

thermoTab™ *active*
PCM Plates for refrigeration system

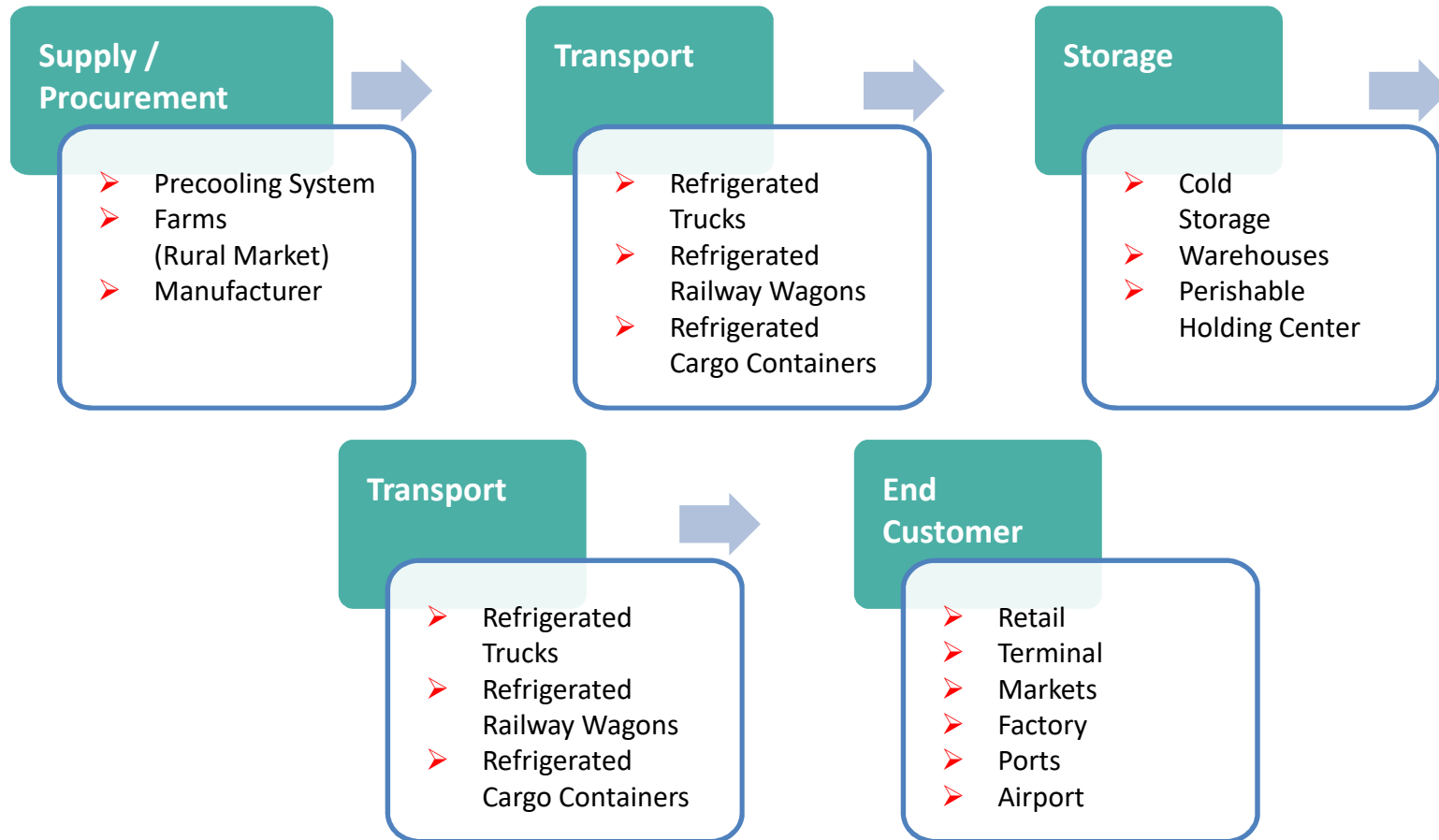


PLUSS®
TECHNOLOGY FOR
A BETTER WORLD

The logo features the word "PLUSS" in a bold, red, sans-serif font with a registered trademark symbol. Below it, the tagline "TECHNOLOGY FOR A BETTER WORLD" is written in a smaller, black, sans-serif font. The logo is centered within a white diamond shape that is part of a larger geometric design of overlapping triangles in shades of red, blue, and grey.

Overview

The cold chain logistics infrastructure



Refrigerated transportation is required to carry temperature sensitive food/medicine at every step

Current Challenges - Temperature Controlled Transportation

- High maintenance & operational costs of conventional cold chain logistic solutions



- Limited distribution radius without temperature control



“In 2015, India’s infrastructure gap in reefer transport was assessed at 52,826 units; the country is estimated to have only 9000-10000 long haul reefer trucks and zero reefer containers in use.”

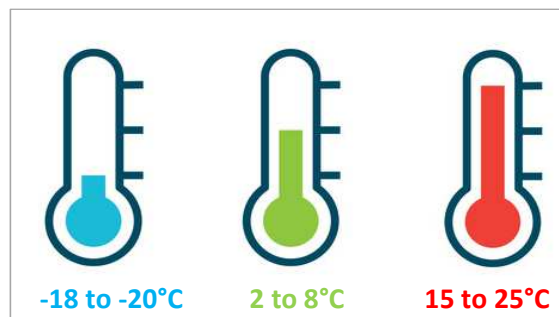
Extracted from NCCD - AICIC study 2015

Current Challenges - Temperature Controlled Transportation

- Spoilage due to poor or no temperature control



- Different F&V products require different temperature range

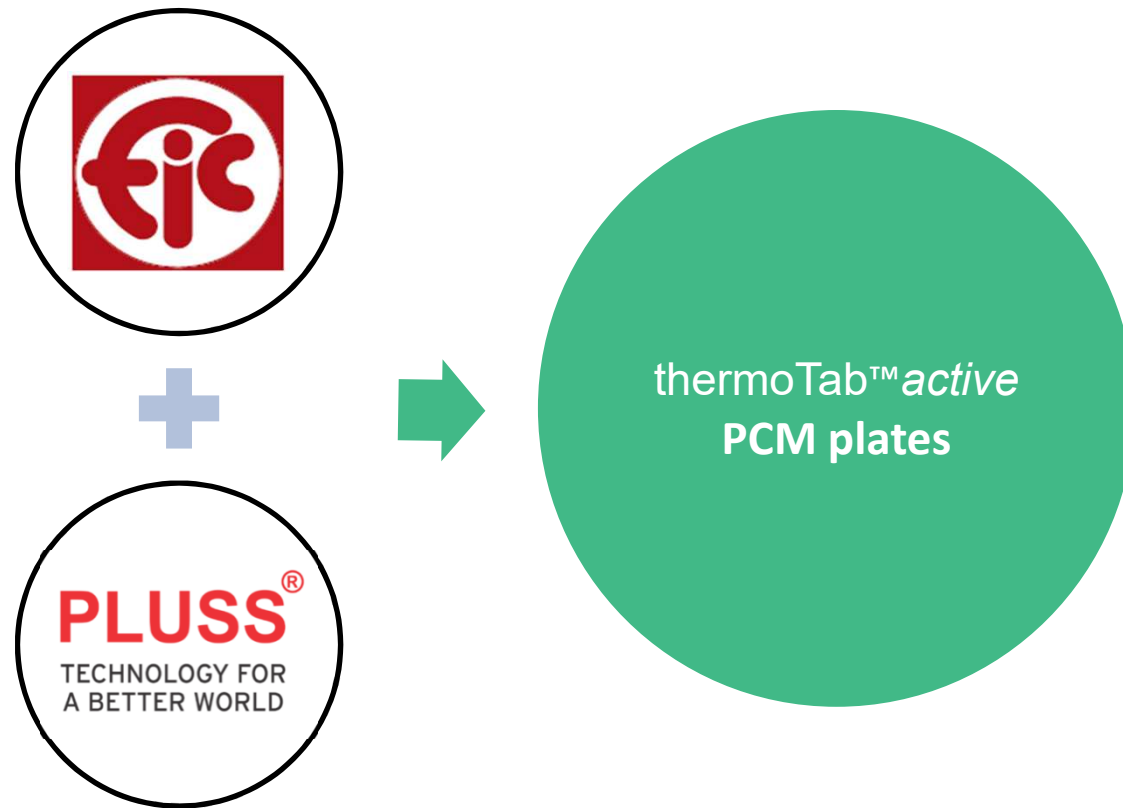


“Cold-chain development must shift from the past focus on cold storage alone, towards a supply chain based approach. The cold-chain needs to function as a conduit that communicates farm produce, **at the right temperature**, to multiple terminal markets. This approach will be crucial for doubling of farmers income, to bring farm productivity to gainful use and to have a future ready food supply system.”

– **Pawanexh Kohli, NCCD**

thermoTab™ *active* – Enabling fuel free refrigeration for logistics

- PLUS in collaboration with FIC, Italy, offers an innovative solution for temperature controlled logistic solution to enable temperature controlled transport of food and beverages.



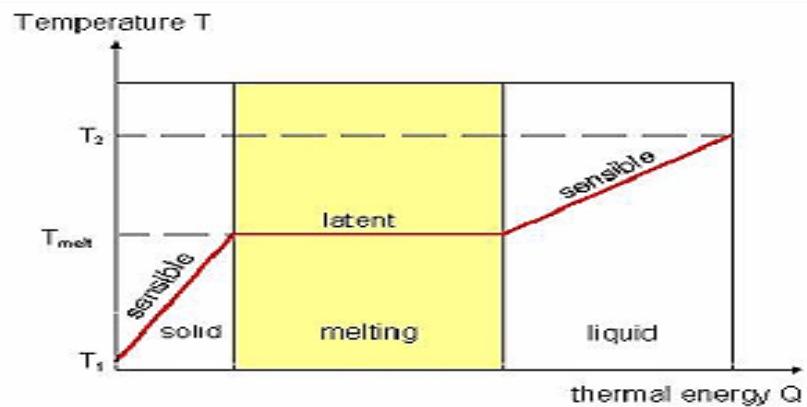
FIC: Company Profile and PCM active Plates

- FIC s.p.a has 65+ years of experience in manufacturing Heat Exchangers.
- Based out of Italy, with global exposure to more than 60 Countries.
- The material selection and design eliminates the risk of expansion and corrosion.
- PCM active plates consist of two sheets of steel cold formed and welded together with electrical resistance.
- Longer life time and no moving parts; maintenance free.
- Average cost is lower than other conventional systems.



Plus[®] PCM

- Maintains constant temperature utilizing the latent heat.
- Thermal Management to increase efficiency.
- Shifts peak power loads to off-peak hour.
- Reliable temperature backup.
- Re-usable for more than 2000 thermal cycles.
- Green technology - Environment friendly.



Range and Specification

Frozen (-15 to -25°C)

S. No	Model	External Dimension (mm)	Total weight (kg)	Wattage (kWh)
1	Thermotab™ <i>active</i> 1250F	1190 x 485 x 54	46.5	2.07
2	Thermotab™ <i>active</i> 1370F	1290 x 690 x 49	64.5	2.56

Chilled (2 to 8°C)

S. No	Model	External Dimension (mm)	Total weight (kg)	Wattage (kWh)
1	Thermotab™ <i>active</i> 1250C	1190 x 485 x 54	39.5	1.65
3	Thermotab™ <i>active</i> 1370C	1290 x 690 x 49	55.5	2.05

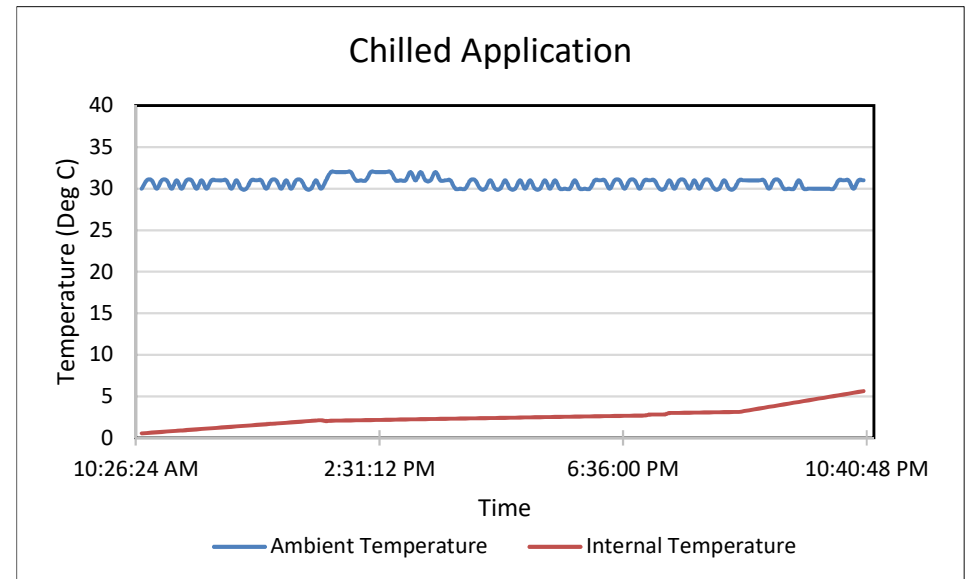
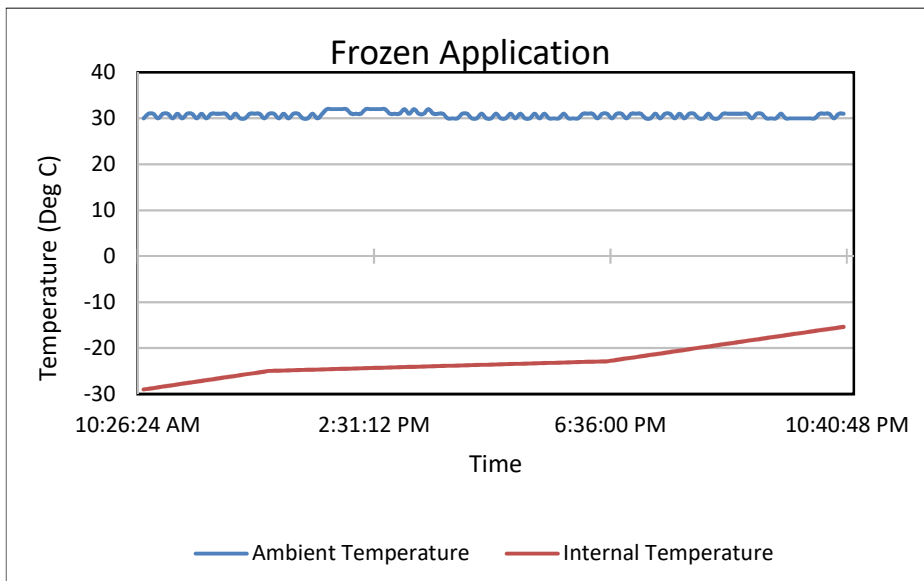
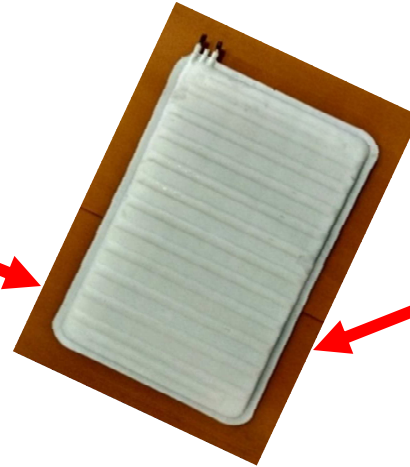
Advantages of the thermoTab™ *active* over conventional systems

Advantages

- Low maintenance
- Higher reliability
- Quick to charge
- Green technology
- Cost effective
- Longer life time
- Maintains constant temperature

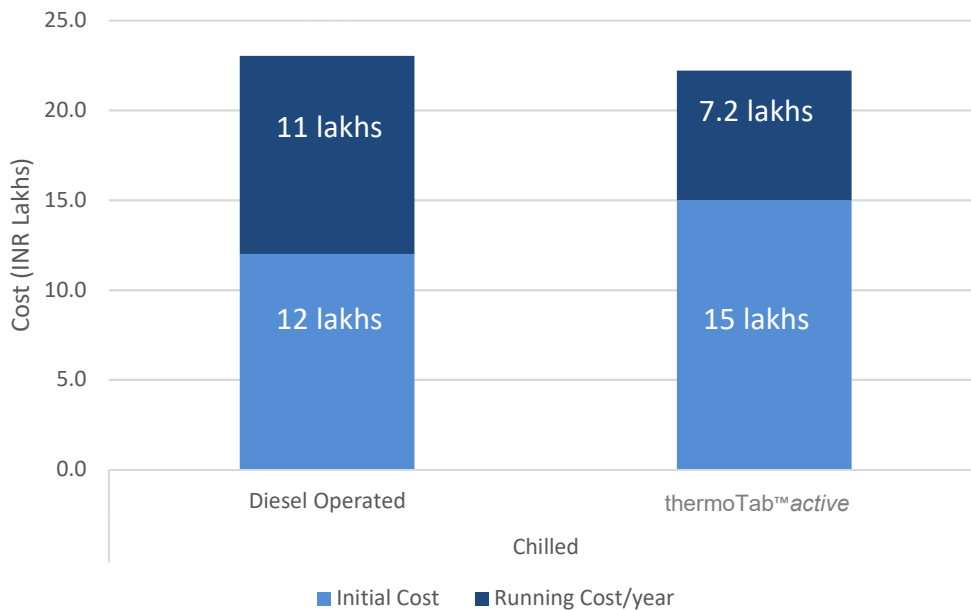


Performance & Temperature Validation

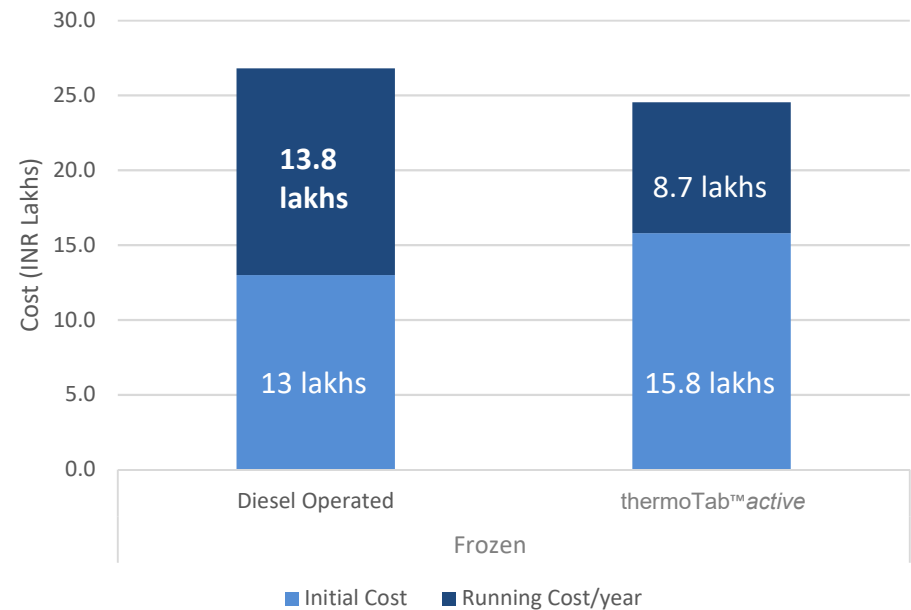


Cost Benefit Analysis

First year cost for Chilled Application*



First year cost of Frozen Application*



Parameter	Chilled	Frozen
Payback Period (year)	< 1	< 1
Annual Saving (INR lakhs)	3.8	5.1

Application

Potential Application Site

- Fresh fruits and vegetables.
- Yogurt, milk and dairy products.
- Raw meat and sea food.
- Processed food.
- Frozen food like ice-cream and cold meat.
- Vaccines/drugs.



Thank You