PLATE FREEZERS

Plate Freezers are the world's fastest and most energy efficient system for freezing cartons of meat.

Plate Freezers feature refrigerant-filled plates which make direct contact with cartons of product to provide a rapid, energy efficient freeze. They are the largest plate freezers in the world, with capacities of up to 3,072 cartons.

Introducing plate freezers on a commercial scale across Australia has saved approximately 15-20% of the energy consumption used for freezing in the meat industry, resulting in a significant reduction in greenhouse gases.

More than 200 plate freezer installations have been completed in Australia to date, and we have the capability to export these to all markets.

APPLICATIONS

Plate freezers are suitable for freezing a range of products, including red meat, pork, poultry and liquid cream, where there is:

- High volume throughput
- Uniformity of carton size

BENEFITS

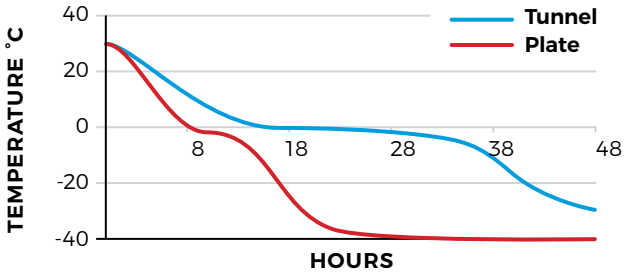
- Fast freezing – the typical 48 hour freezing cycle of air blast freezers is reduced to 24 hours in plate freezers – improving the refrigeration index, and reducing stock inventory and time to market
- Energy efficient – typically 25-30% electrical energy saving over blast freezing
- Product output with uniformly flat surfaces to improve product presentation and deliver space efficiencies in palletising, container loading and distribution – delivering a freight saving of 8% in 20 foot containers
- Hands-free operation with automated loading and unloading
- Reliable and low maintenance

ENERGY EFFICIENCY

Figure 1: *Freezing energy comparison between air blast freezing and plate freezing*

Freezing Energy Comparison	48 hr Air Blast	24 hr Plate Freezer
Electrical energy per 1,000 cartons frozen	2,891 kWh	2,197 kWh
kWh per tonne frozen (7 day production)	**106** kWh/t	**81** kWh/t
Energy saving: 24%		
kWh per tonne frozen (5 day production)	**126** kWh/t	**89** kWh/t
Energy saving: 30%		

Figure 2: *Cooling rate comparison between a plate freezer and air blast tunnel*



	Tunnel	Plate
Refrigeration Index (RI):	1.02	0.22
Process Hygiene Index (PHI):	10.9	7.4

CONFIGURATION OPTIONS

Each plate freezer installation is custom designed to meet the client's processing requirements. Consideration is given at the design stage to allow flexibility for future additions, extensions and upgrades as product throughput requirements grow.

Plate freezers are available in automatic, semi-automatic or manual configurations, and supplied using ammonia (NH_3) as the refrigerant. Capacity options typically range from 600 to 3,072 standard meat cartons, or 16 to 84 tonnes of product.

CASE STUDIES

Teys Australia (a Cargill JV)

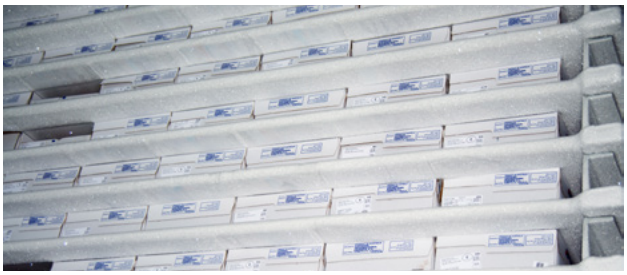
Beenleigh, QLD, Australia

Four half stack closing, elevating conveyor plate freezers with capacity to freeze a total of 7,200 cartons of beef in a 24 hour cycle.

Fletcher International Exports

Dubbo, NSW, Australia

Five plate freezers, three of which are single station opening (SSO), with combined capacity to freeze more than 12,000 cartons of lamb in a 24 hour cycle. A further 13 plate freezers have been installed at other Fletcher International Exports sites across Australia.



Linley Valley Pork

Wooroloo, WA, Australia

Two plate freezers, each with the capacity to freeze at least 952 cartons of pork (or more if cartons are smaller sizes) in a 24 hour cycle. These plate freezers have the unique feature of being able to store three different carton sizes over the various levels. The infeed system automatically detects the carton size and assigns it to the appropriate level.