



# Smart Conveying Improves eCommerce Order Fulfillment of Delicate Gift Items for YourSurprise.com

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## EXECUTIVE SUMMARY

A very unique integration of smart conveying automation and devices from Shuttleworth – such as Slip-Torque roller technology, dynamic accumulation, lift-and-transfer systems, and vision tracking – have enabled YourSurprise.com to ultra-streamline its 2,000-foot eCommerce fulfillment line dedicated to packing and shipping delicate gift items.



### Customer Challenge

Today, eCommerce companies are challenged to quickly fulfill orders. Next-day, and even same-day delivery are no longer perks for eCommerce consumers, they are expectations. Consumers are demanding more choices, and are willing to change brand allegiance to get better value and service. To remain competitive, every step in the eCommerce fulfillment process must be handled accurately, efficiently and quickly to maintain a positive customer experience.

One company that has mastered this challenge is YourSurprise.com (YourSurprise), a Dutch online fulfillment company that markets personalized gift items to a wide and diverse marketplace comprising 22 countries. Having started in 2005, the company has seen consistent rapid growth in sales, and particularly so within the past seven to eight years where orders have increased significantly. Today, YourSurprise is shipping around two million gifts per year, with an annual growth rate of 30 to 40 percent.

"We are working with emotional products that improve the bond between people," said Bartjan van Damme, Production Manager at YourSurprise. "These gifts include products like pendants, chocolates, photo albums, mugs, and custom shirts. The distinguishing factor that truly sets YourSurprise apart from other fulfillment companies is that ours are specialized products that are all personalized."

### FULFILLMENT CHALLENGES

By their very nature, personalized gift items require delicate handling. Manual fulfillment of these items is fine with low order counts, but as YourSurprise expanded and transitioned from a small online boutique to a company with major production throughput, the challenges of order accuracy and on-time delivery accelerated exponentially.

"Because of our accelerated growth in the numbers of gifts needing to be shipped, we really needed to work more efficiently," explained van Damme.

Another complication YourSurprise faced was highly-variable demand, particularly as the company spread into new countries with different holiday seasons.

"For example, Father's Day in Western Europe is completely different than in the Nordics, so May and June are very busy months," added van Damme. "Then there is the winter holiday season when approximately 40 percent of everything that is sold is shipped during the last six weeks of the year."

Adding to the challenge was the fact that YourSurprise was dealing with multiple shipping companies in different countries creating a massive struggle with sorting packages.

"Our whole production line went smoothly until we got to the bottom link at the end-of-line process," explained van Damme. "We had a lot of packages that had to be shipped to many different countries, a process that is generally prone to mistakes."

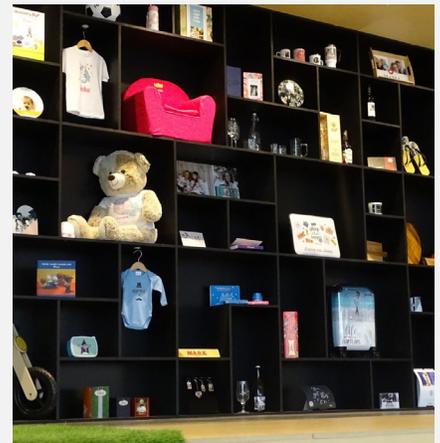
Sending out thousands of orders daily, human error was causing a significant amount of lost profits. A T-shirt order packed and ready for shipping had to have its shipping label manually checked by an employee to determine what method was going to be used to send the parcel. The employee would then decide what lane or tray to place it in for shipping. If the worker placed it on an incorrect pallet, it would never reach the



### COMPANY BACKGROUND

*YourSurprise.com is an online gift shop with over a 2,000 personal gifts. The company has been online since 2005. Consumers can always be sure to find a unique gift, personalized with their own name, text, logo or photo. YourSurprise.com distinguishes itself with original gifts, fast delivery, affordable yet top-quality products, a user friendly website, and an outstanding customer service. Every gift is delivered in beautiful gift wrapping, and with a free message card.*

*Currently YourSurprise.com has active websites in 22 countries, with the main markets being The Netherlands, Belgium, France Germany, Switzerland, Austria and Sweden. The company delivers gifts to private as well as company addresses.*



### SELECTION OF YOURSURPRISE PRODUCTS

customer.

"A DHL-labeled package mis-shipped via UPS would be shipped right back to us, and we wouldn't know where that package was because we really didn't have an effective track and trace system in place," continued van Damme. "Our system of manual workflow often made it difficult to know whether a product had even been entered into the fulfillment line in the first place."

### MOVING TO AUTOMATION

eCommerce companies seeking to maximize throughput, and minimize shipping error and damage have relied increasingly on automation.

"We needed to build a factory, and it was necessary to mechanize and automate as many of our processes as we could," said van Damme. "But we wanted to still maintain the same ideals and principles of personalized attention to our customers that we started with."

Automated pack-and-ship fulfillment for eCommerce requires conveyor systems that provide precision product placement and routing. Although traditional flat-belt conveyors can deliver some degree of precision placement, they are a poor choice for managing product accumulation, such as is required for staging and spacing delicate gift products into automated packing and labeling systems. The result is product jam ups, product damage, misfires on wrapping, wasted packaging materials such as shrink wrapping film, and resultant line slowdowns and cessations.

In 2017, representatives from YourSurprise were at an expo in the Netherlands when they met team members from Shuttleworth, a leading designer, manufacturer and integrator of conveyor solutions that solve company's material handling challenges. Specifically, conveyor systems that will accumulate, flip, stack, rotate, push, divert, or index products for manufacturing or packaging processes, including eCommerce fulfillment.

"Shuttleworth invited us to look at a project they had recently installed at a plant near ours, where we could see their technology in operation," said van Damme. "They guided us every step of the way by suggesting what would suit us and our operation the best, and what would fit into our budget and timeline and predicted growth. In September we gave the approval to install the equipment and by then they had only had about 6-8 weeks to get up and running. We had the entire system done, installed and in use by the end of December."

### SMART CONVEYOR TECHNOLOGY

Focusing on Shuttleworth's Slip-Torque® roller technology, more than 2,000 linear feet of smart conveyor system were installed at YourSurprise.

Slip-Torque is very interesting, in that it utilizes individually-powered, stationary rotating roller shafts covered with loose, segmented rollers, which become the conveyor surface. It is powered by a continuous chain to control the drive force of the conveyed gifts.



Shuttleworth's Slip-Torque® roller technology



Shuttleworth's roller technology conveying YourSurprise gifts

When the products stop on the surface of the conveyors, the segmented rollers beneath them also stop, generating low back-pressure accumulation, and minimizing product damage. It is the weight of the gifts being conveyed, combined with the coefficient of friction between the shafts and the inside diameter of the rollers that provides the driving force. As the weight of the products increase, there is a corresponding increase in the driving force supplied.

Slip-Torque's low line-pressure provided throughout the continuous-motion accumulation conveyors at YourSurprise allows for precise product placement on the conveyors while it continues to take product flow from an upstream line for a period of time, where other conveyors would have stopped well before. A low-pressure accumulation buffer, called Dynamic Accumulation™, absorbs irregularities in the production flow and provides a smooth, even flow on the line. First-in, first-out accumulation maintains chronological order as items move along the line.

"Slip-Torque is perfect for us because it exerts exactly the right amount of pressure on the little gifts that we sell," explained van Damme. "We can transport really thin envelopes without any problem, and that's really important for us."

The conveyor system at YourSurprise is designed to carefully transport gifts ranging from one centimeter (0.39 inches) to 40 centimeters in length (15.7 inches), and weights ranging from 50 grams (1.8 ounces) to 20 kilograms (44.1 pounds).

"The accumulation capability where products are not jamming is also a big factor, especially in the sorting area," added van Damme. "We don't want the delicate products being marred or damaged by the ones coming down the line."

The system allows the same conveyors to be split into multiple, independently-operating lanes if desired. For example, the middle lane can accumulate, while at the same time the right lane and the left lane can both convey, or even run in opposite directions. Each lane can act independently, but is powered by only one common motor, which also reduces energy costs.

YourSurprise' conveyors have the ability to modulate the speed of different sections of the conveyors via a central control PLC and HMI. As products are moving down the line, the rollers at the back end of the conveyors can be moving faster than the ones at the front end of it.

YourSurprise' fragile gifts can be moving at variable speeds on different sections of the conveyors as dictated by throughput requirements. This controls the product spacing on the conveyors, keeping the fragile items separated and equally spaced from each other to minimize product contact, facilitate infeed into packaging and labeling equipment, and smooth transitioning into shipping diverts.



Low back-pressure accumulation

The conveyor system also minimizes product contact while steering products into desired locations, such as employing rollers with herringbone patterns to orient products without the use of guardrails, or setting up a series of sequentially smaller roller heights to direct the gift products into the center of the conveyor for packaging induction, without touching any other conveyor parts. Motorized rollers with tapered corners are also used to maintain product orientation, gently and safely, as it is transported through 45-degree and 90-degree conveyor turns.

Because of the unique features of Slip-Torque rollers, the conveyor system is a safe environment for YourSurprise workers that work near and interact with the products being carried on the conveyor system. The roller contact surface is designed to stop immediately if a hand is placed on it, thus maintaining a safe working environment.

### **PRODUCT CONTROL DEVICES**

Throughout the 2,000 feet of the smart conveyor system at YourSurprise, product control devices have been installed to bring a much higher level of positioning accuracy with more positive product handling. These devices included:

- a) Blade stops and brakes that enable on-demand stops and starts of production flow;
- b) Lift-and-transfer, lift-and-rotate, side transfer and turntable devices used to provide a smooth and accurate product transfer at a 90-degree angle to the original transport direction, or to change the orientation of products on the conveyors. Also for shipping diverts to route orders into specific shipping lanes for consolidation, lift-and-transfer devices were installed to scan and sort packages;
- c) Product positioners to accurately position products for a particular process;
- d) Pushers to move products perpendicularly from one conveyor traffic lane to another traveling in the same or the opposite direction, into or out of operator workstations or off of the conveyor system completely;
- e) Single-row combiners to efficiently combine products in multiple lanes into one single row.

### **ORDER TRACKING**

"The system has the capability to identify the different types of products that we are moving through the system, and where they are in the system," added van Damme. "Each order, and all products associated with the order, is assigned a license plate which is scanned at locations throughout the system, so the exact location and status of all orders can be viewed in real time."

In the case of combination orders where more than one gift is being combined in a singular shipping package, the system knows to hold those products in a buffer zone until all items have been accumulated, and only then will that order be released for packing and shipping.



Conveyors steering products into desired locations



YOURSURPRISE HEADQUARTERS

### Integrated System

The YourSurprise order line starts with the consumer, who visits the company's website and orders a gift. This gift is then released into production for personalization, where it automatically loads into a personalized gift editor that adds a name, brand, text, photo, or logo. All personalization of gifts is done in-house at YourSurprise. Once the order is placed, the gift is printed within five minutes and automatically routed through the fulfillment line – order consolidation, packaging, labeling, and designated shipping lane. "The entire system is integrated into one smooth operation," explained van Damme. "We have a lot of fragile goods so it's very important for us to have a system that detects that, and can react accordingly. Motion sensors are located throughout every part of the fulfillment process."

"The final system components were installed in November, 2019 into our new facility," said van Damme. "Since then, we have reduced our order error rate by more than 60 percent, while maintaining 100 percent accuracy with correct carrier assignment for shipping. The final scan at the end of the process gives us certainty that a gift has been produced and has been sorted out to the right carrier."

*Shuttleworth is a leading designer and manufacturer of integrated solutions that solve company's material handling challenges. When a company needs a conveyor system that will accumulate, flip, stack, rotate, push, divert, or index its products for manufacturing or packaging processes, Shuttleworth can design, build, install and service it throughout the system's life. Year after year, Shuttleworth continues to revolutionize the material handling industry with Slip-Torque® technology, conveyor systems and equipment innovations that are as unique as the product lines that they handle. Shuttleworth has been a member of the Packaging Machinery Manufacturers Institute (PMMI) since 1967, and is a member of the Processing and Packaging Machinery Association (PPMA) in the UK. The company is certified ISO 9001 since 2008. Learn more about Shuttleworth at [www.shuttleworth.com](http://www.shuttleworth.com) and more about ProMach at [ProMachBuilt.com](http://ProMachBuilt.com).*

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