ENGINEERING TOMORROW

Danfoss

IISc-Danfoss Training Program On

Design and Development of CO_2 based Refrigeration and Heat Pump Systems

Course Date:
08th to 10th April 2025 (3 Days)

Course Timings:
Tue -Thu : 10:00 am – 5:00 pm

Faculty Co-ordinator
Prof. Pramod Kumar, ICER, IISc

Industry Co-ordinator
Dr. Kundan Kumar, Danfoss India

Supported by

ALFA LAVAL

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Course Fee per participant: **INR 25,000 + 18% GST (Total INR 29,500/-)**
Accommodation (Per day-single occupancy) **INR 1,000 + 12% GST (Total INR 1,120/-)** - per participant on first come first serve basis at CCE guest house (Breakfast & Dinner not Included)
Fees are non-refundable due to limit number of participants
Minimum Qualifications: B.E (Any Discipline)
Batch Size: 30
Course Mode: Offline (CCE Classroom, IISc Bengaluru)
Attendance in all sessions is <u>compulsory</u> for obtaining a participation certificate
Course completion certificate will be provided to all participants who clear the assessments

Contact Us:

Centre for Continuing Education (CCE)
Indian Institute of Science
Bengaluru-560012, INDIA
Phone: +91 080 2293 2055/2491/2247

Scan to Register Online

More Details: https://cce.iisc.ac.in/self-support-courses/

Timing	Day-1	Day-2	Day-3
	Topic		
10:00 am	Familiarization, Program Overview & Review of thermodynamic principles applied to refrigeration systems	CO_2 based heat pump design and Heat recovery strategies	Good design practices and maintenance of the CO_2 systems
11:30 am	Tea Break		
11:45 am	Design & analysis of CO_2 booster and Parallel compression refrigeration systems	Hands-on with CO_2 system and interactive discussion on system design	Discussion on case study-based system design assignments
1:15 pm	Lunch		
1:45 pm	Design & analysis of Ejector based CO_2 refrigeration systems	Transcritical CO_2 systems safety measures and testbed design	Discussion on case study-based system design assignments
3:15 pm	Tea Break		
3:30-5:00 pm	Tutorials, quizzes, hands-on training and assessments		Feedback and Discussions

Course Overview

The IISc-Danfoss Training Program on "Design and Development of CO_2-based Refrigeration and Heat Pump Systems" has been specifically tailored for practicing HVAC and refrigeration engineers to familiarize them with CO_2 based refrigeration systems. Different modules in the course are specifically curated to cover various aspects of design starting from fundamental concepts of thermodynamics, heat transfer, and refrigeration cycles to hands-on design and best practices used in HVAC industry. The curriculum is expected to bridge the gap between theory and practice. Emphasis is given on simple paper and pencil based design to comprehensive system evaluation using computer-based tools. Specific attention to heat exchanger sizing, compressor selection, and control system design is provided to ensure fail-safe operation. Case studies showcasing best practices used in hardware/software interlocks, control wiring, and skid development will be presented. It is expected that upon successful completion of the course, the participant will be in a position to size, design, troubleshoot, and evaluate the performance of a standalone CO_2 systems.

Course Format: The format typically includes a morning session dedicated to theory, followed by hands-on training and system design including Q&A in the afternoon session. The course is structured such that no subject matter pre-requisites are required. **However, working knowledge of MS Excel would be helpful**.

Course Material: Participants will receive session wise course materials, handouts, and booklets required for each module. **All Participants are required to carry their own laptops with MS Office pre-installed.**

Pre-requisite: Basic knowledge of Mechanical Engineering, particularly related to refrigeration and HVAC applications. **No prior knowledge of computer programming is necessary**.

Note: Completion Certificates will be issued to only those who successfully clear the assessments. **No grades/marks will be allotted. Participation certificates will be issued to all participants.**