

## Refrigerated Mixing Center

### Application:

**Kraft Foods Inc.  
Columbus, OH**



*ACTIV System—Commissioned 1998*

This application includes one 4-level high ACTIV module installed in a new refrigerated mixing center. It also includes an adjacent Kraft-supplied conventional rack storage area and a fully integrated, dynamic pick line replenishment system located within the ACTIV footprint. Kraft's Warehouse Management System (WMS) controls the entire operating warehouse environment.

The ACTIV System handles mid to high moving SKUs; slower moving product is stored in the conventional rack area. ACTIV is fully automated, tracking pallet and location information throughout the system.

### ACTIV Input

ACTIV's induction conveyors operate independently to receive pallet loads from all areas of the facility (Mixed Pallet Picking, conventional storage, and dock). Each ACTIV input point consists of a drop point, a sizing check, a reject spur, and a short pallet conveyor directly connected to an ACTIV vertical transfer lift (VTL). As the palletized loads move toward the VTLs, they are size-checked. Acceptable loads continue into the ACTIV System; unacceptable loads are routed to the reject spur for rework and return to the system.

ACTIV's storage algorithms direct the system's VTLs, cross-aisle transfers (CATs), and deep

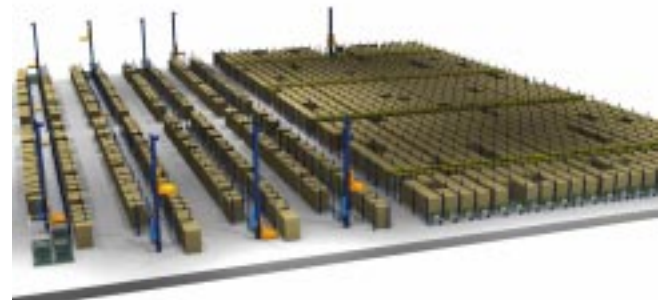
### System Data

Total Usable ACTIV Positions	7,800
Conventional Storage Positions	1,600
ACTIV Staging Positions	567
ACTIV Pick Spurs	325
Miscellaneous Pick Spurs and Floor Locations within ACTIV Pick Aisle	54
VTLs	9
CATs	18
DLTs	153
Tilt-Top Delivery Lanes	8
Levels of Rack	4
Staging Levels	3
Staging Slots (1 lane wide; 3 levels high)	21
Lanes per level, System (max.)	43

lane transfers (DLTs) to position the incoming pallets within the system based on when they are expected to be retrieved. This ensures that the next pallets required for output are at or near the output paths of the deep lanes for quick access.

### Mixed Pallet Picking

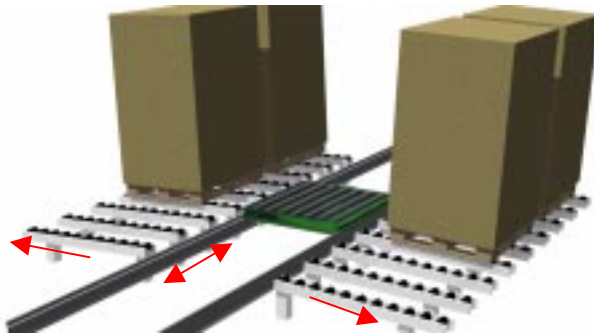
The Mixed Pallet Picking area is also located within the ACTIV footprint. Here, under direction of the WMS, full and partial pallets are converted into mixed pallets. Automatically replenished pick spurs are used for the higher volume product; lower volume product is zoned for the conventional racks and associated pick faces.



*ACTIV Level 1—Mixed Pallet Picking and Storage*

## Pick Replenishment

For pick replenishment, ACTIV moves the selected loads to the appropriate VTL, which is connected to a special purpose delivery device called a Tilt-Top DLT. The Tilt-Top DLT uses a standard DLT chassis modified with a powered roller conveyor bed. The device employs standard DLT maneuvering procedures to transport



*Tilt-Top DLTs move product to the picking area.*

## ACTIV Output

ACTIV output can direct full pallets to both staging and pick area. For staging, the loads exit the system through staging slots located at the end of the deep lanes. The system has twenty-one of these slots, each containing twenty-seven pallets (one trailer load).

For this application, trailer orders include both mixed and full pallets. The staged sequence follows the trailer load plan, which may include multiple orders on one shipment. In a typical operation, the forklift pulls loads from the staging slot face and positions them directly onto the assigned trailer. Because ACTIV continually replenishes the staging slot face, the forklift operator is able to concentrate on rapid trailer loading.

## ACTIV Benefits Summary

### *Space utilization...*

- **Conventional construction supported**—Facility was constructed as a conventional standard-height warehouse. ACTIV did not require super flat flooring.
- **Smaller footprint required**—Because of ACTIV's high-density characteristics, the footprint was 30% smaller than that required for conventional construction.
- **Warehouse space maximized**—Fully integrated, dynamic pick line replenishment system was incorporated within the ACTIV footprint.

### *Production improvements . . .*

- **Value-added processes supported**—ACTIV's Path Management Software manages the intricate flows created by value-added processes such as order staging and pick face replenishment. Code date rotation is achieved. Manual replenishment travel is minimized.

### *Personnel savings . . .*

- **Personnel requirements minimized**—Labor associated with product movements is minimized; trailer loading time is significantly reduced. Peak shipping periods can be accommodated with less effort hours.

### *Product savings . . .*

- **Product damage eliminated**—ACTIV's automatic soft handling virtually eliminates product damage within the ACTIV footprint.

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