



Reime NIS

Network Implementation Services

Member Of The **ACME** Group



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**BUILDING A SUSTAINABLE WORLD**

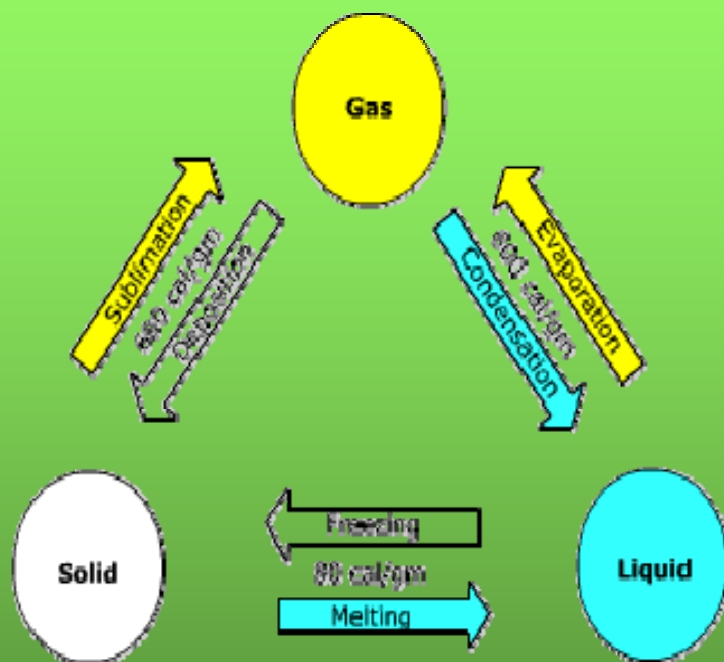


# Introduction

- PCM stands for Passive cooling solution
- Proprietary solution developed by Reime
- Provides back up for 4-6 hours in case of power failure.



# Mechanism

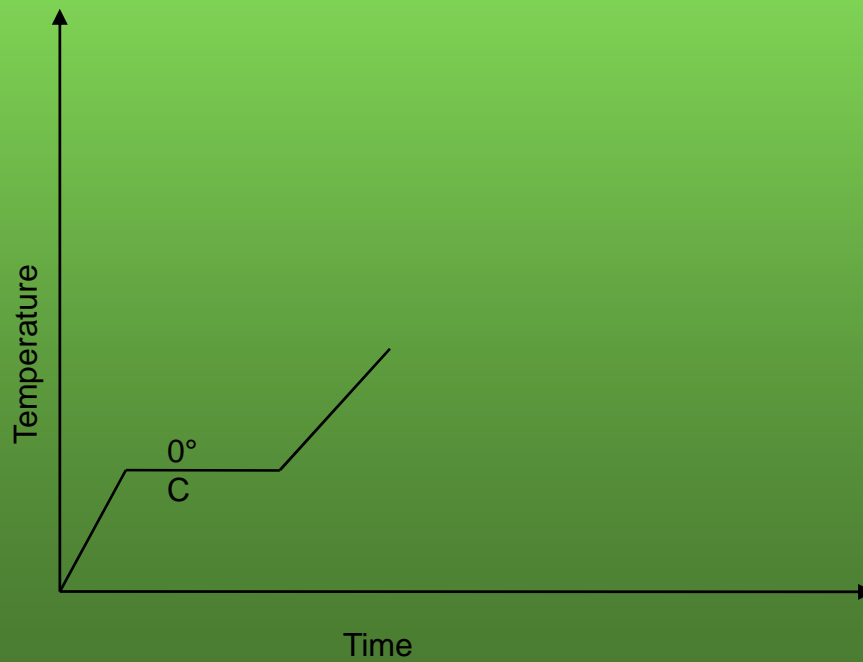


Mechanism of thermal management  
using PCM

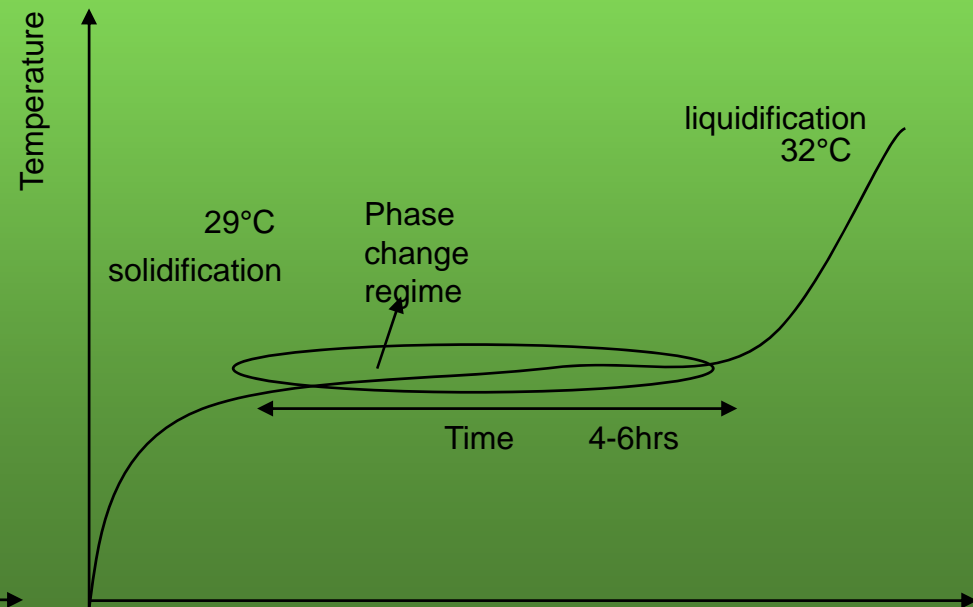
# Operating Principle Mechanism



### ICE - WATER



### PCM





# Features of PCM

- PCM - Inorganic Hydrated Salt Solution + ACME chemical additives
- Phase changing process can be repeated over thousands of cycles with no change to their physical or chemical properties for long term use.
- PCM - used in enclosure-based systems.
- The PCM has the capability to absorb and release heat energy due to its ability to provide latent heat.



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# Features of PCM

- Better Back-up efficiency in case of Power failure.
- Non – flammable.
- Comes in various ranges so that it works efficiently, depending on the heat released by Telecom sites.
- High savings in site Operational costs.
- Cools down the shelter by absorbing the heat of telecom equipments hence avoid running the Diesel Generator.
- Only one joint (at opening) to avoid leakage.



# Specifications of PCM

PCM Type	29
Appearance	White deliquescent crystals
Specific gravity	1.5
Melting point	29°C
Latent heat of fusion	188 KJ/Kg
Thermal Conductivity (liquid)	1.0 W/mK
Thermal Conductivity (solid)	0.8 W/mK
Combustibility	Non-combustible
Flammability	Non-flammable
Toxicology	Non-toxic
Stability	Stable
Transport information	Non-hazardous for air, sea and road freight



# Design Calculation

- 1 PCM Panel = 200 WH
- Heat Load of single BTS site shelter is approx. 3 KW including all heat loads (1BTS + 1MW+ 1SMPS + Batteries+ Solar Gains)
- Load= 3KW \* 4Hrs backup = 12 KWH
- Required Weight of 1 KWH = 20 KG
- For 12 KW = 240 KG
- Weight of 1 panel = 4 KG
- Required Number of panels for 12 KWH load  
=  $240/4 = 60$



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DC  
Fan





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# Principle of TMS

## Thermal Management System

Is using integrated electronic equipment and phase change materials (PCM).

TMS help in maintaining the temperature range inside the shelter from 25°C to 35°C.

PCM provides thermal back-up at telecom sites for 2-8 hours

Reducing the need of running diesel generators at high costs.

ACME's TMS comes with a complete package including the diesel generator management system hardware and software kit.



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# Benefits of TMS

Cost Saving

Reliable

Environment Friendly

Quiet

Safe

Service Free



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**THANK YOU**