

viastore systems Leads Automation in Cold Storage

by Thomas R. Cutler

Solving the challenges of cold storage automation is viastore systems, a leading international provider of automated material handling solutions including automated storage and retrieval systems (AS/RS) and conveyor systems, warehouse management systems (WMS) software, material flow and process controls, and integrated SAP logistics solutions for new turn-key systems and for modernizing and updating existing systems.

As a system integrator specializing in cold storage, viastore manages the entire process, including design and workflow management, the building structure, insulation, the passageways between different temperature zones, and the design of air conditioning and refrigeration technologies. The company employs over 400 people worldwide and has annual sales of over US\$200 Million.

According to viastore, ensuring that AS/RS and conveyor systems can operate smoothly requires they must be equipped with freezer grade technology. The drives, controllers, and the electronic and mechanical components must all be able to withstand temperatures down to minus 45 degrees Fahrenheit. Photo sensors should be heated so they will not fog up. Control cabinets must be heated or, located outside the refrigerated zone. Also, attention must be paid to using freezer grade, food grade, or pharmaceutically compatible lubricating greases, oils and seals. Special demands regarding the corrosion resistance of metals also need to be taken into account.

According to the American Frozen Food Institute, frozen foods have been providing American consumers with convenient, affordable and ever increasing healthy food and meal options since 1930, when Clarence Birdseye's first line of frozen foods hit grocery stores. Since then, consumers have continued to warm up to frozen foods. According to Transparency Market Research, the demand for frozen foods is expected to reach \$293.75 billion by 2019. At the country level, the U.S. is the largest market, accounting for more than 80% share in the frozen food market followed by Japan and Germany. Ready-made frozen meals, frozen pizza, desserts, snacks, and entrees will account for 34% of the total global market by 2019.

A newer segment, frozen foods made with natural and organic ingredients, is quickly becoming a target for manufacturers. Advancements in freezing technologies are allowing manufacturers to preserve the nutritional value of fruits and vegetables for a longer time period and in some cases restore key nutrients once lost using prior freezing processes.

Companies that manufacture, process, store, and distribute frozen foods need to have ever-sophisticated capacities along the entire supply chain. Secure, transparent, and energy-saving cold storage material handling automation solutions that ensure high process efficiency is the new 'secret sauce' for success.

While frozen and temperature controlled automated storage warehouses are needed for food production and distribution, they are also viable in the medical technology and pharmaceutical industries. All these systems must ensure an uninterrupted cooling chain, and efficient flow of goods and full product traceability.

Manufacturers, distributors, and service providers continue to look for ways to automate processes. Automation is pivotal because frozen products impact working conditions; concurrently manufacturers and distributors utilize lean manufacturing techniques to increase accuracy, reduce errors, make efficient use of space, optimize labor utilization, and save energy. Speed and quality are key factors in competition.

Another major advantage of automatic material handling systems is that the working conditions for warehouse operators are significantly improved. Storage and retrieval processes are performed by the AS/RS. This means that order picking of deep-frozen items is based on the goods-to-person principle. It is important that the picking stations are ergonomically designed so that employees do not have to lift heavy loads repetitively, and are not exposed to the low temperatures for an unnecessarily long period of time. The WMS has a decisive influence in this regard as it allows for picking aids such as voice picking or light displays, and it also provides for a high level of transparency in the warehouse or distribution center through integrated management of batches, best-before dates and serial number tracking.

The WMS provides intelligent calculations of all processes so they engage with each other smoothly and without loss of time. Moreover, it ensures that every product is in the right place at the right time, from goods receiving to storage and order picking, to shipping so that the cooling chain will not be interrupted. Therefore the software quality should comply with international standards such as IFS, and validation according to GAMP.

A scalable WMS software package can drive warehouse processes and optimally control the distribution center based on flexible adjustable strategies. Operators can view all the information in real-time. Operation and control of the WMS adapts to workflows in the warehouse. Real-time operation means one scan or touch of a button is enough to immediately trigger the next processing step. A WMS that contains all the necessary modules for controlling the AS/RS, conveyor system, and other mechanical components makes the system seamless. Add in visualization, it can be managed by exception the control and visualization of a complex material flow system. The ability for the WMS to connect to third party products, such as freight-forwarding, customs, or shipping software via standardized interfaces, should also be an important consideration.