



Palletizing Methods in Freezer Environments: How do they compare in terms of effectiveness, efficiency and cost?

For years, manufacturers of frozen food products have been faced with the difficult problem of palletizing their product in a 0°F to -20°F manufacturing environment. The Lorenz Pan M-6 freezer palletizer, specifically designed for cold environments, is proven to save human resources in freezer rooms, increase efficiencies and improve load quality. Competing palletizing methods in frozen environments are extremely expensive, as well as inefficient and ineffective.

MANUAL PALLETIZING. One basic solution to freezer palletizing is utilizing manual labor to hand stack cases in the freezer. Because of the difficult environment, the labor turn-over is high and the load quality is often less than desired. Companies that hand palletize also risk high workman's compensation claims due to repetitive motion and back injuries. Because of the low temperature environment, increased labor is required because work rules often require that a person should be allowed 20 minutes to recover after working for 40 minutes in a low temperature area, thereby increasing labor costs even more. Many companies also supply costly outerwear for the employees in the freezer room and a separate room for them to "warm up". Valuable production time can be lost if adequate labor is not available to hand stack loads.

CONVENTIONAL "AMBIENT" PALLETIZING: Another competing palletizing method is to palletize in a warm area using conventional palletizing equipment. This exposes the finished product to elevated temperatures for an unknown period of time and severely jeopardizes the quality of the finished product. If the product is exposed to the elevated temperatures too long it may be necessary to dispose of the product. This option can lead to consumer complaints and is unacceptable in companies that place a high regard for the quality of their product.

ROBOTIC PALLETIZING: Robots have been utilized to palletize in low temperature freezers, but with inconsistent results. These machines usually require a separate control system that is much different than the control systems that operate other packaging equipment, thus requiring additional training for maintenance personnel. The tooling is expensive, sophisticated, and easily damaged. Depending on the weight or the shape of the product, robots may not be able to handle the product effectively. Robots often require near perfect packages for handling; an odd package may cause the robot to fault. Attaining an acceptable and consistent pallet load is also difficult to

achieve using robotics. Robotic palletizing used in less than perfect conditions will lead to more stress and maintenance on the system.

CONVENTIONAL “MODIFIED” PALLETIZERS: Conventional palletizers have been modified and adapted to operate at the extreme low temperatures found in a freezer environment. These machines have performed poorly because they were not designed for the low temperatures. Drive components, rubber belts, flexible electrical cables and control systems often fail. Simply stated, a conventional palletizer modified to operate in cold production will not withstand dependable, long-term operation. Machines that are modified do not address contraction and expansion of the equipment and components. The modifications do not specify the most reliable groups of components and controls needed for this environment. Constant faults due to these modified palletizers being under-engineered for cold environments produce constant maintenance on the system.

THE LORENZ PAN “FREEZER” PALLETIZER: The Lorenz Pan Company, a Germanic, family-owned machine engineering firm, is one of the largest palletizer suppliers in Europe. The Pan family operates a frozen food plant in Bolzano, Italy. Over 30 years ago, Lorenz Pan developed the M6 palletizer specifically to operate in the demanding environment of the family’s frozen food business. These efficient machines were designed to be simple to operate and maintain, while reducing floor space.

Cold Engineered. The M6 Palletizer was designed from the ground up to operate in freezers. This machine has special electrical cables, control systems, gearboxes, motors, and power transmission components all engineered for low temperatures. In addition, the company specifies a higher level of components for these machines. Machines and components are rigorously tested in the company’s frozen food plant. Partnerships with leading edge motor, controls and component manufacturers allow for advanced design and selection of components for this environment. The end result for the M6 specifically designed, tested and proven to operate in cold temperatures is a guaranteed machine.

Saves Cost and Floor Space. Because of the unique layer-by-layer design of the Pan machines, a single palletizer can often palletize multiple lines at a total speeds in the range of 25 cases per minute. The layer-by-layer machine requires the case conveyor to accumulate only one layer per line. Compared to the traditional layer palletizer that typically requires a pallet load, this style reduces cost and floor space requirements, and uses less in-feed conveyor and fewer electrical controls. In fact, at 16’ x 23’, the floor space of the M6 palletizer is 20% - 30% less than a conventional high – load palletizer machine.

Saves Energy. The energy required to operate a Pan palletizer, an important consideration in a freezer, is reduced by 25 to 50% over robotics and conventional palletizers. The main drive concept on a Pan palletizer using the layer-by-layer method provides significant savings. Unlike other palletizers, there is no breaking and positioning. With energy being expelled by heat, saving 2HP is 1500 watts. These efficient machines help keep the manufacturing environment cold, whereas other

palletizers disperse unnecessary heat into the manufacturing environment. This design has been incorporated in the extensive line of Lorenz Pan equipment.

About Lorenz Pan. In 1982 Lorenz Pan formed a company to manufacture palletizers and at present over 1200 machines have been manufactured and installed. The company now manufactures a wide range of palletizers, from low cost, low level palletizers to high in-feed, high-speed machines for many industries. Part of their core business is still supplying palletizers to the frozen food industry. Hundreds of the freezer machines are installed and operating worldwide. Pan has also developed pallet conveyor and stretch wrappers for use at low temperatures. The commitment to designing simple, rugged, energy efficient machines can be seen in all of Pan's products.

The Lorenz Pan Company has a strategic partnership with Nercon Engineering of Oshkosh, WI. Nercon is a leading supplier of engineering and conveyor systems to the frozen food industry and together the two companies have more than 30 palletizing systems installed in the USA. The M6 palletizers have been built to handle packaged Ice Cream, frozen dairy novelties, frozen entrees, frozen vegetables and frozen potatoes. With the partnership, Nercon provides complete support, including parts and service for the Pan machines sold to Nercon's customers.

About Nercon. Nercon specializes in packaging line engineering and design, controls integration and conveyor manufacturing. Having a great depth of experience in frozen food industries, Nercon's engineers are proficient at designing fully integrated and automated conveyor lines for frozen food packaging and in extreme cold room temperatures. Nercon has been a conveyor and equipment supplier to the top frozen food manufacturers for more than ten years.

Frozen foods can be successfully palletized and conveyed at 0°F to -20°F using the Lorenz Pan M-6 palletizer with Nercon's expertly designed mat style in-feed conveyors for these harsh environments. This combination of equipment and frozen conveyor expertise will provide a reduction of manual labor and maintenance, as well as an increase in production with fully automated capabilities for frozen production lines.

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