



Logistics Association of Australia Ltd

PROCESSES USED IN BEST PRACTICE DC'S

In his sixth article, Bill Gobbe, winner of the 1995 LMA International Study Award, writes about processes used in some of the world's Best Practice distribution centres.

Processes

Rarely are the processes the same between two distribution centres. Factors which influence these differences include the product, its size, shape and durability, the culture of the organisation, the layout of the premises and marketplace demands.

This article traces material flows through a combination of typical Fortune 500 companies' distribution centres.

Some companies have specific materials handling needs, such as frozen food storage. Such product specific processes will not be covered in this article.

Receival / Putaway

Incoming goods arrive during a time window specified on the purchase order.

The distribution centre has allocated this time to optimise resources in the receiving area.

The product is packed in standard packaging, nominated by the distribution centre to allow the least amount of variation in its internal processes.

Weight and packing material is consistent and the labelling has been carefully designed to allow the product to be despatched without repackaging at the distribution centre.

The packaging label has been specified or supplied by the distribution centre and includes at least the product code, purchase order number, product weight and dimensions and the quantity in each package outer.

Each of these codes is also shown as a barcode and has its predetermined place on the label to facilitate faster recognition by the operator on its arrival.

On arrival, the outer condition is checked and the received quantity checked against the delivery docket before signing.

The appropriate barcodes are scanned into the computer system using a radio frequency handheld terminal.

This confirms the receipt against the purchase order and into stock, alerts accounts payable and order personnel of the goods' arrival, and initiates a putaway label.

A label is printed for each pallet, its main purpose to show the bin location for putaway.

The bin location position has been decided in advance, based on pallet size and expected sales rate.

If the product is for immediate supply, it is sent to a cross docking location. The cross docking area is marked on the floor between receiving and despatch, each pallet space having its own bin location number.

Many distribution centres have a space problem due to inventory being larger than expected. The trend is to have a large proportion of an incoming shipment sent to an overflow storage facility and brought back to the main distribution centre as needed.

This is preferable to the practice of storemen searching for empty spaces or moving stock around to create pallet spaces.

Storage

Fast-moving stock is stored close to despatch or conveyor systems. This generally applies to new products, the slower and older stock lines stored highest and further away.

Where split case orders are processed, flow racking is used for the fastest moving medium sized items, bordered by conveyor on the low side. Very fast lines have pallet spaces behind the flow racks and are continually replenished by roving replenishers.

Carousels are used for storing large product ranges of slower moving loose product - vertical for very small items and horizontal carousels for

medium sized items. Position of stock is checked monthly to ensure the fastest movers are in the most efficient picking areas.

High bay racking stores slower moving palletised stock, supported by wire guided turret trucks, although in some areas of California the wire guidance has been removed due to wire breakage during earthquakes.

Shelf-based split case storage is more than one level, with the faster movers on the lower levels.

All bin locations are clearly marked in large sans serif letters and show the location's barcode. The floor locations are painted on the floor and have signs suspended from the roof showing the floor location number and barcode in larger black on yellow print.

Replenishment

Pick face replenishment instructions are sent to a radio frequency unit on the stock picker or turret truck. The instruction is sent and picked as needed for urgent orders. Non urgent replenishment takes place in the first wave of the day or batch at close of the day's customer order entry.

The instruction is automatically generated by the computer system when the pick face is reduced to a certain number of cartons or units.

Picking

Wave picking is common. Orders are released at regular intervals or as the previous wave passes a particular point.

Full cartons are picked from rack to conveyor in the case of fast movers, while slower movers away from conveyors are picked to a stock picker.

The picker is given a stack of labels in bin location sequence and is expected to pick about 470 cartons per hour to the conveyor and 120 per hour to a stock picker.

As well as the bin location, destination details and a barcode of the order are printed on the label. The computer stock is downgraded at the time of label printing.

Loose or split case picking varies according to the product being picked. One method for small items and medium volumes of orders is a pick to light system using bins linked by radio frequency to a multi bin trolley. A PC on the trolley receives a number of orders and sends pick messages to the pick to light system on the bins.

A number of orders are picked at the same time.

They are sorted by using a bin for each order on the trolley. Quantities of low cost items such as nuts and bolts are determined by weighing them on scales attached to the trolley and linked to the PC.

Medium size items in a high volume environment are picked to cartons from a pick to light system. Standard sized cartons are made at the beginning of the line.

Another method uses a pick to invoice system with variable size cartons using a common base dimension.

A barcoded label is added to the corner of the carton. The label shows the zones from which the order is to be picked as well as the order number, destination and carrier details.

The height of the carton sides is determined by the size of the order. The system calculates the weight of the order and indicates the carton size to be used.

The carton moves along the conveyor system being added to by pickers located in the various zones. The zone pickers are expected to pick 60 to 80 lines per hour.

Pick quality checks are on the conveyor system. This consists of scales linked to the computer system and a barcode wand placed shortly before the scales.

The system calculated weight includes an allowance for the carton and filling weight. Shortly after an incorrectly picked carton passes over the scales it is sent down a reject line for checking.

Split case orders generally need filling to avoid damage to the product during transport. A number of methods are used for the fill, including a liquid filled plastic envelope which expands to fill the space in the carton as the liquid solidifies by chemical reaction.

The cartons in multi carton orders are picked independently of each other and are consolidated at despatch.

Single order items are batch picked to a tote which travels to a packing area where the item is fed into a core sealing machine which inserts it in between two layers of contact adhesive-backed corrugated cardboard.

As the carton proceeds along the conveyor line, it passes a scanner which prompts the printing of that carton on the appropriate carrier manifest along with all relevant information.

When the carton arrives at the despatch area it is diverted to the appropriate spur, depending on its destination or transport method.

Some items must be kept upright at all times and to ensure this occurs, a TILT device is attached to the side of the container to alert the receiver if it has not been kept upright during the preceding process.

Stocktaking

A variety of policies exist relating to physical counting of stock to ensure computer inventory accuracy.

One company, which counts once a year and then only the fastest 200 SKU'S, considers the accuracy of these as representative of the complete stock.

This relates to 2% of the SKU's in the facility but more than 70% of the inventory.

In addition to this annual stocktake, an inventory control team member investigates and rectifies every instance of an item not being at a location when a picking instruction has sent a picker to pick that item.

Another company only counts the palletised stock. This represents 80% of the value of the stock.

A number of rack rows are counted on a particular day each month, the aim being for all rows to be counted each year.

One company counts 2% of its products - a number of the fastest movers plus a range of randomly chosen products - seven times each year.