

VIRTUAL LAB SESSION ON VAPOUR COMPRESSION REFRIGERATION SYSTEM

- **Name of Faculty coordinator:** Prof. C.V. Papade
- **Name of Expert Faculty:** Prof. C.V. Papade
- **Date:** 11/05/2021 (Tuesday)
- **Subject:** Refrigeration & Air Conditioning
- **Class:** Final Year Diploma students (Mech Engg.)
- **Number of Students:** 51

Under the Diploma connect activity, Virtual lab session conducted on VCC for 3rd year students of Maulana Azad Polytechnic, Solapur as per their requirement.

Content Covered:

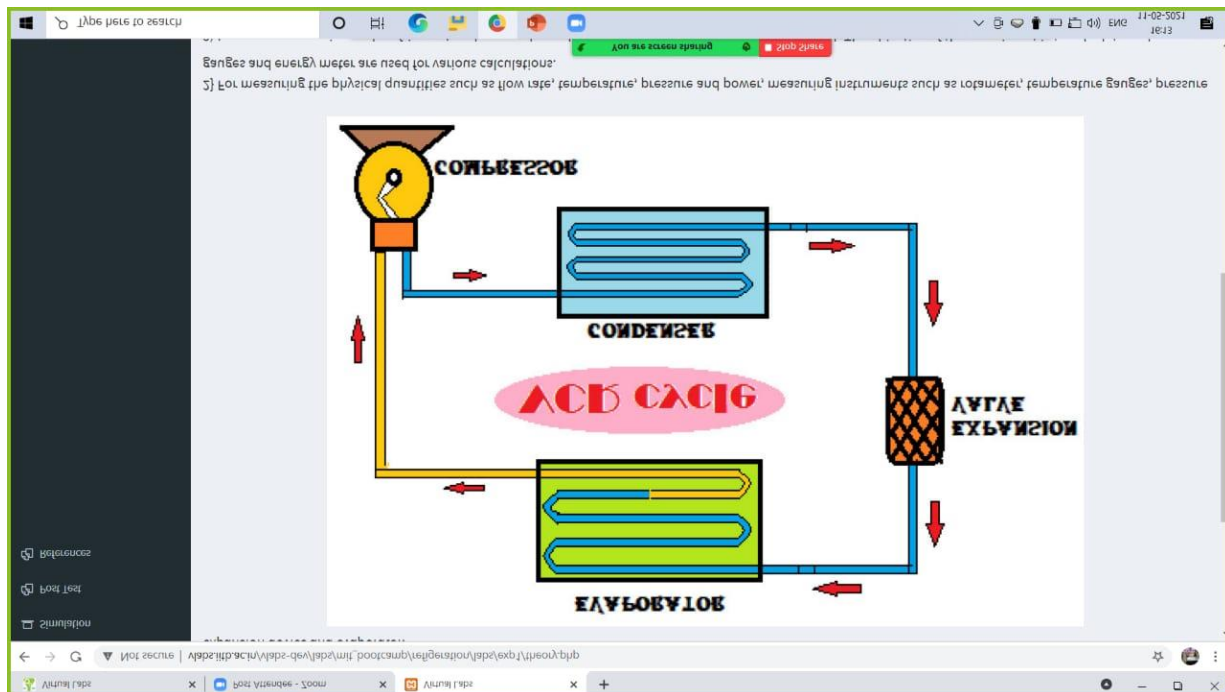
- Introduction to virtual lab
- Objectives of virtual lab
- Theory of experiment
- Procedure by using V. Lab
- Simulation of VCRS by using V.LAB



Expert Session on
VAPOUR COMPRESSION REFRIGERATION
SYSTEM BY USING VIRTUAL LAB
to
T.E.-Mechanical Engineering (Maulana Azad Polytechnic, Solapur)
By
Prof. C. V. PAPADE
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Remaining Meeting Time: 05:39 Stop Share

Prof.C.V.PAPADE 1



Virtual Labs

Post Attendee - Zoom

Virtual Labs

Not secure

vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/refrigeration/labs/exp1/procedure.php

Aim

Theory

Pre Test

Procedure

Simulation

Post Test

References

Trial On VCRS System

Talking: Prof.C.V.PAPADE

Procedure

1. Click on "simulator" tab, the page having basic block diagram of VCR System will appear.
2. Click on "Proceed" button.
3. Questions will appear on the screen, read and answer the question by clicking on any of the given options. If correct answer is selected, the next question will appear. Select appropriate answer from the dropdown list.
4. Click on "Proceed" button.
5. Drag and drop all the components and measuring devices from menu into the set-up.
6. Click on "Connect" tab.
7. Question will appear on the screen, read and answer the question by clicking on any of the given options.
8. Start the system by initiating all the components one by one.
9. Click on "Run Simulation" button.
10. Select the pressure range from the options and click on "Calculate enthalpy" and "plot the graph" tabs.
11. Click on "Add effect of pressure losses" and "Plot the graph" tabs.
12. Select degree of superheat and sub-cool from the options and click on "Add effect of superheating and sub-cooling" and "Plot the graph" tabs.
13. Click on "Work of compression" tab.
14. Click on "Observation table" tab.
15. As per the instruction put the enthalpy values into the simulator and COP will be obtained.
16. Click on "Proceed" tab.
17. Click on "add to table" tab.
18. Question will appear on the screen, read and answer the question by clicking on any of the given options.
19. Attempt the test. The test will contain questions related to the experiment perform by the student.

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Refrigeration Virtual Lab.mp4 - VLC media player

Media Playback Audio Video Subtitle Tools View Help

01 Steady State Simulation of VCR System.vi

File Edit View Project Operate Tools Window Help

Intro Tech Specs Operating Instructions Equipment Results P-H Chart Obs.Table

STEADY STATE SIMULATION OF VCR SYSTEM

Talking Prof.C.V.PAPADE

LIST OF EXPERIMENTS (SAMPLE TASKS)

1. Determine Refrigeration Effect, Compressor Work & actual COP @ 12 deg C calorimeter temperature.
2. Plot the above condition on P-H chart and evaluate theoretical COP of the cycle.
3. Determine the Refrigeration Effect @ 0, 4, 7, 10, 13 & 20 deg C calorimeter temperature and plot the graph of Refrigeration Effect Vs. Evaporation temperature.
4. Repeat the above procedure for various condensing temperatures and plot the graph of COP vs condensing temperatures.

USER SETTINGS

Cooling Thermostat: 10

Heating Thermostat: 45

Differential: 2

Tank Volume: 5

Heater Input: 100

Temperature after compression: 82.4 C

Temperature after condensation: 47.8 C

Temperature after expansion: 10.33 C

Temperature after evaporation: 25.33 C

Suction Pressure: 3.132 Bar


Discharge Pressure: 13.98 Bar

Stirrer

Calorimeter Temperature: 26.34 C

Steady State? ☒

REFRIGERATION TEST RIG



Energy Meter Comp.: 462.5 Watts


Energy Meter Heater: 0 Watts

Refrigeration Effect: 1121.00 Watts

Total Heat Input: 0.00 Watts

18.336 Refrigerant Flow : LPH

CONDENSER FAN



Ref. System Heating System Heating Cycle Cooling Cycle

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