

[2021-22]

STUDENT BODIES: ISHRAE-VCET STUDENTS CHAPTER

# National Student Design Competition (2021-2022)



## SHOW YOUR METTLE IN HVAC&R DESIGN

Design of Air Conditioning and Ventilation System for a Multi-specialty Hospital building that pertains to Comfort Cooling, Ventilation and Indoor Air Quality



### National Student Design Competition 2021-22

#### THE TASK

Design Theme: Design of Air Conditioning and Ventilation System for a Multi-specialty Hospital building that pertains to Comfort Cooling, Ventilation and Indoor Air Quality.

The Multi-specialty Hospital building consists of 2 Floors with Terrace.

**In ground floor:**  
Reception, Doctor Consulting Room, Emergency Room, Testing Rooms, Admin Rooms such as Billing, Accounts and MD Room, General Wards, Physiotherapy Room, Scan Room, House Keeping Room, Staff Rest Room, Nurse Station, Pharmacy, Canteen and Toilets are available.

**In first floor:**  
Individual wards, Urology, ENT and Intestine Medicare rooms, visitor's room, conference room, Operation Theatres, Isolation Room, Doctor's room, staff room and toilets are available.

For more information/ details, refer the drawing.

#### Competition Open for ISHRAE Student Members

### AWARD

**1<sup>st</sup> PRIZE**  
UNDER  
₹ 30,000

**2<sup>nd</sup> PRIZE**  
UNDER  
₹ 20,000

**Motivational Prize: Under ₹ 10,000**  
(Cash prize includes ISHRAE Publications)

**Participation Certificates will be given to all the participant.**

#### JURY MEMBERS

Panel of Top Notch Industry Experts from across the country.

#### IMPORTANT DATES

Activity/ Phase (Flow of Competition)	Last Date
Release of NSDC Flyer & White Paper, Detail documents with Problem statement, Drawings etc.	21.07.2021 (Wednesday)
Phase 1- Registration: This registration sheet will consist of registration form, Team members and Mentor details.	31.08.2021 (Tuesday)
Phase 2: Submission of design: The report should include assumptions, design calculations and other energy efficiency measures, duly approved by mentors.	31.12.2021 (Friday)
Phase 3: Design presentation at Zone level: (Online Presentation; Shortlisted Teams)	29.01.2022 (Saturday)
Phase 4: Design Presentation at National level: (Online Presentation; Participants: Top 2 teams from each zone)	05.02.2022 (Saturday)

#### CRITERIA FOR EVALUATION

Evaluation of the project will be based on

- Heat Load Calculation
- Equipment selection
- Duct design
- Originality
- Innovation..... Any New technology adopted
- Practicality
- Special IAQ features (Health safety features and standards followed)
- Design qualifying Load fluctuations
- Energy calculations and life-cycle cost analysis
- Affordability (Comparison between VRF and Chilled water systems)

#### SUBMISSION

The duly filled registration form and the project report shall be submitted electronically to : [v.thakur@ishraehq.in](mailto:v.thakur@ishraehq.in)

#### RULES /GUIDELINES

Undergraduate student members of ISHRAE student chapters are eligible to participate.

Maximum number of students in team: 4

It is mandatory to register to the competition. Only registered teams will be considered.

It is mandatory to identify a mentor while registering. A mentor may be the faculty advisor or an active ISHRAE member.

Students are free to assume the necessary data required for design calculation but need to mention it in the report.

Design shall be based on Indian standards.

Submit the project report in PDF format.

Presentation should be crisp and to the point. Teams may use slides to make the presentation.

The decision of jury members will be final.

#### PROJECT REPORT MAY INCLUDE FOLLOWING

Proposed system details of Multi-specialty Hospital building with design & necessary drawings.

Design Basis Report including assumptions, Energy Calculations, Duct designs etc.

Specific assumptions to be listed.

HVAC & IEC (International Electrotechnical Commission) system selection based on energy efficiencies and other features.

Air flow design & distribution.

Part Load efficiencies & Life Cycle cost analysis.

Any Comparison between VRF and Chilled water systems.

Health safety features and standards followed.

Energy Balance Sheet with loss/savings.

Detail drawings with all systems and sub systems in place.

[www.ishrae.in](http://www.ishrae.in)

ISHRAE student activities launches National Student Design Competition (NSDC) for 2021-22 for ISHRAE student members.

Design Theme: Design of Air Conditioning and ventilation system for a multi specialty hospital building that pertains to comfort cooling, ventilation, and indoor air quality. The Multi-specialty hospital building consists of 2 floors with terrace.

In ground floor: Reception, Doctor consulting room, emergency room, testing rooms, admin rooms such as billing, accounts and MD room, general wards, physiotherapy room, scan room, house keeping room, staff rest room, nurse station, pharmacy, canteen, and toilet are available.

In First floor: Individual ward, urology, ENT and intestine Medicare rooms, visitor's room, conference room, operation theaters, isolation room, doctor's room, staff room and toilets are available.

It is basically Design of Air Conditioning System for an IT company for better indoor air quality. The Awards was as follow, 1<sup>st</sup> Prize was Rs.30000, 2<sup>nd</sup> Prize was Rs 20000 followed by Motivational Prize of Rs.10000. Participation certificate was given to all the participants. Important dates for the events were as followed, Registration date was 31/08/2021, Date for submission of design was 31/12/2021, Design presentation at zonal level was conducted at 29/01/2022. followed by design presentation for nation level at 05/02/2022.

The eligibility criteria were the undergraduate student member of ISHRAE were allowed with maximum number of students in team was 4, It was mandatory for all participants to resister for this event only register participants were allowed to enter for event. The proposed system details of multi-specialty hospital building with design and necessary drawings. Design basis report including assumptions, Energy calculations, duct design etc. Specific assumptions to be listed. HVAC & IEC (International Electrotechnical Commission) system selection based on energy efficiencies and other features. Air flow design and distribution. Part load efficiencies and Life cycle cost analysis. Any comparison between VRF and Chilled water systems. Health safety features and standards followed. Energy balance sheet with loss/ savings. Details drawings with all systems and sub systems in place.

The following two teams participate in NSDC 2021-22.

We have received 2 Nos. team details for NSDC 2021-22 registrations from your student Chapter Vidyavardhini College Engineering and Technology.

The list is mentioned below with the mentor's details against every team:

Sr. No	Institute	Team Name	Team Members	Mem No.	Mentor
1	Vidyavardhini COE	Team 1	Mr. Shridhar Kashalkar	S00097957	Mr. Dinesh Sunder Shetty Membership No: 13625 Mobile No: 9624096319 <a href="mailto:dineshshetty@voltas.com">dineshshetty@voltas.com</a>
			Mr. Varad Santosh Takke	S00098019	
			Ms. Riya Rohidas Patil	S00097673	
			Mr.Suyash Mahesh Hoskote	S00098119	
2	Vidyavardhini COE	Team 2	Mr. Saleel Churi	S2109704	Mr. Vivek Ramchandra Marde Membership No: 33930 Mobile No: 9820159998 <a href="mailto:vivek@spacehvac.net">vivek@spacehvac.net</a>
			Mr. Girish Rokade	S21095350	
			Mr. Chintan Patel	S00097650	
			Mr. Yash Shikhare	S00097692	

# ISHRAE HVAC & R HACKATHON (2021-2022)





## ISHRAE HVAC & R HACKATHON



Hackathon will help to establish networks among students, experts, and professionals. This event can be used for job/recruitment fairs and allow the students to assess their abilities and find ways to accomplish the tasks and how they work in a team. A novel method to enhance the image of ISHRAE and get into the innovative, tech-savvy, technology-minded people in this area.

**KEY FEATURES -**

- Problem Statements / Major Area define for this competition
- Low-Cost cooling solutions for Vegetable vendors.
- Natural Cooling - Hot and humid climates
- Advanced Cold chain techniques/ Refrigerants Innovation.

**EVENT GUIDELINES -**

- Only for ISHRAE Student Members.
- No registration fee for ISHRAE members and Team  
(Max Team size will be 5 to 4 Members per team)

**PROCESS OF SCREENING/ SELECTION**

- Online submission of ideas.
- **First level screening:** 3 teams / chapter
- **Second level Screening:** Regional / Zonal Level Round
- **Zone wise:** 3 Winners from each Zone (25 Nos)
- **Zonal Winners:** ₹5,000/team and Certificate (Cash Price + Publications)
- **Final National Event -** During Last week of Feb 2022
- Top 21 teams has to present the work in front of juries (Academic + Industries) in final event.

TENTATIVE SCHEDULE FOR HACKATHON	
Activity	Deadline for Submission
Launching Of Events & Event Information Webinar	21 <sup>st</sup> July 2021
Primary Concept & Abstract Submission/Presentation at Chapter level	Up to 31 <sup>st</sup> August 2021
Scrutiny & Short listing of Maximum Three entries at Chapter level	Up to 15 <sup>th</sup> September 2021
Detail Project Document and Actual Work Report Submission/Presentation at Zonal level	Up to 15 <sup>th</sup> November 2021
Scrutiny & Short listing of Maximum Three entries at Zonal level	Up to 15 <sup>th</sup> December 2021
Final Submission Of Work & Presentation	Till February 22 last Week

**Prize Money for Final Event:**

	<b>Winner : ₹ 1 Lakh</b> (Cash Price + Publications)
	<b>1st Runner up : ₹ 75000</b> (Cash Price + Publications)
	<b>2nd Runner up: ₹ 50000</b> (Cash Price + Publications)

**Submit your entries on [v.thakur@ishraeq.in](mailto:v.thakur@ishraeq.in)**

The following team members from ISHRAE VCET Students Chapter participate in ISHRAE HVAC & R HACKATHON.:

## ISHRAE HVAC & R HACKATHON 2021-22

### TEAM DETAILS:

S. No.	Student Name	ISHRAE Membership No.	Email ID	Mobile No.
1	Mr. Girish Rokade	S21095350	girish.rokade20@gmail.com	9665264288
2	Mr. Harsh Sambare	S20087734	harshsambare210@gmail.com	7875299937
3	Mr. Chintan Patel	S00097650	chintan.190852101@vcet.edu.in	9112355745
4	Mr. Yash Shikhare	S00097692	yash.190982102@vcet.edu.in	8308185987

### INSTITUTE DETAILS:

S. No.	Particulars	Details
1	College Name with Address	Vidyavardhini's College of Engineering and Technology K.T. Marg, Vasai (W), Dist: Palghar, Pin: 401201, Maharashtra
2	Name of the Guide (Mobile No. & email ID )	Vinay D. Patel (Mobile No: 9890811839 & Email ID: <a href="mailto:vinay.patel@vcet.edu.in">vinay.patel@vcet.edu.in</a> )
3	ISHRAE Student Chapter in the Institution (Yes or No)?	Yes

### Local ISHRAE Chapter:

S. No.	Particulars	Name of the Chapter / Sub Chapter
1	Local ISHRAE Chapter	ISHRAE VCET Students Chapter

1) Committee details

- Staff details

Staff Name	Department	Contact no (College extension no)
Vinay D. Patel	Mechanical Engineering	9890811839

- Student details (Only core committee)

Sr. No.	Name of Students	Membership ID	Designation
<b>Core Members</b>			
1	Mr. Shridhar Kashalkar	S00097957	President
2	Mr. Saleel Jayant Churi	S2109704	Secretary
3	Mr. Harsh Rajendra Sambare	S20087734	Treasurer
4	Mr. Chintan Vinay Patel	S00097650	Vice President
5	Mr. Yash Dilip Shikhare	S00097692	Deputy Secretary
6	Mr. Mahesh Vijay Pachpande	S00098378	Deputy Treasurer
7	Mr. Girish Anilraj Rokade	S21095350	Technical Team Head (TTH)
8	Mr. Hrushikesh Saraf	S00098287	Publicity Head (PH)
9	Mr. Shubham Koli	S00098224	Report Writing Head (RWH)
<b>Members</b>			
10	Ms. Riya Rohidas Patil	S00097673	Member TTH
11	Mr. Shreya Narshim Pai	S00097114	Member TTH
12	Mr. Varad Santosh Takke	S00098019	Member RWH
13	Mr. Suyash Mahesh Hoskote	S00098119	Member PH