

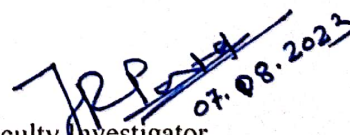
Project Completion Report

1. **Title of the project:** Development and Investigations on Evaporative Cooling System with Membrane Dehumidification
2. **Student Investigator(s):** Mr. Supriyo Bhattacharjee
3. **Faculty Investigator(s):** Dr. Jatin Patel
4. **Implementing Institution(s):** Pandit Deendayal Energy University (PDEU), Gandhinagar Gujarat
5. **Name of ISHRAE Chapter:** ISHRAE Ahmedabad Chapter
6. **Date of Commencement of the Project:** 29.12.2022
7. **Date of Completion of Project:** 01.07.2023
8. **Objectives as stated in the project proposal:**
 - a. To design and develop the energy efficient and climate friendly air conditioning system.
 - b. To demonstrate the air conditioning system without potentially hazardous chemical refrigerants.
 - c. To investigate the performance of the proposed system in terms of COP under various air conditions of air and to compare the system performance with other traditional air conditioning systems.
9. **Experimental work giving full details of experimental set up, methods adopted, data collected supported by necessary table, charts, diagrams & photographs:**
Annexure – I
10. **Financial Bills:**
Annexure – II

Name and Signature with Date

a. Student Investigator

b. Faculty Investigator


07.08.2023
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Annexure – I

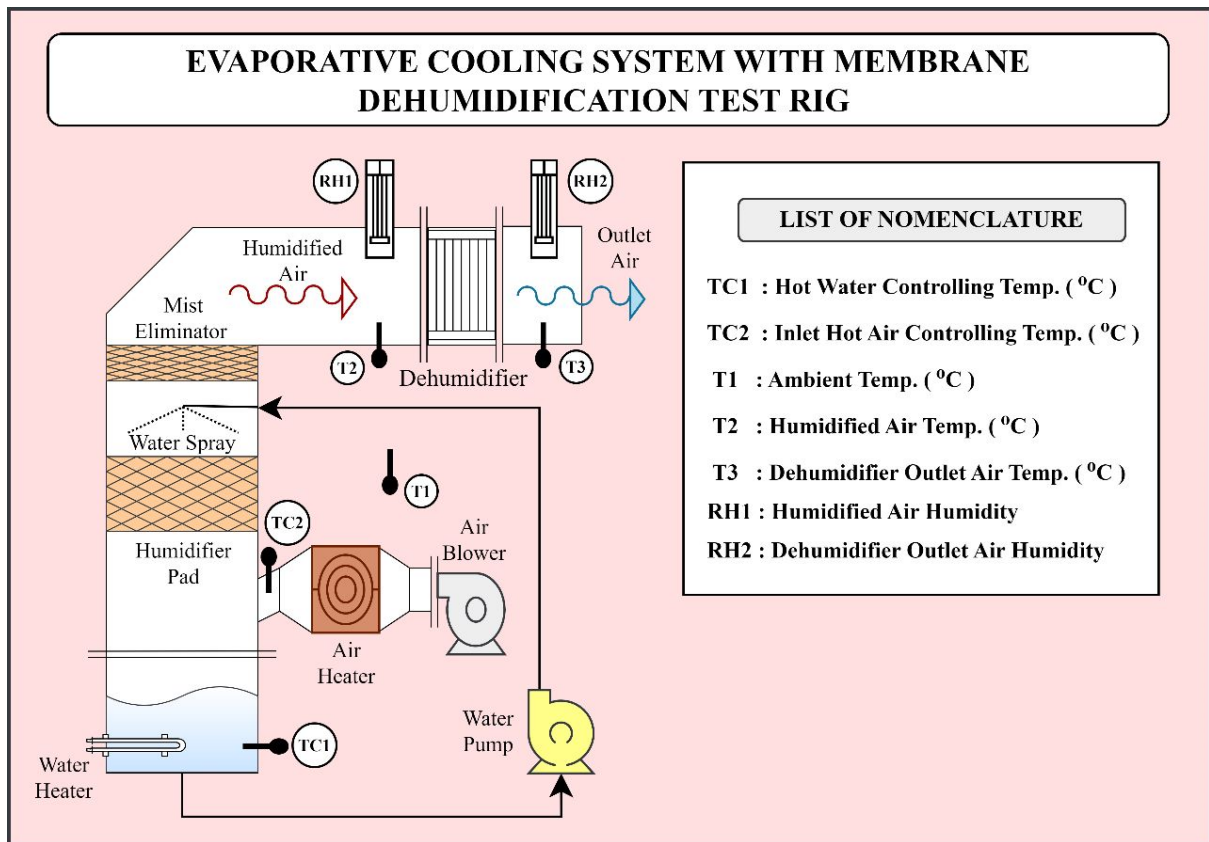


Fig. 1: Schematic diagram of proposed setup

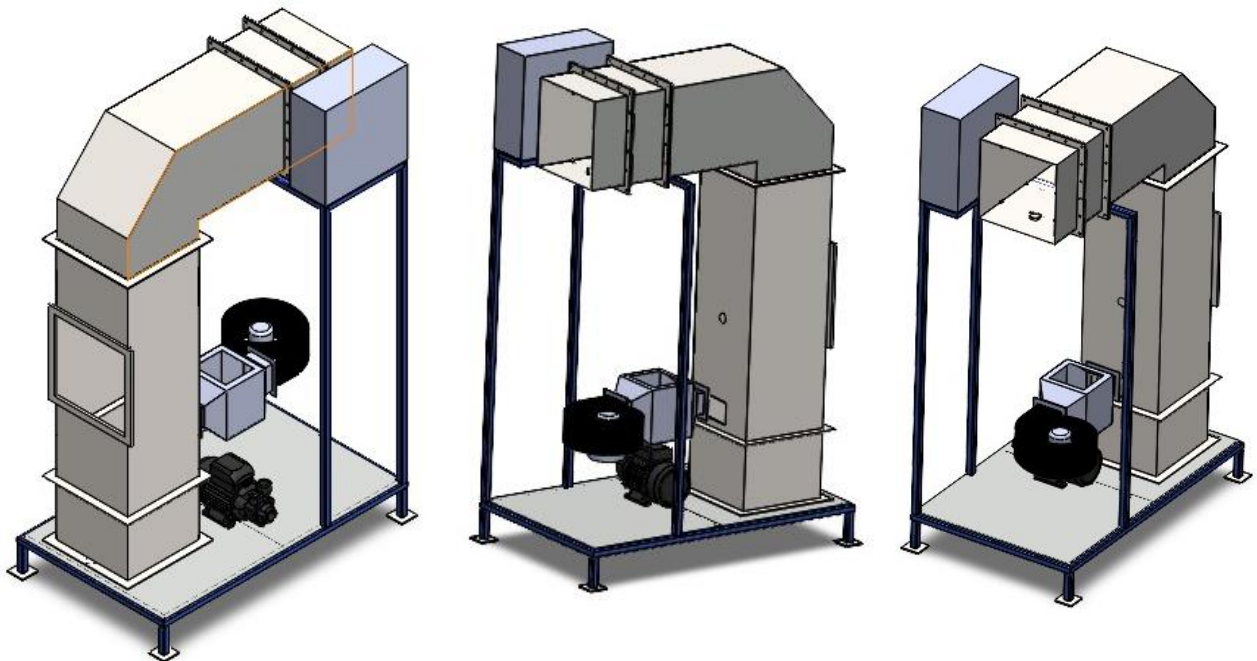


Fig. 2: CAD Models of the Proposed System



Fig 3: Actual images of the Experimental setup


Component list with Specification

Sr. No.	Part name	Detail / Technical specification
1	Pump	<ul style="list-style-type: none"> • Make & Model : Lubi Thunder 2 • Voltage : 220-240 V , 1 Ph • Power : 370 W • Current : 2.5 A max. • RPM : 2800 RPM • Flow rate : 1500 LPH
2	Water Heater	<ul style="list-style-type: none"> • Voltage : 220-240 V , 1 Ph • Capacity : 2000 W
3	Air Heater	<ul style="list-style-type: none"> • Voltage : 220-240 V , 1 Ph • Capacity : 1000 W
4	Blower	<ul style="list-style-type: none"> • Voltage : 220-240 V , 1 Ph • Power : 180 W • Current : 0.7 A max. • RPM : 2650 RPM
5	Rotameter	<ul style="list-style-type: none"> • Measuring range : 400 – 4000 LPH • Connection : 1”
6	Temperature Sensors (5 NOS)	<ul style="list-style-type: none"> • RTD Pt-100
7	Panel Box	<ul style="list-style-type: none"> • Main Switch On/Off (21 A) • Air Heater Switch On/Off (6 A) • Water Heater Switch On/Off (6 A) • Pump Switch On/Off (6 A) • Blower Switch On/Off (6 A) • Blower Regulator • MCB (16 A) (1 NOS) • Contactor (9 A) (2 NOS)
8	Others	<ul style="list-style-type: none"> • Humidity sensors (2 NOS) • UPVC Plumbing • Humidifier Pad • Level indicator

Divya Enterprise

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TAX INVOICE

Invoice Number : 05		Transportation : Private Vehicle		
Invoice Date : 01/07/2023		PAN No.: DSPPP0073N		
Billing To		Shipping To		
Name :	Mr. Supriyo Bhattacharjee	Name:	Mr. Supriyo Bhattacharjee	
Address :	Pandit Deendayal Energy University (PDEU), Knowledge Corridor, Raisan Village, PDPU Rd, Gandhinagar, Gujarat 382007	Address:	Pandit Deendayal Energy University (PDEU), Knowledge Corridor, Raisan Village, PDPU Rd, Gandhinagar, Gujarat 382007	
State:	GUJARAT	State	GUJARAT	
Sr. No.	Item Descriptions	Amount	Qty	Total Amount (RS)
01	Evaporative Cooling System with Membrane Dehumidification <ul style="list-style-type: none">• Humidifier unit with epoxy paint• Dehumidifier unit with membrane changing arrangement• MS fabricated structure with powder coating and with castor wheels• Dry and wet bulb temperature sensors• Water heater: 2 kw & Air heater: 1 kw• Air blower: 250 cfm with regulator• Panel: Manual control panel with Temperature sensors, Water Temperature Controller and Air Temperature Controller	1,00,000/-	01	1,00,000/-
Invoice Total in Words		Invoice Total		1,00,000/-
Rupees One Lakh ONLY.				
DIVYA PRAVINBHAI PATEL		For, DIVYA ENTERPRISE		
BANK NAME: STATE BANK OF INDIA		 Authorized Signatory		
Bank Account no. : 33745264496				
IFSC Code: SBIN0016060				
Note: - Our risk & responsibility ceases after the delivery.				