

CASE STUDY

Combining All Catalogs Into One Warehouse Boosted Productivity At Redcats UK

BY JEAN V. MURPHY

The home shopping leader needed to combine fulfillment operations into one distribution center after parent company PPR added three new catalogs.

Home shopping is big business in Europe as well as the U.S., and Redcats Group is a major player in both markets, ranking third worldwide in home shopping sales. A subsidiary of France-based retail giant Pinault-Printemps-Redoute (PPR), Redcats has operations in 18 countries, 40 internet sites, numerous catalogs and annual revenue of around 5bn euros (\$6.7bn).

The UK division of Redcats accounts for about a sixth of that income. Its oldest brand, Empire Stores, is a general apparel and home furnishings catalog that dates back to 1911. It became part of PPR in 1991. In 1995, PPR launched Redoute mail order catalogs in the UK and two years later added Vertbaudet and Daxon. Redoute markets fashionable clothing for young and middle-aged women, while Vertbaudet offers children's and maternity clothing. Daxon caters to older shoppers for apparel and home goods.

The rapid influx of new products and customers that came with the addition of

three catalogs put a strain on Redcats UK's fulfillment operations. "The new catalogs were hugely successful and growth was phenomenal," says Andy Parker, head of warehouse planning and engineering. The company's primary distribution center in Kettlethorpe, Wakefield, located in north-central England, had been built in 1973 and was not equipped to handle the additional demands. "The picking conveyors and packing hall equipment were installed in 1973 and just couldn't take the volume and expansion," Parker says. As a result, the new catalogs were fulfilled at a second, auxiliary warehouse in nearby Horbury. "Having goods dispatched from two different sites was just not efficient," says Parker.

The greatest inefficiency was having two separate distribution systems, he says. The Kettlethorpe site had developed a reliable and economical distribution network that consolidated and trucked packages to regional service centers, where they were then dispatched to individual couriers for

home delivery. This operation met Redcats's promise of 48-hour delivery and was a much lower cost operation than the traditional parcel service that Horbury was using, he says. "We really wanted to get all of the parcels into our courier network and the only way we could do that was to build an extension on to the Kettlethorpe site."

Redcats set to work creating a concept design for the addition. Design criteria were driven by the need for a large number of pick faces and for a throughput capability of at least 19,000 items per hour. Primary constraints were the amount of available land and the existence of surrounding houses. The company also wanted to have room for additional future growth.

These considerations led to a design that went up as well as out. The team decided on a 120,000-square-foot extension with three floors to accommodate needed pick faces and two double-deck sorting machines. "The houses around us limited how high we could go—the extension is just over 12 meters in

height—but the three floors allowed us to triple our existing pick faces and feed the sorters from multi-directions,” says Parker. This design also left the company with some spare land for future development.

Once it had a concept design, Redcats UK identified a number of suppliers around the world that it thought could meet its requirements. “There are only about 10 major systems integrators and sortation and materials handling companies with the ability to build to these volumes,” says Parker. The company sent out tenders to them all. After analyzing the bids, several contenders were eliminated. “Some simply were not able to meet our requirement to handle 19,000 items per hour and some could meet that requirement only in a much larger space,” he says. The field was then narrowed to five: Dematic (formerly Siemens Dematic), Kosan Crisplant, Muller Martini, CML and Vanderlande.

Redcats UK worked in detail with these five, using their standard equipment to fine-tune the designs and having them produce

computer simulated models. “We asked them to simulate each section of picking, the conveyor feeds, buffer capacities, sorting and packing. We looked at bottlenecks and areas where we could improve our plan and then we re-tendered,” says Parker. After that round, three more companies were knocked out. From the final two Redcats selected Dematic.

There were many reasons that Dematic won the bid, including its ability to cite many similar, large sortation projects, says Parker. Perhaps most important, however, was the attention the Dematic team paid to Redcats’s requirements. “Through the tender process and subsequent discussions and meetings, it was apparent that the people at Dematic really read our documents in detail and understood not only the project requirements but our business needs,” says Parker. “We needed to reduce delivery lead times; we needed a system that would enable us to offer next-day delivery service; we needed to integrate all the catalogs and the brands; we had to improve item availability; and we

needed to offer a service that matched or exceeded that of our competitors.”

Dematic’s solution integrated both forward and backward, says Parker. “We had told them we needed a sorting and packing system that would handle these volumes and this level of growth, but with their computer modeling, Dematic went backwards and suggested improvements in the new pick design. They also went forward into packing and modeled our dispatching system. The result was a much better solution for us and we ended up buying the picking, sortation machinery and packing equipment from them.”

The overall quality of the design and equipment was another deciding factor, Parker says. One example is the use of zero pressure, low-noise conveyors. “A lot of suppliers say they have zero-pressure conveyors, but they don’t actually deliver it,” says Parker. Zero pressure, he explains, means that boxes on a conveyor can be easily pulled even when in a queue of other boxes. “In many systems, the pressure



builds up so that when you want to pull a box out from the middle, it is a problem. Dematic has a system that really is zero-pressure because it uses brakes on the rollers to create a gap between boxes."

Dematic's Sortec machines also met Redcats's low-noise requirement. "Even with a high induction rate, the equipment is very quiet as close as one meter away," Parker says.

In its tender, Redcats had asked for a sortation system with 1,000 chutes. "Nobody could deliver 1,000 chutes, without using more space than was available but Dematic gave us 952 chutes," he says. They did this with positive carriage discharge, allowing them to reduce the pitch of the chutes, making them slightly narrower, "which meant we could get more chutes and have a higher degree of sortation, which improves operations," he explains. Moreover, Parker adds,

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— Andy Parker of Redcats UK

the chutes are high-quality stainless steel, whereas most other suppliers offered wooden or fiberglass construction.

Dematic also far exceeded Redcats's capacity requirements. "Theoretically the system can handle 40,000 items per hour and, practically, 34,000 items," Parker says. Currently Redcats's throughput is 19,000 items per hour.

After-sales service was another important issue. "Dematic has a UK network of service engineers and depots for spare parts as well as full-time engineers on call, UK-based training facilities and software support just 60 miles away. So although the Sortec machine is Italian made, all the functions are supported in the UK," Parker says.

Finally, Dematic was able to meet Redcats's time schedule. "This was very important to us because this was a big project that would deliver major savings," Parker says. "Each week we delayed bringing all of the four catalogs together and into the courier network was costing Redcats money."

Dematic's bid was cost competitive, Parker says, falling between the lowest and highest bids. "We believe that Dematic wanted a UK installation of the Sortec double-deck sorting system," he says. Once Redcats had made the decision and actually began working the project, "we knew we had made the right choice," Parker says. "The Dematic project team was absolutely first-rate."

The System Explained

Here is how it works. Orders from call centers, the internet and post are routed to Redcats's central computers, where they are processed overnight and released to Kettlethorpe the following morning. "Warehouse management actually pulls the work from the computer rather than having the computer drive the work to them," says Parker.

with four tote bins. Before beginning the route, the picker peels off barcode labels from the ticket and attaches them to a small card on each tote box. This barcode tells the control system where to route each tote once it is placed on the conveyor. It also designates the batch number and the number of boxes within that batch.

The picker then starts the route, going to the first position and item designated. After picking the item—which typically is a folded and poly-bagged article of clothing—the picker peels the appropriate barcode label from the ticket, attaches it to the item, and puts it in the designated tote. When all items are picked, they place the tote boxes onto a central conveyor. The pickers then return the picking sheet, which is used as the basis for incentive payments.

The central conveyor takes each box to a buffer area where all of the boxes in an individual batch from all areas of the warehouse come together and are marshaled down one of 10 lanes.

"A batch of 3,000 to 4,000 items will equate to about 250 plastic tote boxes," says Parker. "So these boxes come together in a 30-minute cycle into the buffer system and the warehouse management system reads the barcodes and sorts the boxes into lanes."

In the next step, the batches are released from the buffering system to the sorting machines. "These are double-deck sorters, so we have inducting platforms on the east and west ends," Parker says. Each sorter has seven inducts for a total of 14, and each induct averages 1,350 items per hour. At each induction station, a worker removes items from the tote box and places them on the induct conveyor, barcode up. As each item passes under a barcode scanner, the sorter allocates the item to a carriage that takes it to the appropriate chute, which deposits the item at the packing station. Each packing station receives from four chutes, getting around 25 items (10-11 orders) per dispatch sack which is designated for a particular postal code.

Because it has the capacity, Redcats also uses the induct lines to send all paper insertions and customer advice notes that go with each order, as well as labels. These also are scanned, sorted and sent down the appropriate chute.

Packers consolidate each order into a parcel. As an accuracy check, the packer

Kettlethorpe works two shifts and early hours typically are used to replenish the picking areas from reserve stock. Then picking orders are sent out in batches. A batch can range from 2,500 to 4,000 items and take 20 minutes to 30 minutes to pick. At seasonal and new catalog peaks, the warehouse will pick 190,000 items per day.

The picking area is spread over three floors with an east and west side. In addition to these six picking locations—two sides on each floor—there are separate sites for hanging garments and for free gifts that accompany many orders. "We have about 800,000 pick faces in forward picking and another 1.6 million items in carton locations in forward picking, for a total of approximately 2.4 million items in forward pick. Also we have 290,000 hanging garments in the garment pick area," Parker says.

Pickers in each area gather their picking tickets, each with either 45 or 90 items, which are printed in proper walk sequence down the aisles. The picker has a trolley

matches symbols on the order paperwork with symbols beside each item on the pick ticket. "During the overnight processing, the computer allocates a different symbol or shape to each customer's order and this symbol is printed on the customer's paperwork as well as beside the customer's items on the picking tickets," explains Parker. The packer can then quickly match symbols as they assemble the parcels. Once assembled the parcels are labeled and put into a clear plastic dispatch sack, which also is labeled with a barcode. Each sack holds approximately 10 parcels.

The sacks are then attached to an overhead track which delivers them to the appropriate dispatch dock door, based on the sack's barcode label. Once read, the barcode becomes the source of an electronic manifest which lists all the sacks dispatched. This electronic manifest is sent to the receiving service center so they can plan their work.

Redcats uses two UK trucking companies: Lynx and Reality. Loading is automatic, with the sacks being dropped onto a conveyor that feeds into 40-foot articulated vehicles. These vehicles take the sacks to regional centers around the country where they are unloaded and transferred to small vans that deliver them to a network of 2,600 couriers. The couriers, many of whom are retired people or day workers looking for extra income, then deliver the packages to consumers' homes in the evening. On delivery, the courier gets a signature on the manifest, which is returned the next day and scanned into the Redcats system.

Each courier within a postal sector receives, on average, three sacks or roughly 30 parcels for delivery each night. "The beauty of this system is that it gives us a high level of interaction with customers, because couriers make deliveries in the early evening when customers are at home," says Parker. "We get a lot of customer feedback this way."

The couriers also deliver new catalogs to the doorstep and they often pick up returns, either on request of the customer or when making another delivery. Returns are transported by Lynx and Reality back to the warehouse at Horbury, which now is used for dispatch of larger, non-apparel items and for all returns processing.

Returns are a big operation at Redcats UK, since roughly a third of all shipped parcels come back. "This is part of the UK



home-shopping culture," says Parker. "Customers will often order two sizes and keep only the one that is the best fit, so we do have a lot of returns—as many as 60,000 items per day."

Horbury has 40 opening and entry work stations to process the returns, he says. These workers unpack the order and accompanying paperwork and credit the customer for the return. Items are placed in totes and moved via conveyor system to a refurbishment section with around 100 work stations. "At this stage, workers check the item and, if it is in good order, they repackage it for restocking." Some garments may be sent for cleaning or ironing before being repackaged. If the garment is damaged, it will go to disposal, which may include being sold to a discounter, or be returned to the manufacturer.

Redcats has two peak seasons a year: one is the winter holiday period and the second is when the spring/summer catalogs are issued. To cope with the peaks without increasing labor costs, the company employs an annualized hours system. Parker explains that workers are paid on an average work week of 35 hours. During peak season they could actually work 40 or 42 hours per week and then drop back to

28 or 30 hours during off-peak times. Often, he adds, receiving is on peak hours while shipping is off-peak and vice versa "so we flex the workforce within an area to suit the volumes. The management skill is to get the weekly hours correct, so we have to predict, based on forecasts and historical trends, when we are going to be busy."

Since installing this system Redcats UK has shipped an average of 13 million parcels and 33 million items per year, Parker says. While the system was designed for a seven-hour daily operation, Redcats now operates two shifts a day. "In relative terms, this system is probably the equivalent of 11 years old," Parker says. Nonetheless, the system's uptime currently is running at 99.69 percent.

Redcats recently upgraded the software that controls the entire system to the latest Windows-based version. "With that upgrade, I think we are probably good for another seven to eight years," says Parker. ○

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