How to Increase Flexibility and Control Costs

New Technology challenges the traditional packaging line concept.

Gone are the days of stocking warehouses. Today, many companies are filling grocery-store shelves—and filling them fast!

Food packagers are having a hard time responding to these changing products and sizes using dedicated packaging lines. Flexibility and cost control are essential, and many of them are finding that traditional equipment just isn't cut out for this new environment.

The traditional packaging line concept focuses on creating a purpose-built line that runs high volumes for extended periods of time (multiple shifts or days between changeovers).

For example, the traditional bag-in-box (BIB) setup for dry products features two intermittent-motion VFFS machines running at 40-60/min. The machines deliver bags to a continuous-motion horizontal cartoner. A high-output line might feature three or four VFFS machines. A frozen-product setup typically consists of a tri-seal cartoning line with manual bag loading.

New Technology

This growing need for flexibility and labor-cost control is challenging tried-and-true configurations. The new packaging cell concept is to create a system built around the ability to change a smaller line more quickly (a single shift or multiple changes within a shift). This approach was not profitable with traditional lines due to excessive changeover/setup times.

Packaging cells offer the flexibility to run a range of sizes or styles of packaging while making one product out of the processing equipment. Features include:

- A versatile computer scale capable of running weights for package sizes ranging from small retail to large wholesale.
- A continuous-motion VFFS machine capable of pillow bags, gusseted bags, and 4-corner seal bags, (with or without zipper-reclosure features).
- A horizontal cartoner able to run single-pack and multipack cartons without parts changes.
- An automatic case packer able to handle bag-only and cartoned products.

Today's continuous-motion VFFS machines have doubled previous-generation equipment output to 80-120/min per tube. Plus, new cartoning solutions can match continuous-motion VFFS machine output in very small footprints. Combining these developments with a new paradigm can maximize returns.

Benefits

The equipment and components of the flexible packaging cell are similar in function to those of traditional BIB lines. The difference is in the packaging cell's ability to change quickly between package styles, sizes, or fill weights. Packagers can meet their customers' ever-changing demands and react quickly to their own marketing departments' ideas on new package style, size, weight, or features.

By having the equipment in place that can run a wide range of packaging styles, the flexible packaging cell provides several benefits over traditional bag-in-box packaging:

- Flexibility—the ability to run virtually any package with minimal setup time.
- Adaptability—the ability to quickly change to meet market and/or customer demands.
- Productivity—rapid, no-tool changeovers equal more time making product.
- Redundancy—Reduced risk of entire line shutdown as production is spread over multiple lines.

Real-World Examples

Customer: Private label packager.

Problem: Older equipment required replacement of change parts, multiple adjustments, loading of new programs, and time to get the equipment up and running efficiently again. A significant amount of time was spent fine-tuning the equipment after the general changeover.

When demand for a given product was lower, one or two VFFS machines would sit idle while the big, continuous-motion cartoner cycled at top speed for only one third to two thirds of the output. The idle assets did not make the company money when in a lower-output mode, but the line still required the same number of operators.

Solution: The company installed flexible packaging cells with identical equipment (offering the aforementioned two-to-one advantage) next to a traditional three-VFFS continuous-motion cartoning line featuring one cartoner. Changeover times plummeted from between four and five hours to between 30 and 45 minutes. In addition, twin-pack cartoning capability was added as a standard feature.

Customer: IQF foods company

Problem: A traditional tri-seal cartoning line takes more than one hour to change over and requires forming sets. The line consists of a carton former, a section of conveyor for manual bag loading, and a tri-seal closer. In this configuration, there were two machines plus the hand-load area.

Solution: The company installed a flexible packaging cell next to the traditional cartoning line. Labor immediately dropped from 12 operators to one, while dedicated floor space decreased roughly 350 square feet. The company can now change over the cartoner, VFFS machine, and scale in 20 to 25 minutes without change parts.

The flexible packaging cell format demands that industry alter its mindset of the past several decades. To successfully compete in today's market and weather future unknowns, packagers need in update their packaging capabilities and invest in more agile, responsive systems.

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