

## EXPRESSION OF INTEREST AND PAPER

Academia authors intending to present Research Papers must submit an abstract/ expression of interest of 250 words by email (ncrac2024@gmail.com). Upon acceptance of the abstract/ expression of interest, authors are required to send the full paper in the prescribed format, which will be communicated later. All papers will be reviewed to ensure high standards. Authors are required to submit the revised manuscript in the prescribed format addressing all the review comments to the Technical Committee for final acceptance.

## PAPERS FROM INDUSTRY PERSONNEL/ CONSULTANTS

Industry personnel and consultants in HVAC&R field can submit papers in the prescribed format by email (ncrac2024@gmail.com). All such papers will be peer reviewed by a panel comprising of experts from both Academia and Industry. Authors are required to submit the revised manuscript in the prescribed format addressing all the review comments to the Technical Committee for final acceptance. Separate sessions will be scheduled for presentation of these papers. Presentations comprising of field experience, case studies, new developments/trends, etc. are welcomed in this session.

## TOPICS

The conference will cover all areas of Refrigeration and Air conditioning, including but not restricted to:

- Building services and automation.
- Desiccant and evaporative cooling.
- District heating and cooling.
- Energy efficiency and cold/heat recovery.
- Cold chain, cold storage, and refrigerated transport
- Green buildings.
- Indoor Environmental Quality (IEQ) and Industrial ventilation.
- Low-temperature applications.
- Modern innovations and materials in HVAC systems.
- Novel/alternate eco-friendly HVAC systems.
- Natural/new refrigerants and mixtures.
- Polygeneration.
- Refrigerated cold chain, transport, and cold stores.
- Sorption heating and cooling systems.
- Thermodynamic cycles.
- Thermal comfort and comfort standards.
- Thermal energy storage and any other related areas.

## ADDRESS FOR CORRESPONDENCE

Organizing Secretary, NCRAC 2024,  
Department of Mechanical Engineering  
Indian Institute of Technology Madras,  
Chennai – 600 036, INDIA  
Email: NCRAC2024@gmail.com

## IMPORTANT DATES

Full paper submission : 31st December 2023  
Revised paper submission : 14th February 2024  
Conference dates : 13-15th March 2024

## REGISTRATION FEE

### • Indian-Only offline.

Full registration(Indian) : Rs. 12,000  
For each additional paper : Rs.3,000  
Students : Rs.7,500 and for each additional paper : Rs.2,000  
Accompanying Person: Rs.3,000.

### • Foreign - Offline

Full registration : USD 350  
For each additional paper : USD 150  
Students : USD 250 and for each additional paper : USD 100  
Accompanying person : USD 150.

### • Foreign – Online

Full registration : USD 200  
For each additional paper : USD 125  
Students : USD 150 and for each additional paper : USD 100

**NOTE:** Limited accommodation will be made available subject to availability.

## LINKS

Registration link for paper submission:

<https://easychair.org/cfp/NCRAC2024>

Website : <https://ge.iitm.ac.in/NCRAC2024/index.html>

## SPONSORSHIP AND ADVERTISEMENT

In this edition of NCRAC 2024, sponsors are given the opportunity to hold product presentations and display their products, posters, and catalogues, while distributing their brochures. The printed proceedings of the conference will contain plenary, keynote and invited papers, abstracts of contributed papers along with fielded advertisements. The details of sponsorship and advertisement will be updated in the second announcement.

## VENUE AND ACCOMMODATION

All international participants can join the conference both online and offline mode. For Domestic participants offline mode is compulsory. Accommodation will be provided by IIT Madras for offline participants.

## PUBLICATION

All presented papers in NCRAC 2024 will be considered for publication in reputed SCI and Scopus-indexed Journals. Details will be updated soon. (About 60% of the manuscripts presented in the previous NCRAC (NCRAC 2022) were published/accepted in reputed journals such as Thermal Science and Engineering Progress (TSEP), Sadhana, etc. after the peer review process.

## CALL FOR PAPERS

8<sup>th</sup> National and  
2<sup>nd</sup> INTERNATIONAL  
CONFERENCE

ON

“Refrigeration And Air  
Conditioning”

NCRAC 2024

13-15<sup>th</sup> March 2024

Theme: Towards Net-Zero HVAC&R Systems &  
Technologies

Organized by



INDIAN INSTITUTE OF TECHNOLOGY MADRAS

&

Supported by



## OBJECTIVE

The aspirations and requirements of humans are ever growing, along with technological advancements. Simultaneously, there is the primary concern of the actions of humankind on the environment and the impact of climate change. To address these demands of humankind while balancing the impact on the environment, advancements and innovations are of paramount necessity in the field of Refrigeration and Air Conditioning (RAC). The applications of RAC go well beyond the requirements of human comfort. It addresses the essential functioning of underground tunnels to the far reaches of space stations and everything in between. The innovations in the field of cold chain industry have empowered the nations' food security. Because of its impact in everyday life, the energy demand of this field is also high. It accounts for nearly 20% of global energy consumption. In buildings, 65% of the energy demand is towards meeting the HVAC&R requirements. There are multiple international protocols and treaties in place, to address this growing need while balancing it against the environmental impact. Though the terms of the Montreal protocol have been nearly addressed, thereby saving the ozone layer, the terms of the Kyoto protocol dealing with emissions of greenhouse gases and global warming are yet to be addressed fully. There is a dire need for innovations in the form of environmentally friendly alternate systems and refrigerants, along with improvement in terms of energy efficiency of RAC systems, so that the global rise in temperature can be arrested within 2°C, as per the terms of the Paris Agreement.

## ABOUT NCRAC

The National Conference on Refrigeration and Air Conditioning (NCRAC) was started at IIT Madras in 2009. It continued to host this biennial conference in 2011 and 2013 while Rajalakshmi College of Engineering, Chennai hosted the 4th NCRAC in 2015, and NITK Surathkal hosted the 5th NCRAC in 2018. NCRAC in 2020 was organized by KLN College of Engineering, Madurai, in association with IIT Madras. The recent edition (NCRAC 2022) brought International participants and was organized by IIT Guwahati in association with IIT Tirupati as First Interaction and 7th National Conference on Refrigeration and Air-Conditioning. Addressing the objective of the Net Zero Emission target by 2070 by the Government of India, the 8th National and 2nd International Conference NCRAC 2024 is aimed to disseminate the knowledge to support the objective from the HVAC & R field worldwide.

## ABOUT IIT MADRAS

The Indian Institute of Technology Madras is known both nationally and internationally for excellence in technical education, basic and applied research, innovation, entrepreneurship and industrial consultancy. The Institute is proud to bear the laureate of being No.1 engineering university in India. More recently, IIT Madras has been given the title of Institute of Eminence. In 1956, the German Government offered technical assistance for establishing an institute of higher education in engineering in India. IIT Madras has been the top-ranked engineering institute in India for four consecutive years as well as the 'Best Educational Institution' in Overall Category in the NIRF Rankings of 2019 put out by the Ministry of Human Resource Development. IIT Madras is a residential institute with nearly 550 faculty, 8000 students and 1250 administrative & supporting staff and is a self-contained campus located in a beautiful wooded land of about 250 hectares. The campus is located in the city of Chennai, previously known as Madras. Chennai is the state capital of Tamilnadu, a southern state in India.

## ABOUT MECHANICAL ENGINEERING DEPARTMENT

The Department of Mechanical Engineering is the largest of its kind in the country and one of the largest in Asia. As old as the Institute itself. Mechanical engineering is one of the most diverse streams of engineering touching some parts of many other branches like aerospace, electrical, civil, chemical and even materials science and bio-engineering. Some prominent topics in this branch are Materials, solid and fluid mechanics, thermodynamics, heat transfer, control, product design and manufacturing processes.

The Mechanical Engineering department collaborates with a number of core engineering companies such as Hindustan Unilever, ITC Limited, Caterpillar India Private Ltd., Wipro Consumer Care and Lighting, Tata Steel, P&G, Bajaj Auto Limited, General Electric, Boeing International, and Tata Research Development and Design Centre, among others; thus providing abundant internships opportunities.

Students have the option to go into research in their undergraduate programme and can work on innovative projects with the Institute's professors or opt for research internships at some of the best institutes in the world - Purdue, Caltech, Fraunhauffer-Gesselschaft, RWTH Aachen, University of Tokyo, etc. Students from this department have joined leading core industries such as ITC Limited, General Electric, Mercedes Benz R&D, Rolls Royce India Private Limited, Royal Enfield, Tata motors, etc.

## COMMITTEES

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