



GOVERNMENT DEGREE COLLEGE (MEN)

ACCREDITED BY NAAC WITH B++ (CGPA 2.90)

Srikakulam - 532001, Andhra Pradesh, India

ph: 08942 222383 e-mail: info@gdcmskrm.ac.in website: https://www.gdcmskrm.ac.in



ICT BASED LESSON PLAN

Date and Time (duration)	20.11.2023 , 12:30 pm to 1: 20 pm
Class:	III B.SC MPCS
No. of students attended	21
Name of the Class Teacher	R.Ravi Kumar, Lecturer in Physics, GDC(M), Srikakulam
Title:	Vapour Absorption refrigeration system
Objectives	<p>The objectives of a vapour absorption refrigeration system are to efficiently transfer heat from the refrigerated space, enabling precise temperature control and effective cooling. It emphasizes energy efficiency, utilizing environmentally responsible refrigerants and sustainable practices. The system aims for reliability, adaptability to diverse needs, cost-effectiveness, and a reduced environmental footprint, prioritizing safety and compliance with regulations. Ultimately, it strives to provide efficient, tailored cooling solutions across different applications, ensuring comfort, preservation, and industrial processes are optimally managed.</p>
Materials used	<ol style="list-style-type: none">1.Computer with projector2.Internet access3. Access videos from YouTube4.Whiteboard and markers
Introduction (5 minutes) Begin with a captivating video or images.	<ol style="list-style-type: none">1. What is Refrigeration?2. How does Your Fridge Work?3. What is the Role of Heat in Refrigeration?4. Can You Name the Key Components?5. Environmental Impact of Refrigerants?6.Can you name some everyday applications or industries that heavily rely on vapour compression refrigeration systems?7.What safety precautions do you think are important when dealing with refrigeration systems? Why are they necessary?

Department of Physics

Government Degree College (Men),
SRIKAKULAM

**Virtual Insect Exploration
(10 minutes)**

Students were visualized the YouTube video and principle, working of Vapor absorption refrigeration system

<https://www.youtube.com/watch?v=1p6dgGVnS2w>

<https://www.youtube.com/watch?v=rCMLJfV86mI>

**Presentation and Discussion
(20 minutes)**

A vapour absorption refrigeration system is an alternative to the more common vapour compression refrigeration system. It operates on a similar principle of removing heat from a space and rejecting it elsewhere, but it uses a different method to achieve this. The basic components of a vapor absorption refrigeration system include the absorber, generator, pump, and evaporator.

Basics of Refrigeration:

Explanation of the need for refrigeration.

Temperature control, preservation, and comfort as primary objectives.

Components of a Vapour Absorption Refrigeration System

- Overview of the main components: compressor, condenser, expansion valve, and evaporator.
- Explain the function and purpose of each component.

Basic Components

• **Evaporator:**

- The component where the refrigerant absorbs heat from the space to be cooled, causing it to evaporate.

Absorber:

- A device where the refrigerant vapor is absorbed by a liquid absorbent. This releases heat, and the absorbent takes on the refrigerant in solution.

Generator:

- The high-temperature component where the absorbed refrigerant is separated from the absorbent. This is usually accomplished by applying heat.

Condenser:

- The component where the refrigerant vapor, now separated from the absorbent, is condensed back into a liquid, releasing heat to the external environment.

Pump:

- A pump to circulate the absorbent solution between the absorber and the generator.

Slide 4: Working Principle

• **Evaporation:**

- Refrigerant evaporates in the evaporator, absorbing heat from the surroundings.

Absorption:

The vapor is absorbed by the absorbent in the absorber, releasing heat.

Pumping:

Department of Chemistry

Governament Degree College (M)

CHIKAKHILAM

- The pump circulates the absorbent solution to the generator.

Generation:

- Heat is applied to the absorbent solution in the generator, causing the refrigerant to vaporize and separate from the absorbent.

Condensation:

- The refrigerant vapor is condensed in the condenser, releasing heat to the environment.

Working Cycle of a Vapour absorption Refrigeration System

- The working of a vapour absorption refrigerator involves a cyclic process with four main components: the evaporator, absorber, generator, and condenser. Here's a step-by-step explanation of the working principle.

Energy Efficiency and Improvements

- Discuss energy efficiency considerations in a vapour compression system.
- Mention advancements and innovations to improve efficiency (e.g., variable speed compressors, heat recovery).

Applications

- Discuss various applications of vapour compression refrigeration systems (e.g., household refrigeration, air conditioning, industrial processes).

Advantages and Disadvantages

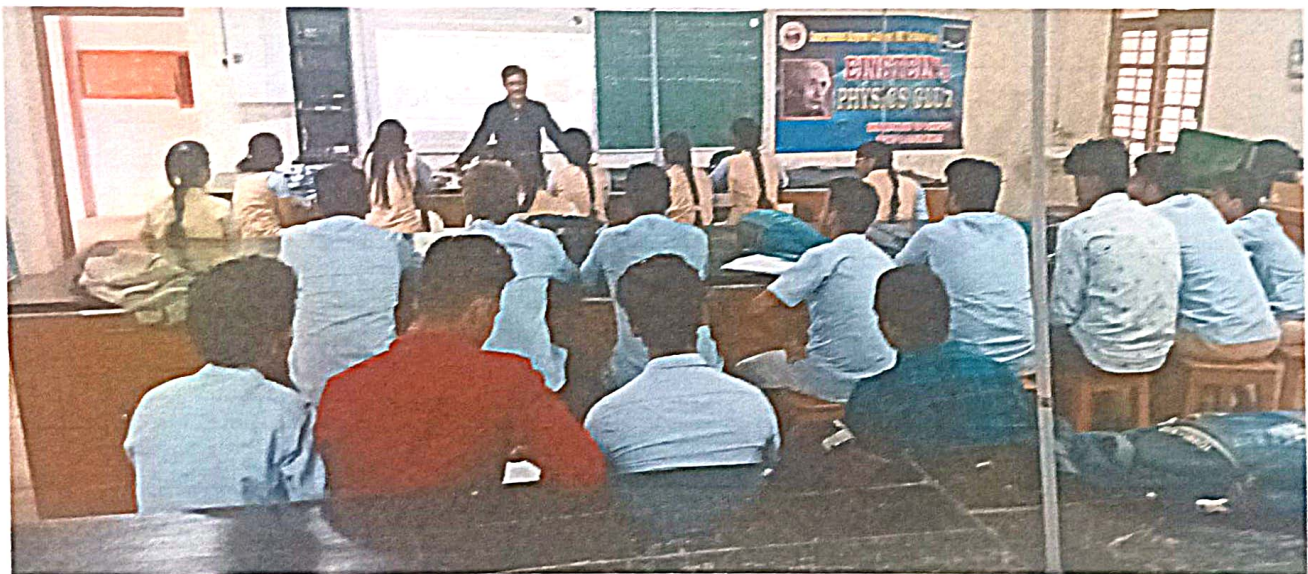
- Present the advantages and disadvantages of using a vapour compression refrigeration system.


Conclusion (5 minutes)

- Highlight specific applications where vapour absorption refrigeration systems are commonly used, such as in industrial processes, district heating, and solar cooling.
- The liquid refrigerant, now at high pressure, returns to the evaporator to repeat the cycle.
- The absorbent solution, now depleted of refrigerant, returns to the absorber to continue absorbing vapour.

This process continues in a cyclic fashion, and the absorption of heat in the evaporator and the release of heat in the absorber and condenser drive the refrigeration cycle. Unlike vapour compression refrigeration systems that use a compressor to circulate the refrigerant, vapour absorption refrigeration systems use heat and the absorbent to achieve the same result, making them suitable for applications where electricity is limited or expensive. It's worth noting that vapour absorption refrigeration systems are often used in applications where waste heat or a low-grade heat source is available, making them more energy-efficient in certain scenarios.

Activity photos




Department Of Physics
Government Degree College (M.C.N.)
SRIKAKULAM

