

## ABSTRACTS AND PAPERS

Participants from academia intending to present their work at NCRAC 2026 must submit an abstract of 250 words through email (ncrac2026@iittp.ac.in). Upon acceptance of the abstract, the authors will be intimated to submit their full-length papers. Format for the full-length papers will be communicated later. All papers will be subjected to a rigorous review process.

## PAPERS FROM INDUSTRY PERSONNEL/ CONSULTANTS

Industry personnel and consultants working in HVAC&R field are also welcome to submit papers in the prescribed format through the email (ncrac2026@iittp.ac.in). All papers will be peer reviewed by a panel comprising of experts from both academia and industry. Separate sessions will be scheduled for presentation of these papers. Presentations comprising of field experience, case studies, new developments/trends, etc. can also be submitted.

## TOPICS

The conference will cover all significant areas of Refrigeration and Air conditioning, including:

- Energy efficiency and cold/heat recovery
- Novel/alternate ecofriendly RAC systems
- Natural/new refrigerants and mixtures
- Refrigerated cold chain, transport and cold stores
- Sorption heating and cooling systems
- District heating and cooling
- Desiccant and evaporative cooling
- Polygeneration
- Heat pump
- Indoor air quality and Industrial ventilation,
- HVAC systems for healthcare applications
- Clean Room for semiconductor / Solar PV/ Automobile / Pharma sectors
- Green buildings
- Building management systems
- Modern innovations in HVAC systems
- Low temperature applications
- Application of IoT in RAC
- AI/ML models for refrigeration systems
- Role of CFD in HVAC design
- Refrigeration cycles
- Thermal comfort and comfort standards
- Thermal energy storage
- Materials and HMT in HVAC
- Cooling as Service
- Thermal management in Datacenter / e-applications

## IMPORTANT DATES

Short abstracts (250 words) : 28<sup>th</sup> Feb 2026  
Abstract acceptance : 15<sup>th</sup> March 2026  
Full paper submission : 30<sup>th</sup> June 2026  
Revised paper submission : 30<sup>th</sup> September 2026  
Conference dates : 13-16<sup>th</sup> December 2026

## REGISTRATION FEE

The normal registration fee per delegate is Rs. 12,000/- and the accompanying person is Rs. 5,000. The registration fee for student authors from academic institutes and research labs is Rs. 7,500/- and accompanying person is Rs. 3500/-. The registration fee for industry participants is Rs. 15,000/-. Registration fee for overseas delegate and student author is \$400 and \$250 respectively. The details of registration procedure will be communicated in the second announcement.

## SPONSORSHIP AND ADVERTISEMENT

In this edition of NCRAC 2026, sponsors are given the opportunity to hold product presentations, 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

Conference will be in offline mode only. The venue is IIT Tirupati campus.

## PUBLICATION

All selected papers will be considered for publication in reputed SCI and Scopus indexed Journals. Details will be updated soon.

## ADDRESS FOR CORRESPONDENCE

**Organizing Secretary, NCRAC 2026**  
**Department of Mechanical Engineering**  
**Indian Institute of Technology Tirupati**  
**Tirupati – 517619, Andhra Pradesh, India**  
**Email: ncrac2026@iittp.ac.in**

# CALL FOR PAPERS

**9<sup>th</sup> National  
&  
3<sup>rd</sup> International Conference  
on**

**“Refrigeration & Air  
Conditioning”**

**NCRAC 2026**

**13-16<sup>th</sup> December 2026**

*Theme: Smart & Sustainable HVAC  
Systems for Viksit Bharat 2047*

Organized by



Indian Institute of Technology Tirupati

&

Supported by



## OBJECTIVES

The aspirations and living standards of humankind continue to rise in parallel with rapid technological progress. At the same time, the pressing challenges of environmental degradation, global warming, and climate change demand immediate and sustained attention. To meet human comfort and industrial requirements while ensuring environmental sustainability, advancements and innovations in Refrigeration and Air Conditioning (RAC) are of critical importance. The applications of RAC today extend far beyond human comfort; they underpin essential operations in sectors ranging from food preservation and healthcare to space exploration and digital infrastructure. Given its pervasive use, the RAC sector represents a significant share of the world's energy consumption, approximately 20% of global electricity. While global efforts under the Montreal Protocol have largely succeeded in protecting the ozone layer, the objectives of the Kyoto Protocol and Paris Agreement, particularly the reduction of greenhouse gas emissions and limiting global temperature rise to within 2°C remain ongoing challenges. Therefore, there is an urgent need for eco-friendly refrigerants, innovative system architectures, integration with renewables, and life-cycle-based sustainability approaches to guide the next generation of RAC systems. The conference aims to bring together researchers, academicians, industry professionals, and policymakers to deliberate on these challenges, showcase emerging technologies, and chart the path toward a low-carbon, energy-efficient, and sustainable future in refrigeration and air conditioning.

## 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 4<sup>th</sup> NCRAC in 2015 and NITK Surathkal hosted the 5<sup>th</sup> NCRAC in 2018. The 6<sup>th</sup> NCRAC was hosted by IIT Madras. The 7<sup>th</sup> NCRAC in 2022 brought international participants and was organized by IIT Guwahati in association with IIT Tirupati as First International and 7<sup>th</sup> National Conference on Refrigeration and Air-Conditioning. The recent edition of NCRAC was organized by IIT Madras in 2024. Addressing the objectives of the conference, NCRAC 2026 will present an international platform to discuss and disseminate the cutting-edge research in the RAC field to the community worldwide.

## ABOUT IIT TIRUPATI

IIT Tirupati, established in 2015, started functioning with the support of its mentoring institute, IIT Madras, from the academic year of 2015-16. By 2018, the academic program has expanded to nine departments covering major engineering, sciences and humanities discipline offering B.Tech., M.Tech., M.Sc., M.S.(R) and Ph.D. programmes. Though IIT Tirupati is comparatively young, it is aiming to reach and compete with the international ranking of the established institutes including older IITs. The curriculum for various programmes have an emphasis on theoretical knowledge and practice-oriented laboratories. Courses are well planned to nurture innovation, creativity, quality, teamwork, communication skills, ethics, and societal interaction. The construction of the permanent campus in a 548 acre scenic site is in progress with some buildings completed and functional since 2018. Tirupati town with its airport and proximity to Chennai and Bengaluru, gives it excellent connectivity.

## ABOUT MECHANICAL ENGINEERING DEPARTMENT

The Mechanical Engineering Department at IIT Tirupati is a dynamic and rapidly growing academic unit, established in 2015 alongside the institute itself. It offers a robust curriculum at multiple levels, a B.Tech in Mechanical Engineering; M.Tech programs with specializations such as Design & Manufacturing; Thermal Engineering and Energy Systems; as well as MS (by Research) and PhD programs. Recently, an M.Tech program in computational mechanics and an executive M.Tech manufacturing have been recently approved.

The faculty are active across a wide range of research areas, including renewable energy, thermal energy storage, hydrogen production and storage, wind energy, compact heat exchangers, advanced manufacturing (additive/micro-/nano-scale), advanced materials, computational fluid dynamics, fluid-structure interaction, multiphase flows, aerial and underwater drones, robotics, precision agriculture/food processing, and theoretical & applied mechanics. The department is well-equipped with instructional & research laboratories, a central workshop, and state-of-the-art facilities to support both teaching and high-quality research. In terms of academics and student body, IIT Tirupati's Mechanical Engineering department is known for its interdisciplinary collaborations, continuous updating of syllabus to match industry trends, and strong linkages to applied research.

## COMMITTEES

### Patron

**Prof. K. N. Satyanarayana**, Director, IIT Tirupati

### Chairman

**Prof. M. P. Maiya**, Retired Professor, IIT Madras

**Prof. P. Muthukumar**, Mechanical Engg., IIT Tirupati

### Co-Chairmen

**Prof. E. Anil Kumar**, Mechanical Engg., IIT Tirupati

**Prof. R. Saravanan**, **President Elect**, ISHRAE / Anna University

**Prof. M. Ram Gopal**, IIT Kharagpur

**Prof. Bidyut Baran Saha**, WPI-I2CNER, Kyushu University, Japan

### Organizing Secretary

**Dr. N. Gnanasekaran**, Mechanical Engg., IIT Tirupati

**Dr. Vignesh T.G.**, Mechanical Engg., IIT Tirupati

**Dr. Mohd Furquan**, Mechanical Engg., IIT Tirupati

### Advisory Committee

**Prof. S. Srinivasa Murthy**, ICER, IISc Bangalore

**Prof. D. Y. Goswami**, University of South Florida, USA

**Prof Alberto Coronas**, URV - Rovira i Virgili, Spain

**Prof Pradip Dutta**, Mechanical Engg., IISc Bangalore

**Prof Pramod Kumar**, Chairperson, ISER, IISc Bangalore

**Prof. Jyotirmay Mathur**, Mechanical Engg., MNIT Jaipur

**Dr. Yashkumar Shukla**, Head CARBSE, CEPT University, Ahmedabad

**Prof. M. V. Rane**, Mechanical Engg., IIT Bombay

**Dr. Sukumar Devotta**, Former Director NEERI

**Prof. M.S. Dasgupta**, Mechanical Engg., BITS Pilani

**Prof. Armin Hafner**, Energy and Process Engineering, NTNU, Norway

**Mr. I Hariprasad**, President Elect, ASHRAE Chennai Chapter

**Mr. K Rengasamy**, President Elect, ISHRAE Chennai Chapter

### Technical Committee

**Dr. B. Satya Sekhar**, Mechanical Engg., IIT Jammu

**Dr. Advait**, Mechanical Engg., IIT Madras

**Dr. Gurubalan A**, Energy Science & Engg., IIT Bombay

**Dr. B. Kiran Naik**, Mechanical Engg., NIT Rourkela

**Prof. Jahar Sarkar**, Mechanical Engg., IIT-BHU

**Dr. Aakash C Rai**, Mechanical Engg., IIT Kanpur

**Dr. S. Sahoo**, Mechanical Engg., IIT (ISM) Dhanbad

**Dr. Vinod Kumar sharma**, Mechanical Engg., NIT Calicut

**Dr. G Praveen kumar**, Mechanical Engg., VIT Vellore

**Dr. Harikrishnan S.**, Mechanical Engineering, CUSAT Kochi

**Dr. Rakesh Sharma**, Mechanical & Industrial Engg., MIT, Manipal

**Dr Sarun Kumar K**, Energy and Process Engg., NTNU, Norway