Top 7 Ways to Improve the Quality of Your Palletizing Operations

The importance of palletizing operations for your Distribution Center

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The Importance of Palletizing Operations

Many warehouses and distribution centers that utilize batch picking and conveyor sortation systems struggle with end of lane quality palletizing on their shipping floor. Their automation may get a carton to the right lane, but then a human must place the carton on the right pallet. It sounds simple enough, but in today’s fast-paced warehouses and distribution centers, poor pallet quality can quickly eat away the ROI of your automation investments, not to mention your customer’s satisfaction.

Maximizing palletizing quality is not an easy task as the process is a balancing act between accuracy and speed, both affecting total cost.

7 Options for Improving Quality

Let’s examine the Top 7 options for improving the quality of palletizing operations below; in order of increasing effectiveness and implementation cost.

**Option 1: Pallet Count Audit**

After your warehouse control system (WCS) says that all the cartons for an order have been sorted, the operator (or an auditor) can perform a manual count of all the cartons on the pallet and compare this to the expected quantity. Granted, this is can be challenging, especially when counting various sized cartons. Additionally, this method will not help in the situation where two cartons are “swapped” - making the pallet counts right, but the order still incorrect. Taking those limitations into consideration, this method is a good starting point if you are not doing anything at all to insure outbound pallet quality.

**Option 2: Use a Check-Off Sheet or Peal-Away Tab**

If your warehouse control system (WCS) is pre-assigning which cartons will go on which pallet, a list of all the carton id numbers for each pallet can be generated. The operator can then check-off the carton ID
number as they place the carton on the pallet. However, as you can imagine, this method can quickly bog down productivity. Another slight variation of this is where the carton label has a peal-away tab, showing the carton id. This peal-away can be stuck onto the pallet list. A simple visual check will let the operator confirm that there are no missing cartons. Taking this even further, that list could then be OCR scanned into a system which can recognize if any of the carton ids don’t belong on the list and notify the operator to make adjustments.

**Option 3: Scan to the Pallet**
RF scanning of cartons to pallets can also be used to improve quality. There are two variations of this method.

The first method is when a WCS pre-assigns cases to pallets. In this method, the operator scans the bar-coded carton ID number and then the bar-coded pallet id (usually hanging from the ceiling, right above the pallet). If there is a match the operator can then place the carton onto the pallet.

The second variation of this method is when a WCS or WMS does not pre-assign the cases to pallets, but allows the operator to build a pallet on-the-fly. Cartons are continually added to the order pallets until they are all accounted for or when the operator believes that the pallet is “full” and starts another pallet for the same order.

In either case, the system makes sure that the scanned carton belongs on the pallet. If it doesn’t, the RF unit alerts the operator by making a sound. However, be aware that this method is not totally fool proof as a distracted operator may complete the scans but then not actually place the carton causing the WCS or WMS to be mislead. This method is also a bit slower than Voice directed put as the operator must occupy a hand with the RF scanner at some point during the palletizing process.
Option 4: Voice Direct Put

Instead of looking at the RF unit to determine what pallet the scanned case belongs on, a voice directed system could be used. Operators wear head sets that “tell” them the pallet ID number to put the cases on. When the operator says the carton ID (or scans the bar-coded carton ID number), the system tells them the pallet number. Once the case is put on the pallet, the operator confirms the “put” by saying a check digit or some other confirming code to the system. This method is similar to RF scanning but frees up the operator’s hands allowing for greater throughput, especially when palletizing large or heavy boxes. Again misreads can occur with this method if performed by distracted operators.

Option 5: Put to Light Palletizing

Instead of looking at the RF unit to determine what pallet the scanned case belongs on, a put-to-light system could be used. Light indicators are hung over the pallet spots and when the operator scans the bar-coded carton ID number, the appropriate light illuminates. If multiple operators are sorting to the same area, multiple colored lights can be used with a different color assigned to each operator. To confirm that they put the cases on the correct pallet, the operator “extinguishes” the light by pressing the lighted button.

Option 6: Build One Pallet per Sortation Lane

A good way to remove the human error is to reduce the variability in palletizing operations. It’s the K.I.S.S. method. Your sortation system could be designed or redesigned so that there is only one pallet at the end of each sortation lane – making a one-to-one sort. This is one of the most effective ways to decrease cross pollution between multiple pallets.

Also, you may be able to accomplish this layout without making changes to your equipment. Be forewarned, however, that this requires batch picking in significantly smaller waves thus increasing operational costs –
which may or may not overshadow the savings you would get from the improved palletizing quality. To overcome this issue, more sortation lanes can be added to your existing system or a buffering and sequencing system can be installed between the picking and sortation systems. In high volume situations cartons can be sequenced using a case buffer (typically an ASRS) and released to ergonomically designed stations for manual palletizing.

Option 7: Robotic Palletizing

In the end the best way to remove the human error is to remove the human. Mixed case palletizing has come a long way toward complete automation. Robots are better, end-of-arm tools are better, vision systems are better, and warehouse control systems are better – making this technologically feasible. The capital costs are definitely higher than the other options, but the quality results are also much higher while improving the labor and ergonomic costs associated with palletizing operations.

About the Author

As a Systems Consultant for Bastian Material Handling, Marvin has the benefit of using his knowledge of best practices in distribution systems and processes to assist Bastian’s customers in building world-class supply chains. Marvin has had the opportunity to work with many customers in various industries, with projects that range from minor changes to complete redesigns of supply chains. He truly enjoys partnering with customers and engaging in these opportunities.

About Bastian Material Handling

Bastian Material Handling (BMH) is an independent system integrator dedicated to helping our customers increase their productivity through proven automation, information systems, and sound operating procedures.
We provide turnkey solutions from design engineering and simulation all the way through installation and project management. We take great pride in providing exceptional service and flexibility to our customers.

Bastian’s solutions vary in complexity from simple manual ones to highly automated systems such as mobile robots, Automated Storage and Retrieval Systems (ASRS), AGV’s, RFID, sortation, carousels, and conveyor systems. Every solution Bastian proposes is considered on its own merits to provide tremendous productivity gains and a quick return on investment.