



Rentex: Lending a Robotic Hand to Laundering

Dutch healthcare laundry integrates automation to aid staff, boost productivity in textile processing

By Jack Morgan

Above: A view of the packout area in the Rentex plant in Bolsward, the Netherlands.

How many injuries have you seen from employees pushing carts of laundry around a plant? Rentex B.V., a large healthcare launderer in Bolsward, the Netherlands, has leveraged technology to lower these risks, while improving efficiency and delivery accuracy with an automated system of garment loading and cart distribution.

'Power of Data'

Jelco van der Duim, production manager for Rentex, recently completed an automation project with a quartet of vendors, including two Dutch robotics firms, plus sortation equipment from **JENSEN GROUP** and tracking/route-accounting technology from **ABS Laundry Business Solutions**. Rentex's effort to partially automate the movement of carts was designed to help staff, while at the same time boosting throughput. The need for speed and precision in

in the plant is reflected in a slogan posted on a wall that urges staff to *"Doe de was de deur uit!"* ("Do the laundry and get it out the door!"). But automation means more to Rentex than faster throughput. "It ends up saving us almost two people a day," says van der Duim of the system installed just over a year ago. "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) made by Movexx, which pull a train of four roll containers, we make the work a lot more pleasant and

efficient," (click bit.ly/RentexRobots to see the system in action).

Another effect of the new technology is its ability to ensure accurate deliveries to the plant's customer base across the Netherlands and Germany. "An important driver for the realization of the project is also the correct registration of roll container numbers for transport," says van der Duim. "The robot scans the roll container by means of a QR code. We link the exact contents of the roll container (i.e., a cart), which is loaded by the robot into the container. This way we know exactly what is being transported in which roll container." Healthcare clients benefit from the system as well. "This makes it clear to our

customers what the exact contents of the roll container are," van der Duim says. He adds that automation is a step toward better management of textiles across the business. "Ultimately, the goal is to be able to link all data (from the laundry, transport and the customer), in order to better follow the complete process. We believe in the power of data, and the resulting insights further optimize the logistics process, so that our customers can meet their needs even better."

One concern that U.S. laundry operators often voice about automation is whether their staff can maintain these systems. In Rentex's case, van der Duim says they have the resources necessary to keep the

Below: Robotic innovations: (l/r) In operation for a about a year, the automated guided vehicle (AGV) moves carts slowly along a track in the floor; employees load textiles according to a manifest; the robot "arm" drops down to grasp racks of garments. Then it places them in carts for movement to packout. The program featured a collaboration among plant managers and four vendors.



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system running smoothly. “We have a maintenance crew of 13 people with all kinds of different specializations,” he says. “Ninety to 95% of the maintenance we do ourselves. Sometimes you need a specialist to do something. But it’s all done internally.” If necessary, the vendors, including the robotics specialist, DBM Industrial, can observe the equipment via video and offer guidance to maintenance staff. By and large, maintaining the system is relatively simple, van der Duim says. “The maintenance of the robot is low. Our own 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. By default, the robot itself is subjected to maintenance once a year.”

To help keep its maintenance staff at full strength, Rentex offers an apprenticeship program to high school and college-age prospects, says van der Duim. Students begin training on the floor, learning about systems and equipment from full-time staff. After six or seven months, Rentex will test their skills to see if they have greater aptitude for electronics or mechanical work. It takes about 18 months to complete the training, he says. The plant currently has four apprentices, one on

the management side, and three in maintenance, van der Duim says.

While Rentex’s maintenance department is meeting expectations, hiring and retaining a sufficient number of production employees poses challenges. “Besides getting technical people, it’s difficult to get people on the working floor,” says Wiljan van den Hoven, who heads up the company’s technical department. “That’s the other thing you have to face.”

Rentex currently employs 450 people. They work two shifts, processing 1.1 million lbs. (498,000 kg.) per week of rental healthcare garments and flatwork, as well as personal laundry for nursing home residents. Built in 1977, the multilevel laundry occupies 226,000 square feet (21,000 square meters). It’s located in a suburban industrial park about 72 miles northeast of Amsterdam. Using automation to reduce physical labor—coupled with a five-day workweek—helps with retention. The plant is also clean and well organized. Management uses a 5S system, which is part of the Japanese “Lean Manufacturing” model that directs staff to: **Sort** (remove unnecessary items); **Straighten** (organize and arrange items for easy access); **Shine** (clean and maintain the workplace); **Standardize** (establish consistent practices); and **Sustain** (continuously maintain improvements). In practical terms, the use of 5S at

Rentex means “Everything having a fixed place on the work floor, and no more stock than is strictly necessary in order not to disrupt the process,” van der Duim says. We got a first-hand look at Rentex operations during a walk-through of the facility earlier this year.

Plant Tour

Founded in 1913 by Thomsas Thomas Mulder, Rentex today is led by fourth-generation executive Titus Friso Mulder. He serves as managing director. Initially operated under the name Florence, the company has undergone numerous changes in its 111-year history. In the 1970s, it adopted the name Rentex as more than 20 smaller laundries joined forces to serve the Dutch health-care market. While the company is family-owned, its customer base is largely government-run hospitals and a few clinics. The nursing-home side of the business—including the processing of personal clothing of residents—takes up a smaller segment of the throughput. Some of these nursing homes are privately operated. Hospital census numbers in the Netherlands and Germany are generally steady or rising, says van der Duim. In this part of Europe, small or mid-size hospitals are tending to consolidate into larger facilities.

That’s good news for Rentex because the company is well equipped to serve large customers, he says. Our tour began in the soil area on a lower level near the back of the plant. Here we saw lines of “cages” of textile goods (all metal carts), ready for sorting and processing. Some cages held loose items; others had plastic or reusable bags. The textiles are weighed, scanned electronically for foreign items such as pens, and dropped onto a conveyor to the sorting area. We saw two large boxes filled with pens that staff had recovered from garments, thus diverting this waste material from the wash aisle.



Above: (from top) a view of the plant's conventional wash aisle; employees feed garments into a sortation system; a view of the plant's chemical-injection system.

Nearby, employees sorted individual items and dropped them into one of two lines of 10 or more chutes. When full, a signal from the rail system moves the slings to a ceiling-storage area. There, they await processing in one of seven **Lavatec Laundry Technology** tunnel washers. When ready for processing, the computer sends the goods to an upper level where the tunnels are located. This equipment ranges from 9-20 compartments sized at 50 kg. (110 lbs.). **Christeyns** provides the plant's laundry chemistry. Clean wet goods emerge from the press at the end of each tunnel. Next, the textiles move by conveyor to any of 26, 60 kg. (132 lb.) **Lavatec** dryers. The plant's conventional wash aisle includes several **Girbau** washers of varying sizes. These are used for small lots and stain re-wash. There are also a number of pony dryers from various European manufacturers.

Moving to the finishing area, we saw the plant's three ironer lines. There are two **JENSEN** ironers: one for large pieces and a new "combination" ironer for small or large pieces. That ironer was installed in September. The third ironer is a small-piece machine from **Lavatec**. All three ironers are equipped with feeding and folding equipment, plus small-piece folders, primarily from **JENSEN** and another vendor. After finishing, employees place goods onto bulk carts. These items are then placed into cages pulled by AGVs or "smart electric tugs" that move across the floor. The manifest generated by **ABS** determines what goods go in the cart. We watched as these vehicles rolled slowly by on tracks set in the floor. They make a series of preset stops to allow employees to add textiles, as directed by the product list from **ABS**.

A similar process takes place on the garment side, with the addition of an automated arm that lifts racks of garments and places them into carts automatically. All

work garments are fitted with radio frequency identification (RFID) tags, van der Duim says. After washing, employees place clean garments onto hangers for movement via a **JENSEN** Metricon system for sorting. While van der Duim would like to automate this operation, it's not yet feasible to do so. "Hanging is still a manual process," he says. "I don't see how we can automate this in the short term. The biggest challenge in this is the clothes that have been thrown inside out in the wash. This is not possible for a robot to recognize and then recover. Perhaps this will be possible in the future. But for the time being we will continue to do this by hand."

Once the employees have hung the goods, the automated system takes over. We watched through safety fencing as garments moved down a track, pulled by an AGV. Then a robotic arm swoops down—"deus ex machina"—like to move the goods to the next stage of processing. The robot arm carefully lifted a rack of clothing on hangers and placed them on a separate rack in a cage, as directed by the **ABS** manifest. The cart is now ready to move to the "expedition" area, i.e., packout, for delivery to Rentex customers.

Safe & Sustainable

We noted above the importance of safety to Rentex's leadership. It's not surprising then that Rentex has a robust incident-prevention program. "Safety is our No. 1 priority," says van der Duim. "When it's not safe, we stop production." The management team oversees a closely regulated plant, and staff are trained extensively on the company's guidelines, he says. "We have a lot of rules. So when someone starts here, he gets paperwork with all the rules." The program includes mandates on tying back long hair, wearing company uniforms and safety shoes. If an employee sees a loose cord on a floor or a similar hazard, they're

encouraged to notify a supervisor immediately. If, for any reason, a staff member is reluctant to do so, they can send an anonymous email message. The email-tip program began two years ago. Managers regularly remind staff of this option for reporting safety concerns. It's used occasionally, "But most of time people come to the supervisor," van der Duim says.

Another safety initiative takes place with a staff meeting at the start of each shift. "We have the No. 1 point on the agenda, is always, safety," van der Duim says of these sessions. Safety reviews are conducted monthly and on an ad hoc basis after an incident occurs. "When there is an incident, we come together directly," he says. Analyses of past incidents are included to determine

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Rentex also consults with outside experts on safety issues, van den Hoven says. "Externally, we asked people to have a look in the company," he says. "Look at the safety and look at the measures we take to make it safe." Reviews are conducted for various departments and systems.

The company is proactive on sustainability as well. Rentex has pledged to achieve "carbon neutral" status by 2030. That means they must either remove or absorb the

same volume of greenhouse gas emissions from the atmosphere as they produce. It's a daunting challenge because Rentex currently relies on natural gas to heat water for its wash aisle. But there is progress. "Our company is always looking at how we can save energy," van der Duim says. "For example, we have recently installed solar panels in order to be able to generate some of our own electricity. The solar panels will also be used for our recently purchased electric truck. We hope to be able to put it into use by the end of this year. That's something we are extremely proud of."

Rentex is also exploring options for recovering heat from its ironers to heat incoming water. In addition, the company recently acquired a new press that's expected to extract more water from clean textiles. This equipment could help reduce drying times, which, in turn, could lower gas consumption, van der Duim says. "Our goal for 2030 is to be able to produce CO² neutrally. It's something we are all working toward!"


Advancing Automation

As for Rentex's robotics, the outlook for a return on investment is positive, says van der Duim. He anticipates a three-year payback on the system described above. He credits this success to collaboration by Rentex and its suppliers—including two from outside the linen, uniform and facility services industry. Sometimes having outside help is useful, van der Duim says. "Laundry machinery suppliers don't always innovate at the pace we would like to see," he says. "We therefore look at other industries and their application of a process, to learn from them and see if certain automation possibilities are applicable in the laundry industry. Of course, we also work with our regular suppliers to improve our processes. That's how the idea of the clothing robot came about. In the end, we realized this robot project with four of our suppliers."

The automated system outlined above represents an important step forward because it saves labor, while improving efficiency. That means faster throughput *plus* fewer ergonomic strains and collision mishaps since staff are pushing fewer carts around the plant floor. Bottom line? Lending a robotic hand to Rentex's production process is delivering positive results for Rentex employees as well as its management and customers. **TS**



Above: (l/r) Management team members Jelco van der Duim, production manager; and Wiljan van den Hoven, technical department team leader. The truck bears the company's catchphrase (in English) "Taking Care Together." We photographed the two managers by a truck parked outside the Rentex plant and offices, shown above.

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