

Taking a Byte out of Computer Distribution

The burgeoning personal computer business has created an evolutionary material handling project for Vanstar in Indianapolis.

The paint was hardly dry on the walls of this 435,000-square-foot facility in July 1997 and already managers were planning an expansion in the manufacturing side of the building. One hundred new workstations in the manufacturing area are being added. An automated packaging system, now in the prototype stage, is expected to go online later this month. This need for more space reflects the unsurpassed growth of the computer market, not poor planning.

Five years ago when we reported on the company's revolutionary move (*MHE*, December 1992) to blend computer manufacturing and distribution under the same roof, company managers anticipated growth, but nothing like they've experienced.

Vanstar has added joint manufacturing agreements with several major computer manufacturers to configure customers' computers at its new Indianapolis site. The manufacturing part of the business runs three shifts; distribution runs two shifts. Currently, manufacturing is producing 1,200 "kits" per day, and the 100 new workstations will boost that to more than 1,800 per day.

A note of explanation is required here. Manufactur-

A unique blend of manufacturing and distribution in a single facility has helped Vanstar stay ahead in the fast-paced computer business.

by Clyde E. Witt, senior editor

ing for Vanstar means configuring a customer's computer systems. Since the units come to the manufacturing area from distribution in separate pieces, they are referred to as kits. We'll

explain the manufacturing process in more detail later.

Ramping-up at the speed of light

Vanstar's former location is only a few miles from the

new building. But in terms of material handling, size and throughput, it's a long way down the road.

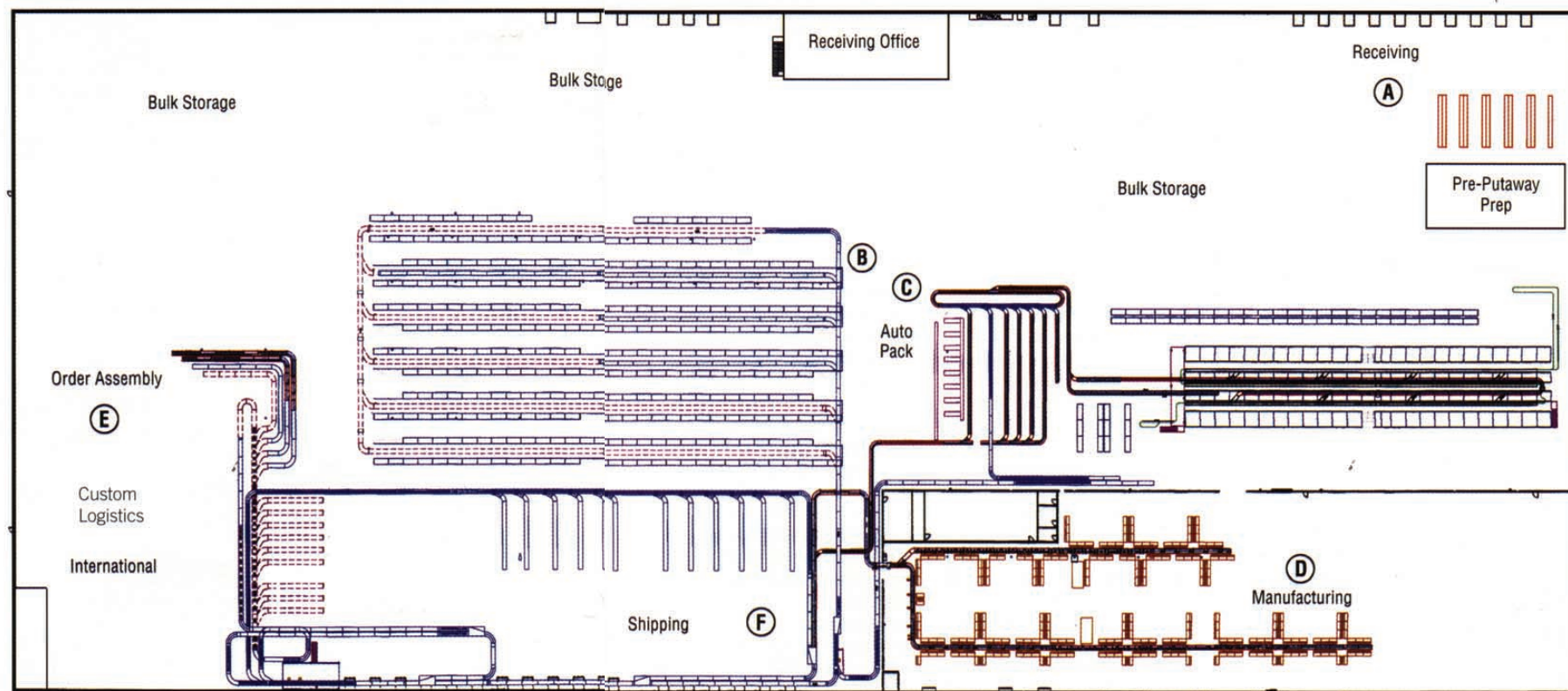
When it became apparent that a new facility was required, the company opted to remain in the Indianapolis area because of the strategic logistics advantages. Company headquar-

ters are in Atlanta and there is another, smaller facility on the West Coast. The new building has more than 50,000 square feet of space dedicated to manufacturing, up from 15,000 square feet.

The company's name (formerly ComputerLand) and business direction changed a couple of years ago from re-

tail sales to concentrating on serving major corporate accounts. Soon, the pressure was felt on material handling managers in both manufacturing and distribution to meet the new demands. It's one thing to promise 48-hour service, but a supply chain management challenge to actually do it, says Steve

All product is scanned as it enters the distribution center (point A). In the picking modules (point B), orderpickers scan bar code labels at rack locations to receive picking instructions. From the picking modules, totes or cartons flow to the packaging area (point C) or manufacturing (point D) as directed at sort-control, the first point of decision the system makes through the WMS. Completed kits and filled orders travel via roller conveyor to order assembly (point E) where they are checked again before moving to shipping (point F).





As the technician builds the kit, he makes online notes on the installation that will go to the user of the computer.

Sturgill, senior manufacturing manager.

The distribution part of the business grew from 105,000 square feet to 405,000 square feet. The layout and configuration of the new facility were done with manufacturing in mind, as well as achieving a productive throughput in distribution. Two separate but related operations — manufacturing and distribution — key off of material handling.

Following the flow

Radio frequency data communications (RFDC) is at the heart of this distribution center. Vanstar uses its own warehouse management system (WMS), Distribution Center Management System (DCMS), to control the flow of goods on receipt from vendor through the entire operation.

All goods coming into the center have an advance shipping notice (ASN) so the distribution center knows at least a day ahead what product will be arriving. One area of the receiving dock is dedicated to full trailer loads of a single

product, such as computer monitors, from a single vendor. Another area of the dock is dedicated to multiple-product receipts that arrive via air freight or less-than truck load.

Bar code labels on every product are scanned using hand held terminals or light pens. The data collected is tied to the product's purchase order number for order verification. When the product has been received and verified in the receiving area, it is briefly staged in the pre-putaway preparation area. In this area, put-away and stock keeping unit (SKU) labels are generated. Typically it is an hour or less from the time a product is received until it is available for picking in the distribution center. If the incoming item is needed immediately, it takes only about 15 minutes to get it through the receiving process.

From the pre-putaway area, the product is directed to one of three areas: bulk locations, case modules or repack modules. The WMS makes the determination and directs the product to the proper location.

Currently, employees are directed to pick locations and products using hand held RFDC terminals. The orderpicker scans the label on the tote to marry it to the order he is selecting. He can begin his pick at any location in the six picking modules by scanning any bar code at any rack location. The message he receives on his terminal will direct him to the correct location and item to pick.

Selected items are placed in plastic totes. There are numerous checks and verifications made by the WMS as each location and prod-

uct are scanned throughout the picking process.

A new packaging system will replace the totes with corrugated shipping cartons. The orderpicker will put the designated product directly into the carton that will be used for delivery to the customer. The correct size carton for all items in the order will be delivered to orderpickers via an overhead conveyor. The database will have all product data such as cube and weight of every possible SKU. If a new product arrives at the center and its dimensions are not known to the database, the product is placed in a dimensioner, or cubing device, that automatically measures the new product and adds the information to the database.

When all items for an order have been selected, cartons will move along a takeaway conveyor and pass over an in-motion check scale. Since the weight of all products is in the database, this weight check will reveal any discrepancies in the order. The carton continues along the line and the label is scanned to tell the packaging dunnage system how much loose fill dunnage to deposit into the carton. This center goes through about 2,000 cubic feet of expanded polystyrene (plastic peanuts) per day. An automatic case taping machine will seal the carton.

As the carton is moving through the packing process, the bar code label is scanned so that contents lists can be automatically generated and placed into cartons.

For orderpickers working in the repack modules (usually selecting small items that must be packaged into larger cartons prior to ship-

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ment), whether the order goes to the packaging stations or to manufacturing in the same building, is transparent. The WMS will direct the product to the proper location. If orderpickers are picking cases, they work from labels and are aware if the order is going to manufacturing. In either case, the order selection process is the same, and the order is routed by the WMS.

Sorting it all out

Sort-control is the first point of decision the system makes once an order has been selected. The carton's bar code label is scanned and a determination made to send the carton or tote to the packaging area or send it to the manufacturing batch consolidation area. If the order is destined for manufacturing, the tote is directed to an incline conveyor and moves overhead to another part of the distribution center.

If sort-control determines the order should be sent to the packaging stations, it is shunted into that area.

Once a customer's order has been allocated, the manufacturing center has a 48-hour commitment to select, configure and ship that order. In distribution, orders are downloaded every half-hour. The commitment in the distribution center is to ship non-configured orders the same day the order arrives. The distribution center moves about 20,000 pieces per day.

There are three scan areas on the conveyor's path, including a carton dimensioner, to direct and check all cartons moving through the system. The bar code label is scanned and the dimensioner verifies that the

size of the carton is what it is supposed to be.

As orders are selected, they are assembled and consolidated before moving into the manufacturing area or onto the shipping dock. More than two miles of conveyor winds its way through this building. There are 8,525 feet of powered roller conveyor and 2,926 feet of gravity conveyor. There are also belt conveyors used to move product up and over areas, and various types of accumulation conveyors where orders are assembled.

Dave Spear, senior distribution manager, says the company's tracking system is so sophisticated it can follow a customer's order, and everyone who touches that order, from the moment it starts through the building until it leaves the center and reaches its destination. The thoroughness of this system allows management to look at any problem or delay in the process to determine if it is an equipment problem or a handling issue that needs more training.

Customizing the customer's order

In the manufacturing, or custom configuration, area, there are currently 220 workstations. An additional 100 stations are being added to handle increased volume. The manufacturing area operates 24 hours per day configuring computer systems to customers' specific needs. Vanstar works with all the major computer manufacturers and has recently entered into agreements with several manufacturers for what is called channel assembly. Channel assembly means Vanstar will be doing more of the assembly work manufac-



If a product's size and weight are not in the database, the item is placed in a cubing device to capture dimension information.

Following A Company's Success

We first visited Vanstar in April 1991 when it was known as ComputerLand. The installation and Advanced Handling Systems were recipients of MHE's annual Value Added Award. The award recognizes extraordinary efforts on the part of a Material Handling Equipment Distributors Association (MHEDA) member.

In April 1991, the building occupied 180,000 square feet and was using about 5,000 feet of powered roller and gravity conveyor.

We were back visiting the distribution center in December 1992. Twenty thousand square feet of manufacturing cell space had been added to provide work area for a unique kitting operation. ComputerLand was expanding to configure computer systems, work that had previously been done at company-owned stores, or franchisee sales offices. It would now be done adjacent to the distribution center. Parts were pulled from the distribution side of the house and sent in totes via roller conveyor to the manufacturing (configuring, in this case) side, then back to the distribution center for shipment to customers.



Completed kits and filled orders travel via roller conveyor to order assembly where they are checked before moving to shipping.

turers had previously done in their own plants.

A technician logs onto a computer at his workstation. In manufacturing to get instructions for the computer system, or kit, he will build. He uses a hand held scanner to scan the label on each piece of product that has been brought to his work cell. This scanning verifies that he has all the required parts for the kit. It will also tell him if he has parts from another kit that have somehow been misrouted.

Even before a technician receives the kit, there has been verification of compatibility of all parts, and a prototype built for review by the customer.

Along with the online notes the technician receives to tell him what and how to install the various parts, there are online notes from the technician indicating what he has done and in what sequence.

When the build is finished, a complete set of these notes, along with the technician's name, is printed and inserted into the carton. Shipping labels are also generated at the end of the manufacturing process and affixed to the carton. The carton is placed on a powered roller take-away conveyor and entered into the shipping routine, headed for the order assembly area.

Shipping the product

Completed orders and assembled kits move to the shipping area via powered roller conveyor. Scanning the shipping labels with fixed-position scanners determines if a carton is the first or last in a customer's order. If it is the first carton, the carton and all others are

moved to a computer-assigned spot in the order assembly area until the entire order is ready to go.

When the last item in the order is determined, the software generates a checklist for the employee to verify that the order is complete. As a final check, an employee scans each piece in the order. A unique aspect of the bar code label Vanstar uses is the predicted date of shipment displayed on the label. By checking this date, the employee can verify that the order will reach the customer on the date promised.

Vanstar has a special relationship with SkyWay Freight Systems, Inc. as its carrier of choice. SkyWay Freight Systems, Inc. employees work on the shipping dock inside Vanstar's building, assembling orders and loading shipping containers.

Complete parts orders and manufactured product that have been through the order assembly area pass through a sortation system and are shunted down one of 12 shipping lanes, based on customer geographic location.

In the shipping area, employees of SkyWay Freight Systems, Inc. scan the label on the outgoing cartons to gather shipping information. Loads are staged or placed into air cargo containers. This first scan by SkyWay Freight Systems, Inc. is called a possession scan, meaning SkyWay Freight Systems, Inc. now has that product. The product is scanned a second time, called a pallet scan, by a SkyWay Freight Systems, Inc. employee and the product is tied to a specific pallet for shipment. **MHE**