

INTEGRATED

BAR CODE PRINTER/APPLICATOR SYSTEMS

Equipment that can both print and apply bar code labels will keep your operation running more smoothly.

Equipment that can both print and apply bar code labels will keep your operation running more smoothly. To comment how Automated Data Collection (ADC) has made inventory and material tracking incredibly more efficient would be preaching to the converted. But now that things in the warehouse are moving so smoothly, have you noticed an area where the bar coding process bogs down? Getting the right bar code label onto all packages as you receive inventory can still be a time-consuming headache. It's no surprise, then, that equipment that both prints and applies those labels is becoming popular. It gets the job done quicker, cheaper, and more accurately. Here are some of the advantages of an integrated printer/applicator:

- **Reduction of manual labor:** Often, these savings will justify the cost of an applicator system in less than 2 years.
- **System throughput:** Since applicators often label products in conjunction with existing or new material handling equipment, the material continues to flow smoothly, instead of halting while labels are manually applied. **Consistency of label placement:** Automatic applications can position labels exactly on each package, allowing them to be scanned much more efficiently. This might eliminate the need for a more expensive in-line omnidirectional scanner.
- **Data integrity:** An applicator system can eliminate the risk of the wrong label formats or data being applied to the container, avoiding costly chargebacks or returns from customers.

TYPICAL SYSTEM CONFIGURATION

Printer/applicators don't work alone. A variety of other necessary equipment makes up a complete working system. The following is a description of each component:

Printer/applicator: The print-and apply machine incorporates a print engine and an application device using one of several technologies (e.g., tamp or blow-on). It also provides user settings and controls and media unwind and rewind devices. The applicator is mounted so that it can place the label exactly where it is needed on the package (e.g., precisely positioned on the side or top).

Applicator stand: An adjustable stand allows the applicator to be positioned properly. Or, the applicator can mount directly to the conveyor.

Warning lights: A series of colored lights on a pole, easily visible to operators, that flash to signify various errors or conditions, such as low media conditions and "no read" bar codes.

BY ROBERT BABEL,
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Photo eye (P/E): A sensor that detects the product as it moves down the conveyor and sends a signal for the applicator to print a label. Sometimes other sensors serve this purpose.

Carton notification scanner: Usually a fixed-mount line or omnidirectional scanner that reads the appropriate bar code on the container, such as a license plate ID or SKU/UPC number, and relays that code to the control software.

Meter conveyor: A conveyor upstream from the applicator; it provides adequate spacing between containers to be labeled.

Skew conveyor: A conveyor with skewed rollers that drive the carton to the applicator side of the conveyor bed, positioning the carton properly. For batches of fixed-width cartons, a guide-rail system and belt conveyor may be used instead.

Programmable Logic Controller (PLC): Used to provide conveyor control, such as shutting off the conveyor in the event of a "no read." May also be used to activate warning lights, or to actually send the firing signal to the applicator. More sophisticated controls may be used for controlling induction into the applicator system and post-application sortation to outbound.

PC with applicator control software: Can be anything from a simple label design/printing package with database look-up capabilities to a more sophisticated software program that accepts downloads from the host, does database look-ups, generates printer formats and data streams, and sends data records back to the host or other system.

SYSTEM INTEGRATION

Companies often make the mistake of purchasing a printer/applicator and then treating it as a standalone piece of equipment, as if it were a tabletop printer. While most of these printer/applicators are robust, industrial-strength machines, it takes considerable skill to successfully install them, because a printer/applicator system's success rests upon related material handling, software, and control systems. Applicators are complex machines that must be precisely configured and installed. With a good system design, professional installation, and proper preventative maintenance, you can expect excellent, trouble-free performance from your printer/applicator



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system. Conversely, taking short-cuts or skimping on necessary system components can mean weeks or even months of trying to tweak the system to get it to work properly. Usually, the systems integrator will want to conduct a site survey or engineering design study to assess your system requirements and constraints. You might have to pay extra for such a study, but it's well worth the cost. It will save you thousands of dollars in the long run to get the right system initially and have it work efficiently. Compare this investment with the cost of shutting down a manufacturing line or distribution center. Your integrator should also look for opportunities to improve material flow and reduce handling. For example, you might place the printer/applicator system at the end of a filling or taping station to minimize additional product handling. On the other hand, it might be best to route the cartons through a high-speed sortation conveyor system or to a carton palletizer first, installing the applicator system further downstream in the material handling process after multiple lines merge. In fact, a good printer/applicator system design will frequently identify material handling bottlenecks or indicate ways to improve data capture, thus saving more than the cost of the applicator. You can make these changes when you set up the applicator. Sometimes you can make an overall upgrade to more logical and efficient material handling later on.

SOFTWARE AND CONTROLS

Software programs for applicator systems fall generally into two categories. One type is usually PC based and controls the host and Warehouse Management System (WMS) interfaces, provides database management and look-ups, and controls the printing process. It might also let you design your labels and perform system diagnostics via remote dial-in. The other type is usually PLC based and controls conveyors and material handling equipment. Typically, the applicator system software will connect to either a host or a WMS system. The nature of this interface and how the system control is allocated between the applicator software and the host, carries from project to project. For example, the host or WMS may download a complete carton record, including precise shipping data and label format. The applicator control software then identifies the appropriate record, based on a unique container ID, and uses this data to print the label. In other, more complex systems, the applicator software receives customer order files and selects the proper destination, label data, and format based on a SKU identifier, moving from order to order as SKU requirements for a particular store or customer are filled. Conveyor controls are also critical. These controls can vary in sophistication, from providing basic functionality that shuts down the line in case of defined events (e.g., bar code misreads, low air pressure, or backups on post-application accumulating conveyors), to more sophisticated software that allows operators to control merges and rates of induction into the applicator line. Some systems also offer high-speed sortation controls after the labels have been applied, requiring an even higher level of control engineering.

KEYS TO SYSTEM SUCCESS

While there are literally thousands of highly successful printer/applicator installations throughout the U.S., there are also systems that have experienced major problems or have failed to meet user expectations. At most of these less-successful installations, the

problem has little to do with the performance of the applicator itself (vs. its supposed capabilities). Too often, the wrong type of machine was used for the application, or there are problems in the material-handling environment in which the applicator is installed. In either case, it is a failure on the part of the supplier or the customer to fully do the pre-installation work needed to ensure that the equipment being proposed meets the application requirements. Many warehouses or manufacturing plants that could benefit from printer/applicator systems do not choose this approach. Either they haven't evaluated applicators as an option, or they've decided against an applicator system because it takes considerable initial effort to implement. It's much easier in the short term to buy a tabletop label printer, plug it in, and have operators start hand-applying labels. But those companies that are spending the money and making the initial effort are reaping long-term savings and increased efficiency that will continue to add up as the years roll by.

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