

Automated System Optimizes Excel Beef Plainview, Texas Distribution Facility

World-class distribution facility processes over 30,000 boxes every day

Whether it's a steak on the grill, a pot roast in the oven, or a hamburger with all the trimmings, beef is an All-American favorite. But today's beef customers — from large grocery chains to specialty restaurants — increasingly demand shorter lead times, smaller lots, and fresh, high-quality products.

And that requires a fast, flexible distribution system with precise inventory control. Such as the one Excel has installed at its processing and distribution facility in Plainview, Texas featuring state-of-the-art material flow systems.

Excel, a division of Cargill Foods, is one of the nation's leading beef suppliers, processing several thousand head of cattle a day in Plainview, Texas. As business grew and customer demands

became more complex, Excel realized that its manual order fulfillment system could not provide the necessary level of service.

Ergonomic concerns focused on the need for workers to lift heavy boxes

Boxes of beef were stored on manually loaded flow racks. Paper-based order picking was inefficient and often inaccurate. In addition, workers had to handle boxes weighing as much as 110 pounds, further slowing the process and leading to damaged boxes.

With the new system, Excel is able to sort, store, and ship boxes using high-speed automated sorters, conveyors, and buffers. Every box is tracked in real time. As customer orders are filled, the system ensures that each shipment is filled exactly as ordered and delivered on schedule.

A design-build partnership to ensure smooth material flow in a refrigerated environment

The success of the system can be attributed in part to the design-build partnership between the parties. Every component is designed for efficient material flow and high reliability in a demanding refrigerated environment. Extensive computer simulation helped to refine and prove the system's design concepts and op-

erating parameters before the system was installed.

A brief tour of the Excel distribution center illustrates how the system works. Primary cuts of beef are care-



fully Cryovac-wrapped and packed in boxes. Each box contains the same product. The boxes are bar code labeled with the product cut, grade, and net weight, which can be up to 110 pounds. The boxes then travel across a skyway conveyor into the new distribution center, which is kept at a constant 28°F to ensure product freshness. As the boxes move along the skyway, a laser scanner reads the bar code label and updates the inventory. *(Continued)*



The new handling system quickly, accurately configures full pallet loads, mixed pallet loads, and floor-loaded orders



An intelligent, automated system

The control system then decides the destination of each box. Some are immediately sent to accumulation lanes to be palletized; some are stored in a mini load buffer until a full pallet can be accumulated; others are stored in a box buffer for individual orders.

Because some of Excel's orders are for full and mixed pallet loads of product while others are for mixed loads of individual boxes, the system is designed to easily accommodate all possible combinations. For example, individual boxes destined for floor loading onto trucks are pulled from the storage buffer, sorted, accumulated by customer line item, and released to one of four floor-loading dock areas.

Boxes that are to be palletized are sent to one of 20 accumulation conveyors. When a full pallet load is accumulated, the boxes are released to an automatic palletizer. Pallets can be created in several different stacking patterns, depending on the product type and box size. The pallet loads are stretch-wrapped

for stability; then a Sorting Transfer Vehicle (STV) picks up the wrapped

pallets and delivers them for storage in a unit load buffer.

As trucks for pallet-loaded goods arrive, the system retrieves the required pallets and delivers them to an STV. The STV then takes the pallet to an output conveyor, where a lift truck picks up the pallet and loads it onto the truck.

Throughout the process, control software developed by Auto-Soft directs all aspects of system operation in real time. This state-of-the-art control system, running on Windows NT, is built on client/server architecture, distributed controls, and a relational database.

Customer service flexibility

Orders are transmitted from Excel's host computer, and may be modified at any time prior to being released for filling. This flexibility allows Excel to offer customers an extra measure of service.

A world class distribution operation

With its ability to configure quickly and accurately full pallet loads, mixed pallet loads, and floor-loaded orders, the system gives Excel a world-class distribution facility able to process over 30,000 boxes every day. So Americans can enjoy fresh, high-quality beef on the dinner table.



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