

Bottoms UP



Automated product recovery system saves pharma packagers time and money

By Sarah Sookman

Alan Shuhaibar's engineering career began twenty years ago when he showed up at the McGill University Admissions Office. Hoping to be accepted into the Mechanical Engineering program, his only proof of graduation from high school was a dot-matrix print-out of his grades. Shuhaibar and his family had left their native Kuwait on July 26, on what was literally the last flight out of the country; Iraq invaded on August 2, 1990.

"They were very understanding," Shuhaibar says of McGill, smiling at the recollection. Prior to leaving Kuwait, his transcripts had been translated from Arabic to English, but his presentation was, at best, unofficial. "I could have done it myself at home," he jokes. Nevertheless, McGill granted him a conditional acceptance and Shuhaibar received his high school diploma – from a war-torn Kuwait – a year later.

As a young engineer in the workforce, Shuhaibar had a keen interest in the pharmaceutical industry, particularly in its use of packaging systems. He noticed that the product re-packaging process was both time-consuming and costly, yet there were no modern solutions to help pharmaceutical contract packagers. "Packaging systems specifically for pharma and nutraceuticals is a small and highly-specialized market," he says. Intrigued by the opportunities in this niche, Shuhaibar thought he might start his own business one day. "I thought

maybe I would start in my forties, after my MBA." But it happened a little sooner than planned.

At the age of 30, Shuhaibar was half-way through his MBA program when his employer consolidated its plants and laid off its employees. So in 2002, he founded BellatRx Inc., named for the star Bellatrix in the Orion constellation. Today, his company boasts a line of packaging machinery for the pharmaceutical, nutritional, food and personal care industries: systems for product handling, recovery, inspection, and filling and verification, to name a few. His machines are used by some of the world's largest pharmaceutical companies. Most of his 25 employees work at the head office in Pointe-Claire (Montreal), Quebec, while his support staff are located in Puerto Rico, North Carolina, Mexico and Texas – areas where he has installations.

Opportunity for recovery

Despite the well-defined and controlled processes in pharmaceutical manufacturing, mistakes happen, and they can be very costly. "If a batch of 100,000 units has the wrong lot code, the manufacturer or contract packager must recover and repackage that product," explains Shuhaibar.

Generic drug manufacturers must also deal with their own product recovery issues. Typically, these manufacturers fill their warehouses with the generic product, anticipating the expiration of a brand-name drug's patent and the FDA's

approval to produce and ship it. A modification to the package's artwork could prompt the manufacturer to recover the inventory and repackage it. More often, however, the FDA issues last minute changes that affect the product's label; for example, it could require a larger font size for certain warnings or new warnings. These are common situations that force the generics manufacturer to recover and repackage the product.

Shuhaibar saw a need for a solution and, in 2005, BellatRx launched the Bottle-Recoverx, a flexible container handling system for automated product recovery. "Until the Bottle-Recoverx, the process was largely manual," says Shuhaibar. "And it's a big deal." Imagine coordinating staff to open, discard cotton and desiccants and empty 100,000 bottles of pills. In such cases, the manufacturer was often forced to take teams off other production lines to help out. Manufacturing down-time not only affected labour costs, but put employees at risk of repetitive stress injuries and the pills at risk of contamination.

The Recoverx System

The base of the Bottle-Recoverx houses three holding bins for the product, empty packaging, and cotton and desiccants. When in use, an operator loads the bottles on a feed conveyor. The two parallel plates of the gripper squeeze together to pick up the bottle, invert and rotate it. Next, a knife assembly slides out and slices the bottom of the bottle where it travels along a chute to be dumped in a waste bin. The gripper rotates the bottle again, positioning it over a recovery bin before re-inverting it to dump the contents. Then, the gripper drops the empty container into a separation mechanism where the cotton and desiccants are removed and placed in their own bin.

The system is equipped with several sensors to ensure operator safety and proper function, while preventing operator error. When in operation, sensors verify bin presence and the bottle's position: It must be inverted before slicing and in its

original orientation prior to dumping. A sensor also detects when a bin is full.

The Bottle-Recoverx processes up to 40 bottles per minute and accommodates a range of bottle shapes and sizes. The system also features a simple touch-screen interface and allows a quick changeover. A standard 120V power source and casters mean that the system can be disconnected and moved elsewhere in the plant. The knife blade can be re-sharpened or replaced as needed. Shuhaibar adds that the knife's lifespan not only depends on the number of hours the machine is running and the number of shifts, but also the bottle's wall thickness and material.

Once Shuhaibar identified the need for the product recovery system, he and the design team faced a number of challenges. Opening the bottle seemed like a simple idea, but difficult to put into practice. "Pill bottles are often packed tightly with cotton, so we had to figure out a way to open a fully-packed bottle without losing or damaging the contents," he explains. The solution was to invert the bottle and slice the bottom off with a knife, and that process brought about unexpected surprises. "In our first tests, we ended up with lots of tiny plastic chips," he laughs. "We needed a cutting mechanism that could comfortably handle various thicknesses of plastic and make a clean cut."

Raising a glass to success

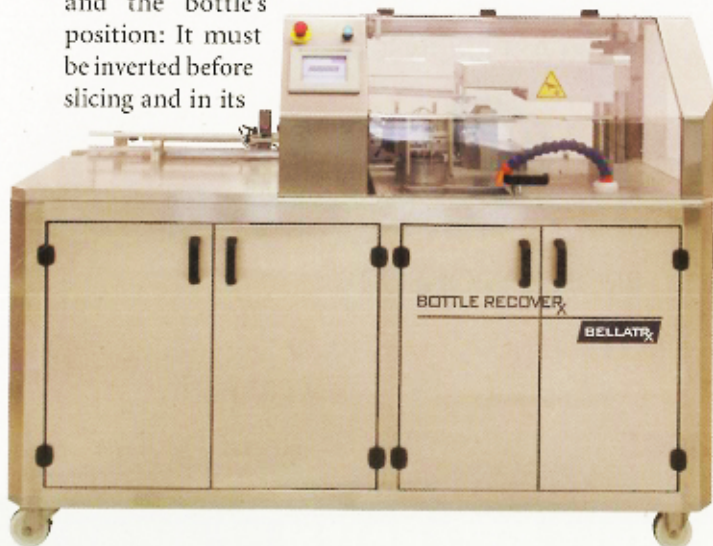
Since its launch in 2005, the Bottle-Recoverx has undergone several revisions and has proven to be very popular. At present, Shuhaibar has around 50 systems in deployment, and lots of repeat customers including many of the major pharma companies. A number of his customers purchase multiple machines in order to keep up with their own volume.

Furthermore, the Bottle-Recoverx cannot be compared with anything on the market, Shuhaibar says; only recently has a competitive system made its appearance. "Our system really is the only one that helps packagers save in four areas," he explains as he counts them off. "Automating product recovery saves [manufacturers] on extra labour costs, prevents repetitive stress injuries, doesn't interfere with other production lines and greatly reduces the risk of contamination." In the area of automatic product recovery systems, Shuhaibar has a five year lead on anyone else, he adds.

As for BellatRx's future, it's an open road ahead. Shuhaibar is taking the Bottle-Recoverx a step further, developing a version that can recover pills from glass bottles. With his track record for innovation and creativity, his customers are likely eager to see the results. **DE**

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The Bottle-Recoverx, by Pointe-Claire, Que.-based BellatRx, automates pharma manufacturers' re-bottling processes.