The FUTURE of AUTOMATION is Here

BY RANDY SOUTHOLDER

IN AN INDUSTRY THAT has traditionally been slow to adopt advanced technology, automation is increasingly becoming a must-have for textile care services companies large and small. A variety of factors are driving a renewed interest in machines and software that can make operations efficient while reducing costs.

Levels of automation vary widely within the industry and even within plants. More operations are incorporating overhead monorail systems and conveyors that deliver textiles from one area to another. Small piece folders, linen separating machines, and automatic spreaders/feeders are also becoming increasingly popular. Thermal oil ironers that run at higher temperatures and faster speeds are more common. So is scanning equipment that can detect tears, stains, and holes in linens.

Automation is creating a faster pace of operations while reducing the need for human workers to handle materials. These advances are increasingly becoming a vital component of the economic health of the operation. "If you aren't up-to-date on what's out there, staying on top of the new developments, you'll be left in the dust," says Jacob Zahler, COO of CleanTex, a provider of linen, linen management, and laundry services for the healthcare industry.

While other industries have moved quickly to automate processes, laundries have often held back due to concerns over costs and a lack of hard data about the service records of technology and software. Now that's changing.

While data on the percentage of laundries that have automated their processes is hard to come by, the number is clearly higher than in years past and getting higher all the time, according to experts. "We have seen more companies willing to spend on automation than there have been in the past," says Chip Malboeuf, president of Turn-Key Industrial Engineering Services, Inc. "There are older plants that encounter more challenges attempting to automate but are willing to invest in automation, and newer plants are eager to integrate the automation while designing a new plant."

Automation of commercial laundry facilities is being driven by the rising costs and availability of workers and competitive pressures within the laundry industry. "It's the labor market that's driving a lot of these decisions," says Malboeuf. "Companies are finding it's hard to get people. We're not a sexy industry so once they get (new employees) the question is will they stay or go? The level of automation has to improve and has got to increase to mitigate this problem."

Like other industries, companies are being forced to come to terms with a shrinking workforce. Long-term employees are getting closer to retirement, and often younger employees are hard to find due to perceptions about working in a laundry. Competition in an industry that many regard as a commodity service also demands more efficiency that doesn't depend on the whims of the labor market.

"Labor is the highest cost for the laundry, and the only way to make any headway is if you're constantly investing in your organization," says Zahler. "The laundries that don't invest and don't constantly put resources into their operations pretty much can't compete."

Larger operations in particular are seeing the advantages and the necessity of automating processes, such as material handling, processing, and moving product through the plant, and even examining linens and other items to ensure they are stain and damage free.

"We're increasingly focused on more automation," says Ron Graham, director of product & service innovation at K-Bro Linen Systems, which specializes in meeting the needs of healthcare, hospitality, and other commercial business sectors. "The available workforce is shrinking over time due
largely to demographics and the draw of other industries seen by young people as more appealing or ‘glamorous’ so to speak.”

As the overall economy gains strength, the available workforce contracts even further. “These combined forces leave us feeling quite strongly that automation is a key ingredient to long term success,” explains Graham. “It’s also our hope that increased automation raises not just our status but that of our industry.”

Historically, laundry plants have depended on immigrants who were more willing to take entry level jobs to gain a foothold in their new country’s economy. Now even new immigrant families have higher expectations for the employment opportunities for the younger generation.

As more companies market automated laundry systems, the cost of bringing automated processes into the plant has declined. “I think we’re now at the point where the cost of automation, robotics, software, and artificial intelligence has come way down making autonomous processes obtainable,” says Zahler. “It’s an opportune time to try to automate and streamline operations where feasible.”

The more automated the processes, the less human hands need to be involved in getting a product from one point to another. “Eliminating any and all human touches makes it a cleaner process from a hygienic standpoint. We’ve worked hard to achieve and maintain Hygienically Clean Certification,” explains Zahler. “This is especially true of linens and medical wear that’s in direct contact with patients.”

Automating a process also provides efficiency gains by reducing the chances that a worker will mistakenly send an item to the wrong customer. “The key to success is making sure you have a consistent uninterrupted flow of linen and that you do not have bottlenecks because of design flaws or weaknesses with any of your systems,” says Rocco Romeo, CEO of HLS Linen Services, which provides linen and laundry service to acute care hospitals, long term care, rehabilitation centers, and mental health facilities.

In planning for automation, companies analyze their current operations and determine if the facility can handle the projected volume and, in turn, grow those numbers in the future.

“When we designed this plant, we were shipping 18 million pounds and we are now shipping over 50 million pounds,” says Romeo. “We had to think to the future and envision our growth with automation that would allow us to grow as we hit each milestone along that journey. Automation allowed us to exceed our expectations. We have to always look ahead to designs or automation opportunities that are out there.

This planned expansion enabled the plant to ramp up volume dramatically over time. To make that goal a reality, the company had to know where additional equipment was needed and how it would be installed.

The importance of material handling systems and pre-designing requirements to those systems is critical to ensuring that growth is managed,” says Romeo. “We knew exactly where we were going to add clean and soil side rail if and when our volume increased. It’s very important as part of a planning process that your
layout and your overall flow and design considers future growth potential.”

The secret to effective automation is tackling one process at a time, according to Zahler. “We’re in the process of putting up a new plant as we speak,” he explains. “Our approach was to mimic successful material handling companies such as an Amazon or FedEx. We went out of our traditional vendors in order to achieve our desired result. Our approach was to change the mindset from a ‘push’ plant to a ‘pull’ plant.”

Expectations for return on investment (ROI) for new equipment and automation has also changed. When labor was abundant and not as costly, a three year payback wasn’t an unusual expectation. However as recruitment and retention become more challenging over time, ROI expectations are viewed over a longer time horizon.

An important consideration for companies adopting automation is gaining support and buy-in from workers. This process is easier in new “greenfield” construction where workers are coming in without expectations of how “it used to be done.”

One factor that has reduced anxiety about automation is in most cases it hasn’t resulted in layoffs among existing personnel. Instead it has reduced the need for new workers as production has expanded. “When you are dealing with staff, it’s best to communicate with them exactly what is going on, what equipment is coming and what’s happening,” says Romeo. “Usually by the time it arrives, all the negative things they think will happen do not and the transition goes smoothly since staff know about it and will make it work. The automation has allowed us to grow while minimizing our overall labor costs through that growth.”

Over the last several years, K-Bro has built several new plants and hasn’t “struggled with the question of trying to change old habits,” according to Graham. “In the context of a new plant, the workforce is mentally prepared for much change, so it presents a rare opportunity to push the reset button so to speak.”

The company has seized these opportunities to install all the standard automation features such as spreader feeders and folders. It’s also provided opportunities for testing new forms of technology that may not have been tried in its other plants.

Laundries must look to the future, and automation plays a vital role in offering more efficiency and longer life to facilities. When HLS Linen Services was moving from a 34-year-old plant to an entirely new facility, we considered how automation could reduce the space needed for operations.

“We wanted to ensure the layout of the plant was as efficient as it could be so we could take advantage of the entire footprint we had planned,” says Romeo. “I’m a firm believer in plant layout and design and using automation to ensure that linen and material handling becomes an important part of your layout. It’s not just about the equipment purchase.”

The overhead monorail system plays an important role in materials handling. Laundry bags suspended from the ceiling affect the entire flow and efficiency of the plant. From the time linen arrives in the plant until it goes through the tunnel washer and dryer, and then to the sorting and processing area, there is a reduction in labor. Materials move faster and more efficiently and without taking up room on the floor. The suspended overhead transport system becomes something almost like a “second floor” for the laundry. “Basically, I call it ‘robotics in the air,’” says Romeo.

The plant’s conveyor systems represent another form of automation for plants. Linens are moved through the facility from the sorting system to the dryer to the finishing department.

“In terms of ironing lines, we use sheet pickers that also assist in material handling and help with overall output,” says Romeo. “They also are significant in (promoting) safety for our staff by reducing repetitive strain injury and also allow them to produce quicker.”

We use corner-less feeders that allow us to increase output through use of technology in corner-less feeding systems.”

Conveyors present items to the operators on the clean side of the plant – usually one item at a time.

“We’re also using a lot of conveyor systems on the back end of the process beyond the ironers and small piece folders,” says Graham. “We’re taking those goods away by conveyor so they’re presented more ergonomically to the shipping staff or the cart make-up staff for packing into carts.”

CleanTex uses automatic folding robots to process scrubs and uniforms. The uniform is hung on a smart hanger with an RFID tag code and at that point goes through a steam tunnel. Depending on the classification and what type of
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finishes are required, the uniform then goes either to an automatic folding robot where it’s automatically fed into a machine that folds, packages, and seals it ready for delivery, according to Zabler.

The ultimate goal of automation is to create a “smart laundry” in which processes are streamlined and highly automated with a minimum of manual processes. The use of software that can handle at least some of the decision making of human operators is beginning to take hold within the industry.

The company is seeking to integrate as much technology and in particular artificial intelligence into its operations as possible, according to Zabler. “By so doing, you’re able to control process and eliminate as much human error as possible.”

One critical piece is a staffing dashboard that enables managers to track workers and provide real-time information on who is available and then dispatch them to the areas where they are most needed. Graham notes that his company’s plants are using a cockpit system that provides real-time information to track- and trace the entire laundry process while providing a wide range of production statistics.

“It’s a fine line between setting reasonable production targets and making them so extreme that production employees can’t keep up with them,” says Graham. “So nobody is required to achieve results that the production management team can’t meet themselves.”

One area that has proven harder to automate than others is in finishing where large numbers of workers are needed. “We haven’t figured out robotics that are economical enough to have automated feeding equipment, but the technology is getting better with the feed rates on ironers and small piece folders,” says Malboeuf.

“Laundries typically have a lot of labor in the finishing and cart loading areas. Automation in these areas is where you can reduce dependency on labor. Washroom automation is also an area where laundries can improve ergonomics and washer turn times, thus reducing dependency on labor and improving throughput.”

Automation is also being driven by the trend of large equipment manufacturers acquiring companies with specific technologies. The JENSEN-GROUP, a major producer of industrial laundry machinery, has been investing in laundry robotics and AI. It recently acquired a 30 percent share in Invatec ApS, a Danish company that manufactures high-end heavy-duty laundry products.

“Vendors are looking through acquisition to acquire the knowledge already developed in another industry.

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“The more automation you put in, the more your engineering team will have to be knowledgeable and aware of what makes a system run,” says Zahler. “From an engineering perspective, you have to have more education and more detailed schedules, making sure you’re covering everything on the maintenance side.”

While automation offers vast opportunities for increasing economy and efficiency within laundry operations, no technology is flawless. Sometimes systems fail and software goes awry. When that happens, it’s essential that companies are prepared to get their operations back up and running as quickly as possible.

“We make sure we have a contingency plan – A, B, and C,” says Romeo. “You need to have strong contingency and back-up planning. You need to make sure you are carrying the proper critical parts inventory to make sure that when one piece goes down, it doesn’t affect your operation. Make sure you have redundancy in your operations as well. If one piece of equipment or one lift in your rail system fails, it’s important that you ensure it does not cripple your operation.”

Software problems can often be diagnosed remotely by the manufacturer. Service contracts that include regular inspections and upgrades are a necessity. When it comes to the future of technology, laundry executives are looking for a variety of improvements in systems. These include better scanning systems that can detect holes and stains on both sides of items.

“One of the areas on the horizon is in production automation where I can actually schedule a plant with a production plan,” says Malboeuf.

Another area ripe for improvement is a system to automatically load carts after the items leave the ironer system and finishing equipment.

“I think there are some automation capabilities there that can better utilize the cube (container) in a building,” says Malboeuf. “If I can store bundles of sheets 20 feet up in the air and automatically go pick them and fill a route based on what’s in my inventory, that would be a huge improvement. The technology is there. It comes down to the function of return on investment and implementation for our industry.”

As automation technology has advanced, so have the attitudes of companies. Today, automation is the “must have” feature of the modern commercial laundry.