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Warehouse of the Month
Hot fashions, Cool DC

Pacific Sunwear's new facility has set records for distributing this retailer's line of teen apparel.

By David Maloney, Senior Editor
Modern Materials Handling
July 1, 2002

Want to know what's hot and what's not? Ask a teenager. They are always aware of the very latest trends, and reflect it in their choice of dress.

Pacific Sunwear is a retailer that caters to teens. The company's three chains, *Pac Sun*, *Pac Sun Outlet*, and *d.e.m.o.* comprise over 750 mall-based stores that sell clothing, accessories and footwear.



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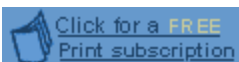
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And as we all know, what a teen wants today is not necessarily what they want tomorrow or the next day. Keeping up with those shifts put a strain on Pacific Sunwear's manual 130,000



square foot distribution center. So earlier this year, the company opened a new 365,000 square foot facility in Anaheim, Calif. that has easily surpassed the old one in volume, accuracy and speed. It also accommodates company growth, with 75 new stores added this year alone.

'We were grossly out of capacity in our old DC and we were even operating two shifts,' says Mark Kibler, vice president of distribution. 'In our second month in the new facility, we set a record for units and dollars processed, all with 30% less labor.'

The materials handling design is responsible for much of that gain. The facility features four sliding shoe sorters (Automotion, www.automotionconveyors.com) that process receipts, sort to packing stations, divert cartons to sealing lanes, and route store-bound shipments to the proper outbound docks.

Other features include wireless terminals that are used throughout the facility. In addition, the building's pack stations use put-to-light technology to efficiently process store orders in each of its 1,484 put locations.

The facility also handles orders for Pacsun.com. These e-commerce orders are picked and packed in a separate area for direct shipment to consumers.

Such a highly automated facility requires a sophisticated warehouse management system (Manhattan Associates, www.manh.com) to keep everything running smoothly. The system allows all items to be allocated to the stores before they are even received at the docks, which was not possible in the old system.

'It allowed us to go from pull distribution to push,' explains Kibler.

Backyard supply chain

Anaheim is not known for inexpensive real estate. It was important, though, for Pacific Sunwear to keep distribution here. Remaining in Anaheim allowed the company to retain most of the staff from the old DC, which was about a mile away. Corporate offices are also located in an adjacent building, which facilitates constant interaction between purchasing and distribution. Buyers visit the DC twice weekly to check the quality of received merchandise.

'We did not want to disturb our base,' notes Kibler. 'That is a luxury.'

Another reason for staying in Anaheim was to be close to suppliers. The vast majority of products comes either from local vendors or is received from overseas suppliers at the nearby ports of Longbeach and Los Angeles.

'We are thirty minutes away from our supply chain,' says Kibler.

Advance ship notices are sent on each receipt prior to arrival at the facility's 16 receiving doors. This permits the pre-allocation of the merchandise to individual stores before items enter the facility. It also facilitates faster processing once product does arrive and permits the vast majority of items to bypass storage. This is essential because stock keeping units (SKUs) must turn very quickly due to the trendy seasonal nature of the company's merchandise.

Carrier drivers are responsible for unloading arriving trailers. They place cases of merchandise onto receiving spurs, after which Pacific Sunwear workers take over. The UCC 128 label on each case is hand scanned to determine its disposition. About 10% of all receipts are randomly selected to undergo verification. These cases are opened and the contents are examined and counted.

All receipts are next pushed off onto a conveyor that feeds the first of the facility's four sliding shoe units – the receiving sorter. There are five possible destinations from here – crossdocked to print-and-apply machines, to pack areas for store fulfillment, to reserve storage, to e-commerce fulfillment, or to a value added area.

Any case that does not have a label or has an unreadable label heads to value added services where a new one is printed. This area also handles ticketing of items, though this is a small amount of receipts since 85% are pre-ticketed by suppliers. Once work is completed, the case re-enters the sorter where it will divert on this pass to one of the other destinations.

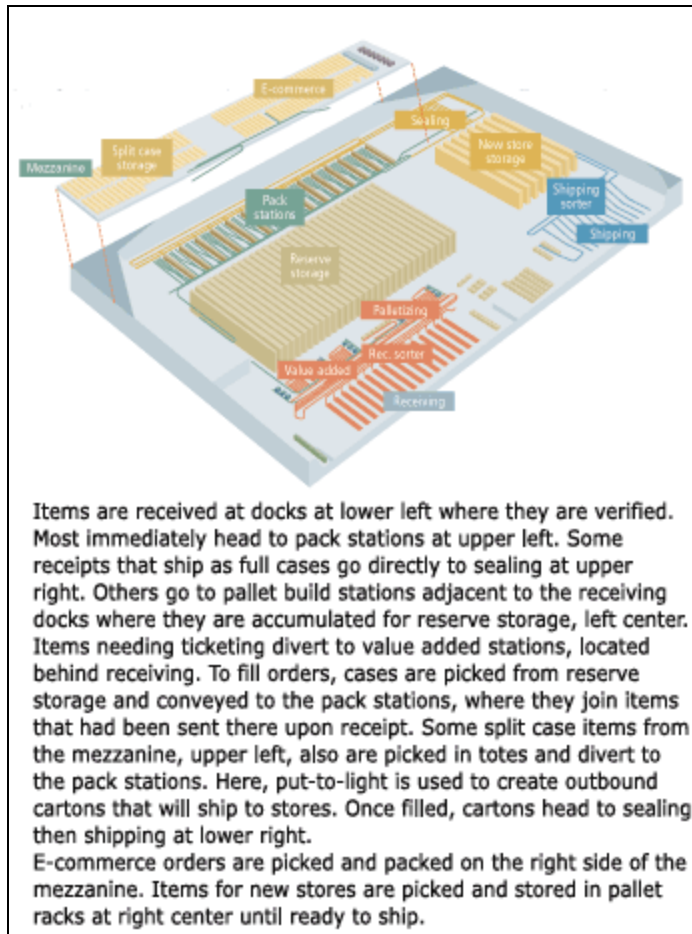
Items that will ship as full cases, about 15% of receipts, are diverted from the receiving sorter

to a conveyor that takes them to a print-and-apply area where a shipping label is attached. They then are conveyed to the shipping sorter.

Reserve storage

The third destination for incoming product is full-case reserve storage. Only about 15% of receipts head here directly from the docks. The receiving sorter diverts these cases to stations where items are manually palletized in mixed SKUs onto wooden pallets. They are then gathered up by order-picker trucks or walkie-riders and taken to narrow-aisle storage of 32-foot-high racks with seven levels.

Drivers enter the aisles, guided by side rails, and randomly choose an open slot for each case on their pallet. The case is scanned with an onboard radio frequency (RF) terminal with scanner and deposited into the slot. The rack location is also scanned to notify the WMS that the case now resides there. Once items are deposited, the driver is given another putaway assignment or is directed to select cases for order fulfillment.



Pacific Sunwear stores tend to be small, usually about 4,000 square feet. This does not permit much storage space, so each store receives items daily to keep shelves stocked fully. Typically, Anaheim ships 6-20 cartons per store each day, depending on that store's sales volumes and selling season.

Store orders are determined every morning. Most picks are typically selected in one daily wave, though special waves can also be run.

'We have the ability to create varied waves,' explains Kibler. 'For instance, we can create a wave just for swimwear. This allows one product to hit all of the stores simultaneously. Though generally, we just run the waves with all SKUs for all stores.'

The locations for needed cases are displayed on the order-picker's RF terminal. The driver then batch-picks the needed cases onto a pallet, scanning each to confirm the selection.

The cases are then deposited onto one of two conveyor spurs that feed the packing sorter.

Packing perfection

The packing stations are the heart of orderfilling at Pacific Sunwear. About 70% of all receipts divert directly here from the docks. Again, the pre-allocation performed on these items makes this efficiency possible.

Besides full cases from the docks and reserve storage areas, merchandise is also fed to the pack stations from split-case reserve shelving located on a mezzanine above the pack area. These split cases are created from full-case leftovers that remain in the pack stations at the

completion of a wave. The extra items are conveyed to the upper mezzanine for storage until there is a call again for that SKU. As orders are assigned to stores, the WMS first looks for available stock in the split-case area before assigning picks in the full case reserve racks. If the needed SKUs are available in split-case, then workers are instructed by the WMS through RF terminals to pick these items from the shelves, scanning them to confirm their selections.

'This design gives us the flexibility to fill demand to the piece,' adds Kibler.

The items are selected onto wheeled carts and placed into totes. The totes then are conveyed down to the packing sorter where they join items from the full case reserve area and those products diverted directly from the receiving docks.

The pack sorter, the facility's longest sliding shoe sorter, feeds 14 pack fingers. Thirteen handle store orders, while the remaining finger processes special handling orders such as those requiring air shipment. Each finger is composed of a sorter spur that runs down the middle of the area. Cases and totes flow down the spur to an end position where the finger splits into two pack stations. A worker here scans the bar code on each case or tote, causing the WMS to assign which of the two stations to assign. He then pushes the container to the right or left along a non-powered conveyor to the selected area.

Another worker next receives the case or tote, opens it, and scans the vendor bar code using a ring scanner. Immediately lights illuminate along a bank of 60 single-sized cartons staged in two rows that make up the put system. The lights indicate which cartons require that item, with each carton location representing a store. The worker gathers items from the case, walks along the cartons counting off the correct number of products indicated by the numeric display adjacent to each carton, and puts that amount into the box. The person then pushes the lighted switch to confirm that the operation has been completed.

Mixed SKUs continue to be added to each carton in this manner until a carton is filled. It is then pushed off onto a takeaway conveyor. The worker next reaches up to gather an empty carton from an overhead carton conveyor. This carton is labeled and placed into the open spot in the put system. The cartons that supply the pack area are erected manually in a nearby area.

The same conveyor is also used to remove trash from empty cases in the packing area. Once all items from a case have been removed, the worker simply places the empty onto an open carrier where it is later removed for disposal.

Meanwhile, the full cartons that were pushed off from the pack stations are conveyed to the sorter that feeds the sealing lanes. The cartons pass through the sealers and are then conveyed through an inline scale before heading to the shipping sorter, the facility's fastest sortation unit. Cartons are diverted down ten lanes according to carrier route. Powered extenders at the end of the spurs reach into the outbound trailers to ease the manual stacking of cartons.

Small package carriers handle shipments. FedEx Ground is used for most of the country and can reach the majority of stores within four days. Western Parcel Express covers West Coast destinations, making most of these deliveries next day. Lyndon Air services Alaska and Hawaii, while FedEx delivers weekly to Puerto Rico.

New store processing

With 75 new stores opening this year, Pacific Sunwear must also process large amounts of items intended for a single destination, as each store requires about twenty pallets of merchandise to initially stock its shelves. This is really the only time that pallet handling comes into play here.

New stores are assigned a location within the pack module that accumulates the merchandise in a similar manner to the way other store orders are filled. However, instead of being sorted to an outbound dock, the new store items are diverted to their own spur where they are palletized and manually stretch-wrapped.

The pallets are then picked up by lift trucks and taken to a separate storage area containing pallet racks. This same storage area also holds store supplies. When ready to ship, the pallets are pulled from the racks and loaded at a separate dock onto a trailer that will head directly to that store. Shipments are scheduled to reach the new location three days prior to the store's opening.

www.pacsun.com

Pacific Sunwear also runs a very successful online operation. These orders are additionally processed at the Anaheim DC. Monday is the biggest day for e-fulfillment, since many orders come from teens surfing the site on weekends.

The second level mezzanine that holds split-case reserve items is also home to e-commerce fulfillment. Pacific Sunwear treats its e-business as a store, albeit a virtual store. Just as the other stores receive merchandise allocations, so does the e-store. In fact, it is designated as 'Store 899,' and is given its own slot within the pack area. Items are accumulated here into cartons, just as with other stores. Instead of being routed to the shipping sorter, though, these cartons are conveyed to the mezzanine.

Cases of new receipts are also conveyed from receiving to the e-commerce area. Additionally, some full cases of items are gathered at the receiving docks onto plastic pallets. These are taken by reach trucks to the edge of the mezzanine and lifted to a safety gate area on the upper level.

All arriving items are hand-scanned and randomly placed onto shelving at the discretion of the worker. The location is also scanned. A limited number of fast movers are additionally placed into flow racks.

Any e-orders received before 2:30 p.m. Pacific time are filled and shipped the same day. Picks are made from lists with each item scanned and placed onto carts. The carts are then wheeled to separate packing stations on the mezzanine. Here, the items are wrapped in tissue and bubble-packed if necessary. Gift wrapping is also available.

The item is then placed in FedEx packaging for overnight deliveries, or U.S. Postal Service mailers for second-day delivery. Parcels are then labeled and accumulated into bulk mail containers. The large metal containers are next wheeled to the gate at the edge of the mezzanine where a reach truck from the main level stretches up to gather the load. It is then transported to the dock and loaded onto a parcel truck.

Fun in the sun

Kibler expects that as capacities increase, the facility will become even more productive. Eventually, the new building will be able to support more than 1,400 stores, or nearly double the current output.

He and his team have been pleased with the performance of the facility, even though it is still ramping up.

'There are always some surprises in going from rudimentary to full-blown automation,' says Kibler. 'Our biggest challenge was getting the vendors to comply with the facility's requirements.'

From a materials handling standpoint, though, he says the building has been perfect.

'We went in 12 months from green-field to a facility that is right for our business,' he adds. 'We are very pleased.'



Click the icon to read how American Eagle Outfitters also uses a put system to distribute to its stores.

SYSTEM SUPPLIERS

Pacific Sunwear Anaheim, Calif.

Products: clothing, accessories, shoes

Began operations: January, 2002

Facility size: 365,000 square feet

Employees: 160 one shift; 200 seasonally

Volume: 42-million units annually

Daily throughput: 4,000 cartons; 7,600 peak

Active SKUs: 12,000

Warehouse management system: Manhattan Associates, 770-955-7070,
www.manh.com

Conveyors and sorters: Automotion, 708-229-3700, www.automotionconveyors.com

Design and integration: Sedlak Management Consultants, 330-908-2100,
www.jasedlak.com

Order pickers, reach trucks, walkie riders: Crown Equipment Corp. 419-629-2311,
www.crownlift.com

Truck battery systems: East Penn Manufacturing (Deka), 610-682-6361, www.eastpenn-deka.com

Racks and shelving: Morgan Marshall Industries, 708-758-6300
www.morganmarshall.com

Put-to-light system: Professional Control Corp, 262-251-3000, www.lightningpick.com

Extendable conveyors: Best Diversified Products, 800-327-9209,
www.bestconveyors.com

Dock equipment, levelers, trailer locks: Rite-Hite Corp., 800-285-5956,
www.ritehite.com

Flow racks: Keneco, Inc., 800-932-0121, www.kenecoinc.com

Fixed scanners: Accu-Sort Systems, 800-227-2633, www.accusort.com

Portable scanners: Symbol Technologies, 516-563-2400, www.symbol.com

In-line scales: Ramsey Technology, 612-783-2500, www.ramseytsr.com

Plastic pallets: Trienda, 800-356-8150, www.trienda.com

Plastic storage bins: Akro-Mils, 800-253-2467, www.akro-mils.com

Totes: Systems Design Inc., 708-596-8888, www.sysdes.com

Sealing units: 3M Packaging Systems, 800-722-5463, www.mmm.com/packaging

Print-and-apply units: Weber Marking Systems, 847-364-8500, www.webermarking.com

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