

COLD CHAIN TECHNOLOGY BRIEF TRANSPORT REFRIGERATION

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Introduction

- Extensive cool chain principally in developed countries maintaining quality and minimising waste
- Around 4 million refrigerated vehicles
- Extensive air transport network
- 1.2 million refrigerated containers
- Regular dedicated train services carrying reefer containers
- Several hundred reefer ships



Transport Refrigeration Types

- Refrigerated Vehicles
 - Vans
 - Trucks
 - Semitrailers
- Refrigerated Air Cargo
- Refrigerated Containers
- Refrigerated Trains
- Refrigerated Ships



Refrigerated Vans & Trucks



Refrigerated Truck and Drawbar



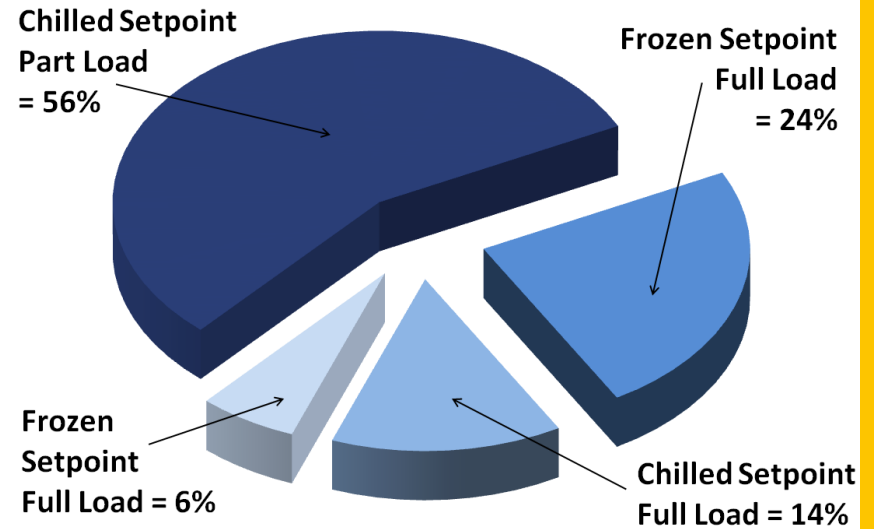
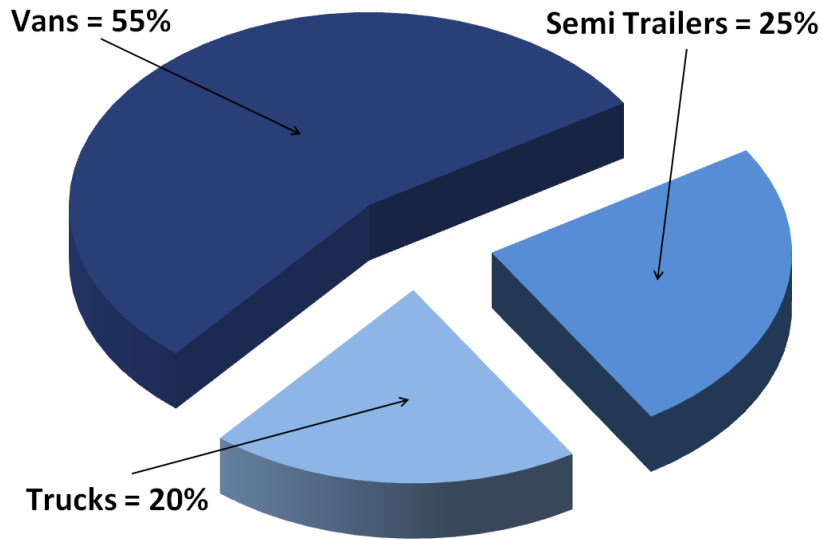
Refrigerated Semi Trailer



Multicompartment / Temperature



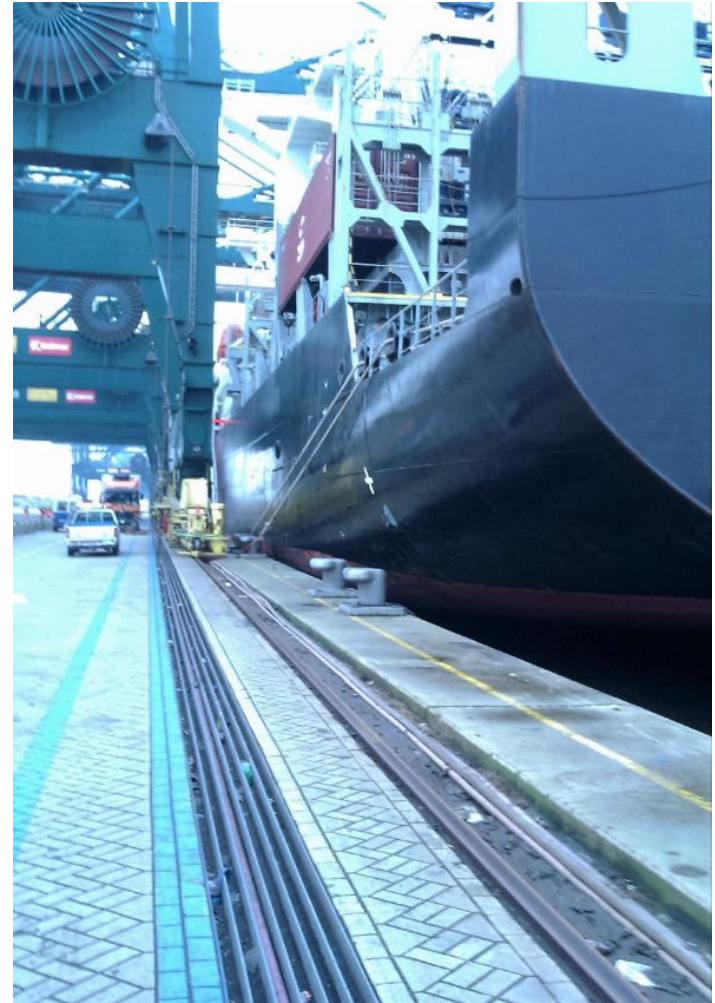
Vehicle Carriage Split



Refrigerated Air Cargo



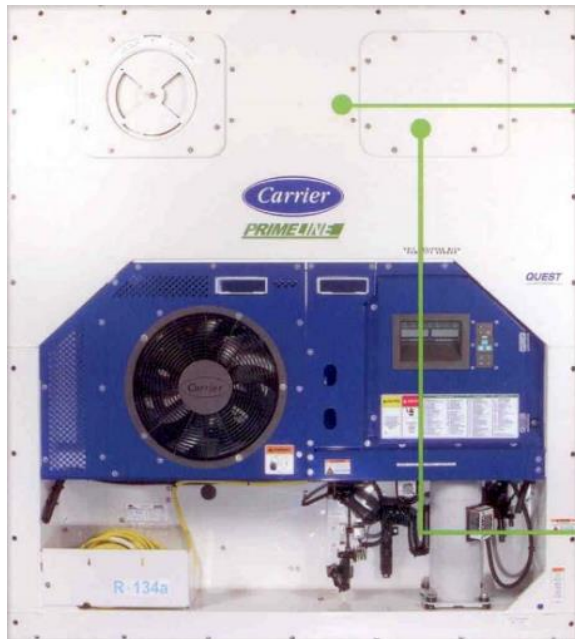
Refrigerated Containers



Refrigerated Containers



Controlled Atmosphere



CO₂ Scrubber



CO₂ Scrubber Blower



Solenoid-Actuated Fresh Air



Refrigerated Trains



Reefer Ships



Combi Carrier (R-717)



Container / Pallet carrier



Refrigerant Options

Transport Refrigeration		
Types of transport	Current higher GWP refrigerants (GWP kg•CO ₂)	Alternative lower GWP refrigerants (GWP kg•CO ₂)
Refrigerated containers, road transport, trains	HFC-134a (1360); HFC-404A (3920), HCFC-22 (1810)	R-744 (1), HFC-452A (1950); HFC-513A (573); HC-290 (5) R-717 (0)



Thanks for Listening!

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