



# Unifrost

*Frozen Food Distribution Center*



*Ardooie Koolskamp, Belgium*

Storage in freezers has always represented a challenge in managing warehouse space and efficiency. Unifrost/Dujardin, a premier supplier of frozen vegetables in Europe, selected MAGMATIC Systems to meet this challenge at its Ardooie Koolskamp, Belgium distribution site. MAGMATIC Systems, known as ACCESS Systems in the United States, is part an automated method of storing pallets.



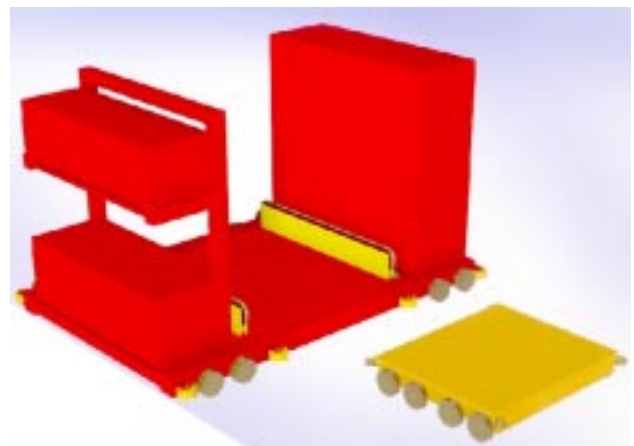
*Autonomous Vehicle on Lift*

The 37,000-pallet position freezer system installed at Ardooie Koolskamp cleverly uses autonomous vehicles that look and behave like automated guided vehicles (AGVs) within the

constraints of guide rails inside a racking system. This design, when combined with a multi-deep lane capability, gives this facility high density with tremendous flexibility for throughput and future growth. This facility allows Unifrost/Dujardin to control shipping and eliminates a large outside storage and logistics cost.

Mr. Bart Ollivier, Operations and Project Manager of this high-tech facility, visualizes 5,000 pallet moves daily using the MAGMATIC (ACCESS) equipment. Ardooie Koolskamp is designed to control inputs from manufacturing 24 hours a day and ship 16 hours a day. As many as 50 trucks can be scheduled for product pick up. The system design provides a focus for quick service at the dock door, which is a critical success factor for frozen products and a frequent problem in many facilities today. The ability to manage up to 1,500 stock keeping units (SKUs) is crucial, along with the ability to manage the peak season beginning around September.

Within the 37,000-position storage system, 8 battery powered, radio dispatched vehicles travel in and out of 10 storage levels via a vehicle lift. The lift allows vehicles to quickly ascend or descend all storage levels. In addition to the vehicle lift (which is slated to be increased to 2 in the future), the 4 pallet lifts service pallet activity directly from the storage levels. Pallets dropped off by the vehicle are queued and the pallet lifts promptly transport them into and out of the storage area.



*Autonomous Vehicle Illustration*

Inside the racking, the vehicles travel in to and across the front of storage aisles. This accessibility into storage areas gives these vehicles the travel characteristics of a fork truck, with limits to one level. Unique to these vehicles is an on-board satellite allowing them to travel up to 6 pallet positions deep in the rack. This *very efficient* approach to storage optimizes the density of the system.

In a conventional, dead stack warehouse products are usually stored 3 pallets high and 14 pallets deep that results in an average density level of 7- to 8-square feet per pallet. In contrast, a warehouse using these vehicles allows for a density level of 2-square feet per pallet. This savings in storage density results in a lower cost for the warehouse construction.



*Pallets*

The rapid service design of this system is capable of delivering a pallet every 40 seconds to a waiting truck, thus keeping the total loading time to a mere 20 to 25 minutes. On average, one truck at a time is loaded to assure a strict quality control for order integrity and temperature. The temperature, set to a nippy -25C, maintains the quality of the vegetables.

The typically full pallet orders can be sequenced for multi-stop requirements, which is the normal loading arrangement. This process of delivering the right pallet in the right order is choreography between the system vehicles and the Dumont shuttle car and conveyor system that buffers several staged truckloads ahead of the dock area.



*Conveyor System with Shuttle Car*

Every element of this system is tracked, from production to the delivery trucks. The bar code scanning of every pallet maintains the pallet identification and links to the orders. With more than 1,500 SKUs managed at this facility, the integrity of order accuracy is most critical.

Overall, the Ardooi Koolskamp facility provides

- precise control over quality,
- rapid service to the trucks,
- low-cost refrigeration attributable to the design's low cube, and
- a nearly labor free operation without the use of outside storage.

The ability of this new Unifrost facility to deliver top quality products at the lowest possible cost will keep it profitable and competitive for many years.

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