

Cool Thinking Cuts Costs



Small volumes of temperature sensitive freight need no longer be an obstacle to attracting logistics and transport providers, thanks to an innovative and environmentally friendly cold-chain transportation initiative developed by Novo Nordisk in Australia. Following is an edited version of an award winning paper from Dilshan de Silva, Distribution and Warehouse Manager, Novo Nordisk Pharmaceuticals, who was runner-up in the 2006 Logistics Development Award, sponsored by CHEP Asia Pacific.

The Challenge

For companies that have large volumes of temperature sensitive pharmaceutical freight for transport within Australia, maintaining high standards of quality control is critical, particularly concerning the transportation of life-saving medicines.

Many such companies face a constant challenge in sourcing logistics support for these smaller freight volumes. For Novo Nordisk, proactive thinking led to a scientific and cost effective transportation solution for low volume, temperature-sensitive products.

The Company

Novo Nordisk Australia is a world leader in diabetes care, dominating 83.1% of the insulin market share in Australia. It also has a leading position in areas such as haemostasis management, growth hormone therapy and hormone replacement therapy.

Conception of "Think Cool"

For Novo Nordisk the challenge of constant improvement and greater effectiveness of transport support systems is regarded as a social obligation to customers through efficient and sustainable cold chain distribution processes within Australia.

The primary objective is to ensure top quality product reaches the consumer within the specified requirements for temperature exposure.

Past Practice

Before Novo Nordisk introduced its new system, addressing the long distances in Australia and the constrained delivery times of temperature sensitive freight were in the hands of logistics/transport providers. Consequently, the high risk of product loss resulted in it being sent by air transport at premium cost.

Scope of "Thinking Cool"

The first consideration in addressing this was the immense distances between the Novo Nordisk warehouse, the distribution centre in Sydney and customers Australia-wide. The company required a system that could keep the product at the desired temperature for a minimum of three days without freezing or heating its valuable contents. The following criteria were priorities:

- Ensuring product quality was maintained for long distance transport.
- Reducing damages in transit.
- Reducing packing and handling time for customer orders.
- The cost of implementation and future operating costs.
- The possibility of using road freight versus airfreight.

The Cool Solution

The Olivo Roll 1000 insulated container was selected for performance trials. Its body and door are Roto moulded polyethylene and the inside insulated by injecting expanded polyurethane foam that is CFC and HCFC free.

With a thickness of 70 to 100 mm, the insulating capacity of the walls minimises the heat transfer between the exterior and interior, protecting the product from temperature fluctuations.

The Cooling System

A simple non-mechanical cooling system using Eutectic plates, inside the top and bottom of the container, releases constant cooling capacity, previously accumulated in the freezer during the freezing process.

Performance Qualification/Validation of System

A series of field trials conducted during Australian summer and winter seasons at extreme temperatures showed that it was possible to maintain the required temperature status within the container.

Olivo Container Validation

For maximum efficiency from the Eutectic plate, the Eutectic liquid must be completely solidified. The freezing temperature must be at least 5 °C less than the melting temperature of the Eutectic fluid, i.e. a -3 °C Eutectic plate must be frozen to a minimum of -8 °C.

A 790 litre capacity chest freezer, with a normal freezing capability of -18 °C, was fitted with a temperature monitoring probe which transferred its temperature to a computer based recording system (Intech).

The ability to successfully use the Olivo container and to plan the despatch timing and return logistics depended on the turnaround time required to freeze the Eutectic plates.

The Olivo container was preconditioned at +2 °C to +8 °C for 12 hours prior to packing and the seal pressure checked.

Reverse Logistics

On return of the Olivo container and Eutectic plates to the Novo Nordisk warehouse at Arndell Park in Sydney, the outer body of the container is thoroughly checked. The Eutectic plates are also checked for any damage or leakage and, if necessary, quarantined until maintenance is completed.

Once quality control is assured, the Eutectic plates are placed inside the freezer and the Olivo container is placed in the cool room at +5 °C for a minimum of 12 hours to be conditioned for re-use.

In conjunction with the Intech recording system, the length of time the Eutectic plates were stored in the freezer and the temperature the Eutectic plates were exposed to is readily available. This information is vital for the selection of the Eutectic plates that will supply the required cool energy.

Cool Conclusion

Following the success of the field trials, distribution using the Olivo container commenced first in WA, SA and Queensland followed by Victoria and NSW in August 2006.

The main objective of maintaining product quality during distribution was achieved. The Olivo container has improved the security and handling of Novo Nordisk products, reduced damage and cost of transit and satisfied customers.

Improved handling and packing of orders and better utilisation of labour hours also resulted. Employing road freight allowed despatches to be evenly distributed across the week with the weekend devoted to transit of consignments.

Optimising the re-use of materials in this manner also complies with Novo Nordisk's environmental policy.

Significant cost savings were achieved, reducing by almost AU\$10,000 in the first month, inclusive of the cost of return logistics for the Olivo container. The costs of purchasing the Olivo containers have already been paid for with the savings within the first six months of operation.

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