



DEPARTMENT OF MECHANICAL ENGINEERING

CIRCULAR

04-01-2020

ATTENTION TO ALL THE 3RD YEAR STUDENTS: Project Batch 2017-2021

“The Good Project promotes excellence, engagement, and ethics in education, preparing students to become good workers and good citizens who contribute to the overall well-being of society”

Sixth semester students are hereby instructed that their final year project work requires to form project groups of not more than four members and choose a guide of your choice based on the problem statement. However, if one guide is selected by several groups, then the groups would be re-allotted to other guides. You need to prepare a ONE PAGE SYNOPSIS (brief synopsis) about the project as per the instruction of the guide/guides. The project topic would be further scrutinized for quality during a poster presentation session.

INSTRUCTIONS

1. Maximum of 4 members in a group
2. Lateral entry(diploma) students are hereby instructed to form their project groups with at least one student from the regular batch or vice versa; one lateral batch student in each regular batch teams.
3. Groups having difficulty in finding project guides, allotment etc would be done by Project committee. Details of guides and their areas of specialization are found in website.
4. Where additional technical inputs are required, a subject expert co-guide may be assigned.
5. Students need to identify their project topics after sufficient background work/ literature review or meeting faculty members of suitable research areas of interest. **Topics which are overdone, too narrow or too vague problems should be avoided and would be rejected by the project committee.**

The various parameters which should be considered while choosing a good project topic are:

- a) **Field of Interest or Area of Specialization – *Enthusiasm doing the Project***
 - b) **Engineering Level projects involving either of following areas such as Conceptual design, fabrication, heat transfer, Analysis (FEA and CFD) etc.**
 - c) **Application of project in further studies or future job – *Learning a new skill set***
 - d) **Resources available to execute the project - *Hardware/ Software/ Testing***
 - e) **Cost- *Efficiently manage costs incurred***
 - f) **Specialization of guide or supervisor**
6. Students should present a brief idea of their project work with the help of poster presentation on the timeline provided at Sadananda auditorium in February 2020. The poster needs to be prepared by project batches as per the guidelines provided.

GUIDELINES FOR SYNOPSIS PREPARATION (Also refer Annexure-1)

1. TITLE of the Project: 16 pt. Bold Times New Roman
2. Names of the Project Associates with USN along with the name of the Guide: 12 pt. CAPITAL letter regular Times New Roman, Single Line Spacing
3. First paragraph is the introduction; second paragraph regarding the objectives of the project, third paragraph Methodology (Experimental procedure), Fourth paragraph is the possible outcomes. Matter Contents: 12 pt. Times New Roman, 1.15 Spacing, Justified.
4. Students are required to prepare SYNOPSIS as per the above-mentioned guidelines and strictly restrict the SYNOPSIS to ONE PAGE only (PDF format). The project guides will upload the SYNOPSIS on the google link provided to them.


GUIDELINES FOR POSTER PRESENTATION (Also refer Annexure-2)

1. The poster should have an approximate minimum size of 3 feet width x 4 feet tall made out of **cloth** materials only.
2. The title of the poster should appear at the TOP along with student, guide/guides names and affiliation.
3. The poster should cover the KEY POINTS of project (Introduction, scope of work, Objectives, methodology & expected outcomes) and should NOT attempt to include too much writings; Use figures, diagrams, graphics, or easy-to-read tables also use large enough print, graphs, charts, or designs to be read easily from a distance.
4. The poster needs to be set up 30 minutes prior to the Poster Session.

Timeline: (TENTATIVE)

Sl. No	Date	Project Progression
1	27/01/2020	SYNOPSIS Submission on Moodle
2	08/02/2020	Scrutinization of Project topics (poster presentation)


PROJECT
COORDINATOR


DR. SHASHIKANTHA KARINKA
HOD

DESIGN AND FABRICATION OF SOLAR THERMAL VAPOUR ABSORPTION AIR CONDITIONING SYSTEM WITH PHASE CHANGE MATERIAL

1.MR AKSHAY
Reg No: 4NM16ME015

2.MR AKSHAY R K
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Introduction

Air conditioning is defined as the simultaneous processing of temperature, humidity, purification and distribution of air current in compliance with the requirement of space needing air conditioning.

Fig 1: Typical complete solar-powered air-conditioning system

Solar thermal absorption air conditioning system

Solar energy heats a fluid that provides heat to the generator of an absorption chiller and is recirculated back to the collectors. The heat provided to the generator drives a cooling cycle that produces chilled water. The chilled water produced is used for home/Industry for Air conditioning cooling medium.

Fig 3: Working principle of Air conditioning/refrigeration system involving all thermodynamics

Scope of the Project

GREENHOUSE GASES: MAJOR DIRECT & INDIRECT SOURCES

Thermal Refrigeration can reduce GHG emissions by up to 80%

Application

- Air conditioning machines.
- Food Processing Industries.
- Jute Industries.
- Commercial purposes

Fig 2: Typical solar-powered air-conditioning system integrated with PCM cooling system is shown in

Methodology

1. Design parameters consideration (temperature and pressure) are set by considering the saturated temperature of refrigerant (ammonia or any other refrigerant after literature review)
2. Theoretical Calculation of heat to be absorbed and rejected at evaporator and condenser, and mass flow rate of refrigerant.
3. Designing and selecting suitable Condenser, evaporator and expansion valve and solution pump.
4. Calculation and designing for amount of heat to be got by the solar collector.
5. Selecting a PCM to be used for storing required amount of energy.
6. Fabrication of the setup.
7. Instrumentation has to be done and experiments are conducted to find COP

Objectives

1. Design and fabricate a solar thermal vapour absorption refrigeration system using appropriate refrigerant and water as absorbent.
2. Using of phase changing material in the setup to store solar energy and to use energy in a controlled manner.

Outcomes

- New types of thermal refrigeration system which uses renewable energy and energy efficient will be fabricated.
- Variation in beam/diffused radiation of sunlight will efficiently managed by phase change material.
- The fabricated refrigeration system will be used for air condition purpose and its further efficiency will be improved by new type of phase change material.

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4 feet

3 feet

Fig: Poster details with approximate sizes (Guides details not to be displayed)