In this adaptation of a UTSA Plant Operations talk, our author shows how automated systems improve quality and productivity

Making the soil room a Cinderella story

By Ed Kwasnick

Automated counting/sorting systems, like this one from E-Tech, Minneapolis, increase unloading speed, reduce labor, set standards for unloading trucks, and improve accuracy.

Whenever you automate a manual function, you've probably decided to do so to reduce labor costs. But you will also benefit from the other major advantages of automation, namely increased capacity and improved quality.

In addition, your labor costs fall not only because you decrease your manpower requirements, but also due to other efficiency gains. Automation makes your production jobs easier to learn, so training isn't as time-consuming or costly. Work becomes safer, so injuries decrease, thanks to less lifting and repetitive motion. This translates to fewer claims and lower insurance costs.

Overall, you create a better workplace. Morale and employee retention improve. You reduce inventory, balance production flow, improve accuracy, and decrease the amount of floor space needed for production processes.

Essentially, though, automation has a single purpose: to simplify production. When you do this, everything else falls into place. You save money and improve quality in many ways.

The key benefit of simplifying production is

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the reduction of exceptions. The best production environment enables you to do the same thing at the same level of quality at the highest possible level of efficiency. You increase the rate of repeatability for maximum results.

To help you reach this goal in the soil department, following is a review of principal soil process functions that are predominantly manual today and could be automated.

This department has been called the "redheaded stepchild" of the industry. Many people haven't really thought about how automation can help here. But there are huge opportunities for improvement.

With automated cart washing, throughput is maximized, quality is consistent, the process is well organized, labor is reduced, and a potential bottleneck is eliminated.

Customer bag. Capitalizing on this particular opportunity requires you to abandon the traditional first-in, first-out system of processing linen goods. Giving up this approach is hardly instinctive. Your gut tells you to get production started and keep it flowing. So you immediately count and sort, then combine like goods in soil slings, and queue them for washing.

With a higher degree of automation, you can separate soil goods by account and product type as they come off the truck. You shift to this methodology because your greatest concern is utilizing the most efficient method for soil counting and sorting, rather than pushing everything through each stage of production in random order.

In a nutshell, here's how a typical system works. A customer's goods are unloaded from delivery vehicles and stored using an overhead rail system. Bags are scanned at the loading point and automatically stored by customer and product classification. Then they're automatically delivered to counting stations dedicated to certain types of products

This system is particularly valuable when you have a multi-location customer who uses the same products. Suppose these various locations are served by different routes. Rather than placing these goods in the customer bag rail system in the order in which they arrive, you store the goods on a dedicated rail.

Then you feed these customer bags (which all contain the same types of products) to a dedicated soil count station for processing. The operator can attain maximum throughput because he or she counts the same basic items, avoiding the work of constantly changing products. Efficiency in counting is maximized.

(This is similar to the way industrial laundries establish separate hanging lines for shirts and pants to take advantage of operators' individual capabilities. Such specialization can improve efficiency 10 to 15 percent.)

You can use the higher-counting-efficiency approach without automation by sorting like-goods into carts and wheeling them to stations for counting. Monorail is probably the superior choice, though. It's better ergonomically. It frees more floor space for other purposes since storage is in the air, and it decreases cart traffic.

Also, because computers help stage the work, you program the sequence in which products will be counted, making the exact work flow more of a management prerogative than an operator's decision.

This approach's only real drawback: labor savings are limited compared with other types of laundry automation.

Vacuum count. Vacuum count systems can make the soil counting process more efficient and accurate. Customer bag contents are discharged onto a table, where the operator keys into the system the identity of the customer and product, and places the items into a vacuum tube. This captures accurate soil count data instantly and soiled items are automatically delivered to the soil sorting area or directly into soil slings for washing.

This promises higher speed and accuracy and provides for accountability and instant data collection. It requires overhead space and increases electrical use, however.

Unloading/sorting. Suppose you don't need to soil count, but you still want to maximize throughput in the soil department. You'd probably be very interested in a system that combines unloading and sorting. When goods come off your trucks, your soil room staff sorts them into chutes by product classification. The chutes lead to bins on scales. Once a bin reaches the prescribed weight level for a sling load of the classification, it automatically discharges the goods into a sling, which is transported to the queue for washing.

This increases unloading speed, reduces labor, organizes the process (sets standards for unloading trucks), and provides more accurate sorting and weighing. The only drawback is that it requires a large amount of floor space.

Automatic monorail storage. This type of system makes your queue as efficient as possible. It sorts your slings by product classification and automatically selects products to be washed based on a pre-determined product schedule. Slings are delivered to the washroom and discharged. You tell the system what types of goods your equipment should process that day or week, which allows you to balance your production flow.

This system can handle exceptions more efficiently. With an automated pairing loop or recirculation line, low volume products can be held and paired with other slings of the same product type. This allows you to always have a full washer load and reduce underloading.

Increased throughput and better scheduling are the primary benefits of such automation. You set up the clean side of your operation in the exact order you want to run it, eliminating last-minute decision-making.

However, compared with other types of automation, this is

not much of a labor-saving technology. It adds work to some degree because it creates a new dimension of production planning. These systems don't learn on their own. They require managers to think in advance about how they want to set up their production runs.

Cart washing. With such a system, empty soil carts are delivered manually or automatically to the cart washer entrance. They're conveyed through a tunnel that washes, sanitizes, and dries them automatically. Clean carts come out the other side, ready to be loaded.

For an operation that processes a high volume of laundry each week and makes extensive use of carts, this has numerous advantages. Throughput is maximized, quality is consistent, the process is well organized, labor is reduced, and a potential bottleneck is eliminated.

Without a high volume of carts, though, these systems seem expensive.

The availability of these various types of systems suggests that a red-headed stepchild's lot in life really can improve. In this case, more operators are recognizing that the soil department sets the pace for the rest of the plant. After all, if you can't get your work through the soil room, you can't wash, dry, or finish.

Scheduling is the key to delivery of clean products to your customers; this is most effective when you know what you need at the end and you've set up the work to produce it from the beginning.

Plus, consider the fate of your workers in this area. Working in the soil department is not fun. Automation makes the work a little more bearable. And that can be a huge benefit in today's tight labor market.

Plant consultant's road tales pique travelers' interest

Ed Kwasnick, the previous article's author, was recently featured in Delta Airlines' Sky magazine when the publication asked frequent flyers to share their road and career experiences. The article noted that he's a mechanical engineer by training who turned industrial engineer when he saw in himself a natural aptitude for designing facilities and processes.

Seven years ago, Kwasnick's entrepreneurial spirit arose. He was with Omni Services, Culpeper, Va. (now part of Cintas Corp., Cincinnati) when he realized that he wouldn't be satisfied until he could start his own business.

He attributes the inception of his company, Turn-Key Industrial Engineering Services, to his wife Nicole's support and belief in him. "We had saved up $10,000 for a rainy day," he remembers. "And I said, 'That's it. We're going to start a company. We're going to take our $10,000, and we're going to throw it out there and see what happens.'

"It would have been very easy for someone to say, 'What if it doesn't work?' But Nicole's reaction was, 'Fantastic!'"

Much of the Sky article offers Kwasnick's view of the fundamentals of large-scale laundering. He estimates that the laundry industry does about $12 billion to $17 billion in sales per year.Of the rental segment, he notes there are giants in the industry [giving Aramark Uniform Services (Burbank, Calif.) and Cintas as examples], but most of Turn-Key's customers are smaller family-owned operations.

He discusses their evolution: "The company that was just running doormats to a couple of companies grows to be a uniform provider, healthcare provider, linen provider. From a couple of million dollars a year, soon they're $20 million."

Big hospitality laundries are covered in greater detail, however, making it easier for Sky readers to relate to Kwasnick's work. He talks about the need for hotels to set par levels for pool towels, for example.

At a better resort, it's likely that the hotel aims to maintain a par of four pool towels per guest per day. At any particular point, you, a guest will use one or two, with a third being laundered and a fourth ready to be disbursed.

That's usually enough, unless weather interferes. Every hotel manager dreads unexpected rainstorms that have guests grabbing towels at will to use as raincoats and umbrellas. Then housekeeping services may not be able to keep up with the demand for pool towels, which are typically lighter weight and have shorter, more snag-resistant plush than bath towels—and, because of their soil, are usually laundered separately.

Kwasnick (shown here as depicted in Delta's magazine) draws on his big-laundry experience to serve the institutional market.

Then the smooth functioning of a hotel housekeeping service can go awry. Bath towels have to be substituted for proper pool towels, and dirty ones become commingled in the towel stream. And this exposes the entire laundry operation to its worst enemy: sand.

Not only does sand take more rinsing to remove from a towel, it also jeopardizes towel life. "When you're mixing them," he explains, "you tend to tear up your bath towels. You're cleaning for the optimal level of cleanliness for the pool towel, which means that you're overcleaning the bath towel."

Sky observes that meeting this type of demand, and avoiding this type of crisis, prompted the splashy Atlantis Resorts in the Bahamas to hire Turn-Key recently. Management would prefer that guests pay attention to new rooms and attractions, not to shortages of towels and tablecloths.

He also cites his experience with Walt Disney World, which had planned a major expansion of resort facilities in 2000. "As they were growing, they were running out of capacity in the hospitality laundry. That refers to sheets, pillowcases, towels, anything in the room that has nothing to do with the restaurant. They wanted to grow that facility by 30 percent, so we helped them design a master plant to add that capability.

"That facility today," he reports, "does 1.2 million pounds of just those categories a week."

Thanks to clients like Atlantis and Disney, as well as independent laundries like SITEX Corporation, Turn-Key now has six employees. Sales grew 90 percent in 2004.

What's his key to success? It's the same as everyone else in the trade, he quips: "You get soap bubbles in your blood."