

## Buffer Warehouse

### Application:

**Kraft Foods Inc.  
Battle Creek, MI**



*ACTIV System—Commissioned 1998*

This ACTIV application is installed in a new warehouse facility. With 25,000+ positions, it is the world's largest ACTIV System. A corporate Warehouse Management System (WMS) manages the entire operating warehouse environment.

In operation, existing Automatic Guided Vehicles (AGVs) move finished goods (110-inch high modules on slipsheets) from the client's Material Handling Center (MHC) to one of three ACTIV input points where pallets are inserted under the modules for movement within the ACTIV System.

ACTIV handles the entire MHC flow from the pallet inserters, ending at the trailer loading area. The ACTIV System also supplies the customer pallet building process, then stores and stages these customer pallets for customer orders. ACTIV is fully automated, tracking pallet and location information throughout the system.

### ACTIV Input

The ACTIV input points consist of a short input conveyor, a pallet inserter, and a sizing frame. As the palletized loads move toward ACTIV's vertical transfer lift (VTL), they are scanned and size-checked. Acceptable loads continue into the ACTIV System; unacceptable loads are routed to a reject spur for rework and return to the system.

ACTIV's storage algorithms direct the system's VTLs, cross-aisle transfers (CATs), and deep lane transfers (DLTs) to position the incoming pallets within the system based on when they are required for output.

### System Data

Total Usable Positions	25,070
Staging Positions	900
VTLs	10
CATs	32
P-CATs	4
DLTs	432
Levels of Rack	6
Staging Levels	2
Staging Slots (1 lane wide; 2 levels high)	30
Lanes per level, System (max.)	76
Total lanes (approx.)	432
ACTIV Inputs in loads/peak day	
MHC Modules	2,201
Stacked Customer Pallets	1,347
Dock Ends Inputs (Both)	20
ACTIV Outputs in load/pk day & (pa/pk hr)	
MHC Modules	1,524
Customer Pallets (stacks)	1,283
Total Staging (both)	2,807
	(115) pk hr
Captive Pallet Stacks	
Conveyor System	220
Modules Delivered to CPP	989

### Customer Pallet Preparation (CPP) Area

The CPP area is used to convert the palletized MHC modules into customer pallets. This area is located within the ACTIV footprint and consists of two identical subsystems that operate independently. Each subsystem includes a layer handling unit, a pallet dispenser, a stretch wrapper, a labeler, a scanner, a customer pallet stacker, a reject spur, and the connecting conveyor equipment. Upon completion, stretch-wrapped customer pallets are returned to the ACTIV System for buffering. ACTIV uses the same storage algorithms as used on the MHC modules to store the customer pallets.



*CPP Area*

## ACTIV Output

Loads exit the ACTIV System through staging slots located at the end of the deep lanes on Levels 1 and 2. The system has thirty of these staging slots, each containing 30 pallets (one trailer load).

For this application, trailer orders include both MHC modules and customer pallets (CPs). The MHC modules are shipped to Distribution Centers; the CPs, to customers. In a typical operation, the forklift pulls the loads from the staging lane face and loads directly onto its assigned trailer. Because ACTIV continually replenishes the staging lane face, the forklift operator is able to concentrate on rapid trailer loading.

## Pallet-CAT (P-CAT)

The P-CAT is a specialty device used to enhance ACTIV's trailer staging functionality and flexibility by facilitating the client's operational need to move and ship loads on slipsheets. This application includes four P-CATs, which operate two per level in their own aisle behind the staging lane face on Levels 1 and 2. The system's thirty staging slots are split into sides so that each P-CAT pair handles fifteen slots.

For slipsheeted orders, a slipsheet truck slides the load off its captive pallet and pulls the load aboard the truck. The P-CAT then moves into position behind the lane face, retrieves the empty pallet, stacks it within itself, and moves out of the way so that the next palletized unit load can index forward. The P-CAT accumulates the captive pallets and, when full, delivers the stack to an ACTIV input point for reuse at the input end of the system.



*P-CAT accumulates standard and custom captive pallets and delivers them to an ACTIV input point for reuse*

## ACTIV Benefits Summary

### *Production improvements . . .*

- **Value-added processes supported**—ACTIV's Path Management Software manages the intricate flows created by value-added processes such as customer pallet preparation and P-CAT functions.

### *Maintenance improvements . . .*

- **System maintenance simplified**—Normal periodic inspection and maintenance takes place outside the rack structure.

### *Personnel savings . . .*

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

### *Product savings . . .*

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

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