

International Workshop

Integrated CO₂ Refrigeration Systems for LT, MT & HT applications and Supermarkets

*Under the auspices of the ongoing Indo-Norwegian project funded by
the Ministry of External Affairs, Government of Norway coordinated by SINTEF, Norway*



Date: 12-13 March 2018

Venue: ICSR Auditorium, IIT Madras,
Chennai - 600036, India



NTNU - Trondheim
Norwegian University of
Science and Technology

Motivation

International Workshop on Integrated CO₂ refrigeration systems for Supermarkets is a part of the ongoing Indo-Norwegian project (INDEE) being carried out at IIT Madras. The project is approved by the Ministry of External Affairs, Government of Norway through SINTEF and NTNU, Norway. Main aim of INDEE is to eliminate conventional synthetic (man-made) refrigerants which are so far highly popular in developing countries like India. With the collaboration, India as a developing country, made an initiative to improve its role on environmental footprints at global level. With this motivation India is committed to eliminate the usage of synthetic HCFC and HFC class refrigerants which have high global warming potential (GWP) as per the recent Kigali agreement. It is perceived that the possible candidate for replacement is CO₂.

Workshop Objective

The intended workshop is meant to disseminate knowledge by means of lecture and demonstration on 35 kW multi-evaporator (freezing at -29°C, refrigeration at -6°C and air conditioning at 9°C), multi-ejector CO₂ system. The system has heat recovery facility for waste heat utilization for applications such as milk dairy, hospitals, hotels, etc. All the attendees of the workshop such as practicing engineers, consultants, industry personnel and also students are bound to get benefited with this emerging technology in the fields of Heating, Air Conditioning and Refrigeration (HVAC).

Target Audience

All technical persons / professionals involved in HVAC&R aspects of the following:

1. Dairy Industries
2. Food Refrigeration
3. Hospitals
4. Hotels
5. Data Centres
6. Supermarkets
7. Cold Chain and Storages
8. Fisheries
9. Marine Refrigeration
10. Low Temperature Refrigeration
11. Controls in Refrigeration
12. Process Cooling and Heating
13. Pharmaceutical Industries
14. Commercial Refrigeration

Speakers

Prof. P. Neksa	Chief Scientist, SINTEF, Norway
Prof. A. Hafner	Professor, NTNU, Norway
Dr. K. Banasiak	Research Scientist, SINTEF, Norway
Mr. S. Giroto	CEO, Enex, Italy
Mr. M. Bonfanti	Dorin, Italy
Mr. S. Mahajan	LU-VE Group, Italy
Mr. R.P. Kamath	Global Application Expert, Danfoss India
Mr. Sampath Kumar	GM, Metro Bangalore
Mr. C. Subramaniam	President Elect, ISHRAE HQ
Dr. P. Kumar	Professor, IISc Bangalore
Mr. M.M. Hazarika	Research Scholar, IIT kharagpur
Prof. M.P. Maiya	Professor, IIT Madras
Dr. S. Singh	Post-Doctoral Fellow, IIT Madras

Workshop Content

Day		Start	End	Event	Speaker
12 th March 2018	Morning	9:00	9:45	Registration / Tea / Networking	
		9:45	10:30	Inauguration ceremony	
		10:30	11:00	Tea Break	
		11:00	11:30	Introduction to INDEE	Prof. P. Neksa
		11:30	1:00	Current status of natural working fluids	Prof. A. Hafner
	Afternoon	1:00	1:45	Lunch Break	
		1:45	2:15	Current scenario of cold chain and supermarket cooling in India	Mr. C. Subramaniam
		2:15	2:45	Standardized CO ₂ supermarket racks & chillers	Mr. S. Giroto
		2:45	3:15	Heat exchangers for CO ₂ units	Mr. S. Mahajan
		3:15	3:45	Introduction to INDEE test facility	Dr. K. Banasiak
13 th March 2018	Morning	3:45	6:00	Tea and Visit to INDEE test facility	Dr. K. Banasiak / Dr. S. Singh
		9:00	10:00	INDEE Achievements	Dr. K. Banasiak
		10:00	10:30	Design challenges in CO ₂ based Combined power and cooling systems	Dr. P. Kumar
		10:30	11:00	Tea break	
		11:00	11:30	Controls and sensors	Mr. R.P. Kamath
	Afternoon	11:30	1:15	Implementation of training for contractors & application-based discussion	Prof. A. Hafner
		1:15	2:00	Lunch Break	
		2:00	2:30	Adaptation of new technology by Metro India - A preamble	Mr. Sampath Kumar
		2:30	3:30	Performance evaluation of a CO ₂ system for air conditioning	Mr. M. M. Hazarika
		3:30	4:00	Funding opportunities	Prof. A. Hafner
		4:00	4:30	Wrap up followed by Tea	

Workshop Partners



Chennai Chapter



Registration

Participants can register by sending the following details on indee.iitm@gmail.com.

Name: _____ Position: _____

Name and Address of the organization/University: _____

Contact no: _____ email: _____

Note: There is **NO** registration fee. A few rooms are reserved at IIT Madras Guest House on payment basis. The student hostel accommodation is being arranged. Students should bring identity card and endorsement letter from their institute.

Coordinators

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