There is Nothing Conventional about Today's Conventional Palletizers

— New Capabilities Offer Exceptional Flexibility, Cost Advantages, and Throughput —

By Dan Johnson, product line manager, Currie by Brenton

Conventional palletizers have undergone a technological revolution in the past few years and today offer a level of flexibility that in many respects rivals robotic palletizing cells. These systems offer a host of new capabilities and advantages in addition to flexibility, including high throughput, rapid return on investment, and 99 percent uptime.

Fast changeover and flexibility in terms of pack patterns

Conventional palletizers were originally designed to automate the pallet loading process on lines that had few if any changes in pack patterns. Changeover to a different pack pattern was primarily a manual operation. Today, PLCs and advances in motion control and drive technology, along with touch screen human machine interface (HMI) devices, have fundamentally changed these hard automation systems to flexible ones. Changeover to a host of pack patterns is accomplished in a matter of seconds by calling up a pattern stored on the PLC. Maintenance personnel need not be involved. While these systems are not quite as flexible as robots, they are nearly so, with the advantages of higher throughput, on average faster payback, and smaller footprints.

Conventional palletizers easily and cost effectively handle 15 to 100 cases a minute. Conventional palletizing solutions from Currie by Brenton, for example, range in price from $120,000 for 15 to 30 cases-per-minute throughput to $275,000 for 50 to 100 cases per minute. The rule of thumb is that the higher the

case rate per minute the faster the payback. Most customers have a return on investment of less than two years. Case rates above 8 to 10 per minute are candidates for moving from manual palletizing to conventional. This is especially true when the cases are in the 15 to 20 pound (6.8 to 9.1 kilogram) range and operations wants to lower on-the-job injuries and workers' compensation claims.

The boundaries between conventional palletizers and robots

Many customers ask Currie by Brenton how to determine whether a conventional palletizer or a robotic cell is the best option for their application. A robotic cell is ideal for palletizing where a number of low-speed lines converge. The ideal rate on each of these lines is, on average, five to eight cases per minute. A robotic cell in this situation can load single or multiple pallets and pack mixed loads. With an accumulator they can pack more cases per minute by loading a full layer at each pass. Robotic cells typically require a larger footprint than conventional solutions and operations personnel must figure that into the equation.

While every situation is unique, the rule of thumb is the following:

- For lower speed multiple-line palletizing, investigate a robotic cell by calculating throughput, return on investment, and available space.

- For moderate to high speed lines, consider conventional palletizers first and determine whether the solution offers the flexibility and return on investment to meet the need.

Specifying the conventional palletizer for optimum performance and return on investment

Currie by Brenton advises its customers to sit down with a conventional palletizing application engineer and discuss not only the current need, but also potential needs three to five years in the future. The discussion should include current and future:

- Production rates
- Primary and secondary packaging
- Number of lines
- Traffic patterns at the plant
- The transportation channel, including cube utilization, pallet types, pull sheet potential, tier sheets, top caps, stretch wrap

This fact gathering is to help the application engineer design a system that has the capability to accommodate change and/or has the hooks built into it that will allow cost effective expansion. Currie by Brenton advises its customers to consider buying a system that can run more cases per minute than the current need because line speeds tend to go up over time. Based on this forward looking effort, the application engineer will be able to present best-case scenarios for either a “low-level” palletizer or a “high-level” palletizer. The high and low designations have more to do with physical configuration than line speeds.

Low-level conventional palletizers integrate to the case packer with a case in-feed located about 40 inches (1.02 meters) above the floor. Low-level systems offer case speeds of 15 to 30 cases per minute. Low-level systems can be applied to multiple lines with accumulators. It is important to look at the plant's present and potential traffic patterns when considering a low-level system. Plant personnel should be confident that picking up and dropping off pallets will not be an issue at that location in three to five years.

High-level systems are just that — the case in-feed is raised 8.3 to 11.7 feet (2.5 to 3.6 meters) above the plant floor. Conveyors move the shipping cases from the case packer and transport them to a warehouse area. This helps to significantly reduce traffic around the packaging line, and it helps keep the area cleaner. Forklift loading and unloading is concentrated in a specific area, making operations more efficient. High-level systems are for case rates of 20 to 100 cases a minute. High-level systems can serve one or multiple packaging lines.

The sustainability movement's push for greater cube utilization and fewer truckloads is having a profound effect on shipping. Plans for conventional palletizers must also include a detailed look at the type of pallet currently being used and potential changes. Currie by Brenton suggests the packager talk with

downstream supply-chain partners to understand partners' plans for handling pallets or pull sheets and the potential application of tier sheets, top caps, and stretch wrap.

From these macro issues, it is important to look deeper during the specification phase into the underlying technology producing flexibility in pack patterns. These discussions should involve descriptions of the control architecture, including PLCs, motion control and drives, and HMI devices. Look for touch screen menu driven HMI because that type interface improves the ability of the operator to control and change the process. Currie by Brenton, for example, offers customers the ability to program new pack patterns on the HMI. This eliminates the need to use an offline computer or to plug in a notebook computer to the palletizer. HMI programming of pack patterns saves time and makes the operation of the equipment more efficient. The control system of choice will also store menus and make changeover in seconds possible.

The supplier of choice must demonstrate that the palletizer is rugged — built with heavy gauge steel. The system being considered should be easy to maintain, and include state-of-the-art safety features. Safety features ensure that whenever the conventional palletizer is being worked on, moving parts are locked down. And if there are jams, those can be cleared quickly, effectively, and safely. That said, the supplier should be able to demonstrate system uptime of 99 percent or better.

Work with a supplier that not only has a breadth of solutions for low- and high-level applications, but also a track record of innovation and customer

satisfaction. Leading suppliers are also incorporating advanced features as standard for their product lines. This strategy offers economies of scale, a broad list of advantages, and improvements in ease-of-use and safety. It also means faster delivery and start up.

To benefit the most from the investment, work with a supplier that has a track record of success, a system that meets or exceeds specifications, and the ability to support the system over its lifecycle.

For more information on the most advanced and best supported conventional palletizers on the market today, call Dan Johnson, product line manager, Currie by Brenton, at 715-448-2233 or write Dan.johnson@becmail.com. Also visit the Currie by Brenton website http://www.brentonengineering.com/currie-by-brenton/.

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