyond the safety monitoring noted above. Rentex, for example, is weighing using AI-directed cameras in the wash aisle. "Rentex has not yet made use of AI," Jelco says. "But it is looking at the possibilities to do so. For example, our supplier of the X-ray scanner is investigating using AI to better detect pens (in pockets)."

Krause adds that AI has vast potential for improving laundry operations. "I think AI will impact nearly every part of our daily life, and that we can't really imagine all the possibilities and risks with this technology. If AI is used the right way, it can improve every part of a laundry's operation."

Only time will tell whether AI or similar innovations will revolutionize or bring gradual changes to linen, uniform and facility services companies. In either case, laundries could get a lift from technology in terms of competitiveness, plus improved efficiency, safety and environmental impact. TS

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