



5<sup>th</sup> Edition

# REFCOLD INDIA

08 - 10 DECEMBER, 2022

Mahatma Mandir, Gandhinagar, Gujarat

Knowledge Enhancing

# SEMINAR & WORKSHOP



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# SEMINAR SCHEDULE



**Date:** 9th December 2022

**Time:** 14:00 to 17:00

EVENT	TIME	TOPIC	SPEAKER	DURATION
Inauguration	14:00 - 14:10	Inauguration of INDEE+ ( IIR Session): Lamp lighting / Welcome address	Mr. Chandrasekhar (ISHRAE President)	10 mins
	14:00 - 14:10	Welcome By INDEE+	Armin Hafner (NTNU)	05 mins
INDEE + project and objectives.	14:15 - 14:45	Status, needs and actions to the uptake of clean and efficient cooling solutions in India.	Armin Hafner (NTNU)	30 mins
Refrigerants in the Indian market	14:45 - 15:30	Current status and barriers of refrigerant recycling, recovery and disposal in India.	Aditya Garg (CEEW)	30 mins
Tea Break	15:30 - 15:50	Tea & Networking Break		
	15:50 - 16:05	ISHRAE Position Paper on Refrigerants for Indian Refrigeration & Air Conditioning Industries	Vikas Mehta (ISHRAE)	15 mins
	16:05 - 16:35	Practices for End-of-Life Refrigerant management in Norway	Torgrim Asphjell (NEA)	30 mins
	16:35 - 17:05	Round table 1: Current cooling technologies in Indian future cleane alternatives & EOL management of Refrigerants	Lead: Prof. MP Maiya (IITM), Torgrim Asphjell (NEA), Sonal Kumar	30 mins

# SEMINAR SCHEDULE



**Date:** 10th December 2022

**Date:** 10:00 to 13:00

EVENT	TIME	TOPIC	SPEAKER	DURATION
	10:00 - 10:10	Brief Introduction to ISHRAE Refrigeration Activities	Mr. Manoj Chakravorti (ISHARE Refrigeration Chair)	10 mins
	10:10 - 10:15	INDEE+ in a nutshell	Armin Hafner (NTNU)	05 mins
Demonstration of CO2 refrigeration technology in India and knowledge transfer plans				
INDEE + demosites	10:15 - 10:30	Co2 supermarket	Pramod Kumar (IISc)	15 min "including 3 min for Q&A"
	10:30 - 10:45	Co2 HeatPump/chiller for hotels	Simarpreet Singh (NTNU)	15 min "including 3 min for Q&A"
	10:45 - 11:00	Co2 HeatPump/chiller for hotels	Siva (IITM)	15 min "including 3 min for Q&A"
	11:00 - 11:15	Co2 Maritime freezing units	Arun B S (CIFT)	15 min "including 3 min for Q&A"
	11:15 - 11:25	ISHRAE - IIT Kharagpur - DST Research Project - CO2 based secondary loop systems for cold storage applications	Prof. Ram Gopal IIT, Kharagpur	10 mins
Tea Break	11:25 - 11:40	Tea Break & Net Working		

# SEMINAR SCHEDULE



**Date:** 10th December 2022

**Date:** 10:00 to 13:00

EVENT	TIME	TOPIC	SPEAKER	DURATION
	11:40 - 12:10	INDEE+ educational units	Arun B S (CIFT) Pradeep Gupta (IISc) Vaishak S (BITS)	(10 min each including 3 min for Q&A)
	12:10 - 13:00	Round table 2: The need to educate and develop skills, who should INDEE+ interact with and how?	Lead: Armin Hafner (NTNU), Shikha Bhasin (CEEW) Kristina Norne Widell (SINTEF O),	50 mins

# SPEAKERS BIO DATA



## **Prof. Dr.-Ing. Armin Hafner**

received his Ph.D. degree in Energy and Process engineering from the Norwegian University of Science and Technology (NTNU). He is the Professor with Refrigeration Engineering and Technology at NTNU, Trondheim, Norway. His research addresses the utilization of natural refrigerants such as CO<sub>2</sub> for various applications such as refrigeration, air conditioning & heat pumps, system design, and life cycle climate performance assessment. His research has led to more than 150 international and national publications and numerous presentations in international and national meetings and conferences.

## **Manoj Chakravorti**

### Qualification:

B.E. (Mechanical) from University of Calcutta Specialization in Air conditioning from Jadavpur University, MBA.

### Professional Membership:

ASHRAE, ISHRAE (Former National President and presently President Emeritus of Calcutta Chapter)  
Association of Ventilation Engineers  
Calcutta Management Association  
Indian Plumbing Association

### Experience:

30 years in the fields of: Environmental Engineering encompassing Air conditioning, Ventilation, Clean Room, Air Pollution Control, Environmental Impact Assessment and Environmental Management Plant.

### Organizations Served:

MECON Limited, Presently working in own organization Engineering Consultancy Services.

### Few key National Projects handled:

HVAC Design & BMS for Currency Printing Press at Shalboni & Mysore.

HVAC System & Environmental Control of Agni (Ballistic Missile) Launching Pad at Balasore.

HVAC & Environmental Control of Inertia Instrumental Lab of Research Centre IMARAT, Hyderabad under DRDO.

HVAC & Environmental Control of Antarctica Study Centre at Goa under Ministry of Science & Technology.

Many more IT Parks, Shopping Malls, Corporate Offices etc.



# SPEAKERS BIO DATA

## **Torgrim Asphjell**

is a Chief Engineer at the Department of Climate in the Norwegian Environment Agency. His key fields of work include fluorinated greenhouse gases, climate gas inventories, and development assistance. With about 15 years of work experience on refrigerants, Torgrim has been instrumental in the implementation of the regulations on this field in Norway. He has worked in the Norwegian Public Administration on climate change, air pollution and other environmental issues since 1992. In the past, Torgrim has worked for the Ministry of Environment in Norway and also the Norwegian Agency for Development Cooperation. He has a Master of Science in Mechanical Engineering from the Technical University of Norway (NTH, now NTNU).



## **Shikha Bhasin**

Shikha Bhasin is Senior Programme Lead in the Technology, Finance and Trade team at The Council on Energy, Environment and Water. She is a co-author of the India Cooling Action Plan (ICAP) and she represents CEEW as a member of ICAP working groups to implement its R&D and servicing sector goals. Her research focusses on enhancing access to sustainable cooling in India, as well as supporting the technology and market transitions required to meet India's Kigali Amendment commitments. She also leads research on climate negotiations, with a particular focus on aspects of the Paris Agreement rulebook, and national ambitions set out under the aegis of the United Nations Framework Convention on Climate Change (UNFCCC).

Her research lies at the interface of policy and academia and has been used to ascertain strategies in various governments, international organisations, and philanthropies. Shikha has served as an Advisory Board member to the Climate Technology Centre and Network (CTCN) instituted by the UNFCCC and contributed to the inception and working of the UNFCCC's Technology Mechanism.

# SPEAKERS BIO DATA

## **Sonal Kumar**

is a Programme Lead in the Technology, Finance and Trade team at the Council. His work is focused on sustainable cooling wherein he supports the implementation of the Kigali Amendment to the Montreal Protocol and the India Cooling Action Plan.

Sonal has 13 years of experience in clean energy, energy efficiency, decarbonisation, air pollution and climate change mitigation. Prior to joining the Council, he was working with Greentech Knowledge Solutions Pvt Ltd (GKSPL) as the Associate Director.



## **Pramod Kumar**

is an Associate Professor at the Department of Mechanical Engineering. Dr. Kumar obtained his Masters' and PhD degrees in Mechanical Engineering from IISc Bangalore. Prior to joining IISc as a faculty, he worked as a Research Engineer at Georgia Institute of Technology, Atlanta.

Dr. Kumar is a Gold Medallist at IISc for his Doctoral Research, recipient of KSCST Prof. Satish Dhawan Young Engineer Award for 2018, Dr. Abdul Kalam award for outstanding engineering contribution for year 2021. In the year 2020, he was elected as a Fellow of Indian National Academy of Engineering (INAE).

Dr. Kumar works broadly in the area of design on thermal systems. Currently, his team designed and developed a 100 kW transcritical CO<sub>2</sub> refrigeration system for ship cooling for Indian Navy. Additionally, his team is involved in developing India's first supercritical CO<sub>2</sub> power generation system.



## **Kristina N. Widell**

is a senior research scientist at the research institute SINTEF Ocean in Trondheim, Norway, working in the department of fisheries and new biomarine industry. She received her Ph.D. degree in Energy and process engineering from the Norwegian University of Science and Technology (NTNU). Her research addresses mainly processing technology and systems for food industry, especially related to refrigeration and the food cold chain. Examples of research activities are

increasing energy efficiency, reducing GHG emissions, increasing utilization of natural refrigerants, improving product quality, and reducing food waste.

# SPEAKERS BIO DATA

## **Prof. M. P. Maiya**

is currently Senior Professor in Department of Mechanical Engineering at Indian Institute of Technology Madras. Dr. Maiya is a graduate of National Institute of Technology Calicut, India in Mechanical Engineering in 1981. He then received M. Tech. and Ph.D. degrees in Thermal and Refrigeration Engineering from Indian Institute of Technology Bombay, Mumbai, India in 1983 and 1988 respectively. He has published over 150 papers in international journals and conferences. His accomplishments include Fellow Membership from The Institution of Engineers (India), DAAD fellowship, several best paper awards in conferences, editorial board memberships and editorships in journals, membership in selection / jury committees and several international academic assignments. His research interests are Sorption technology, Desiccant and Evaporative cooling, Air conditioning and Ventilation, Passive cooling of buildings, CO<sub>2</sub> refrigeration, Metal hydrides and Energy systems. He is a life member of a number of scientific and professional societies like ISTE, ISHMT, ISHRAE, SESI and ASME and member of ASHRAE.



## **Dr. Simarpreet Singh**

is currently working as a Scientific Researcher at NTNU Norway in an ongoing Indo-Norwegian project “Future Refrigeration India: INDEE+” supported by Ministry of Foreign Affairs (MFA) Norway. Dr. Singh had completed his post-doctorate (2017-2019) in the collaboration with NTNU, Norway and Indian Institute of Technology Madras (IIT Madras), under the framework of the “INDEE” (Phase-I).

Dr. Singh also contributed to an eminent project “HighEFF”-Centre for an Energy Efficient and Competitive Industry for the Future, funded by the Research Council of Norway and industrial partners. The work was focused on to improve the overall performance of a dairy industries. Dr. Singh's strength is inclined towards advancing eco-friendly heating and cooling solutions “R744 technology” for various applications.



# SPEAKERS BIO DATA

## **Dr. Y Siva Kumar Reddy**

is currently Post Doctoral Fellow at Indian Institute of Technology Madras working on the Indo-Norwegian project INDEE+. Siva has carried out research on Liquid desiccant air conditioning systems for air conditioning application as part of Ph.D. course. He has received Ph.D. and M.Tech degrees from the National Institute of Technology Warangal. Currently, he is working with the INDEE+ team to model, develop and install a CO<sub>2</sub> heat pump chiller unit at a hotel in Chennai.



## **Dr. Arun B. S**

A Post-doctoral fellow from ICAR-Central Institute of Fisheries Technology, Cochin. He was awarded Ph.D. from the National Institute of Technology Trichy, India. In this capacity, he has delivered lectures on thermodynamics, refrigeration & air-conditioning and heat & mass transfer. He has also published research papers in reputed journals. Currently, he is working on an Ammonia-Carbon dioxide cascade refrigeration system for seafood deep-freezing applications.

## **Dr. Pradeep Gupta**

is currently a post-doctoral fellow at Indian Institute of Science (IISc), Bengaluru in collaboration with NTNU, Norway. He is exploring the feasibility of ejector-based transcritical CO<sub>2</sub> based refrigeration systems in big shopping complex, and pharmaceutical industries. He earned his PhD in Energy Research and Master's in Mechanical Engineering from IISc Bengaluru.



## **Dr. Vaishak. S**

An INDEE+ Post-doctoral fellow at Birla Institute of Technology and Science-Pilani. Vaishak has carried out research on the integration of photovoltaic/thermal systems with heat pumps to develop more energy-efficient technologies. He received his Ph.D. in 2021 from the Sardar Vallabhbhai National Institute of Technology, Surat. Currently, he is working with the INDEE+ team to develop and implement CO<sub>2</sub>/NH<sub>3</sub> cascade and transcritical CO<sub>2</sub> refrigeration systems in India.

# SPEAKERS BIO DATA

## Vikas Mehta

Currently working as Business Manager – South Asia – Marketing and Sales for Refrigerants and Specialty Products for Chemours India (Formerly known as DuPont India Pvt Ltd).

Graduated as a Mechanical Engineer from Punjab Engineering College, Chandigarh in 2003

After Completing Graduation, joined Bluestar Ltd in Mumbai.

Worked with MNCs like Saint Gobain Glass, Trane Chillers and DuPont in various locations and roles of Sales, Marketing and Strategy.

A member of Various expert committees of ISO (ISO TC 86) and IEC (TC 61, SC 61C and 61D) thru BIS. A member of Core Group in MED03 on Refrigeration and AC.

Member of Refrigerants Technical committee @ ISHRAE and Co-Authored position paper on Refrigerants for Indian Refrigeration and Air Conditioning Industries. Also represent ISHRAE for Policy related matters with Govt.

Involved Actively with MoEF and Ozone Cell in bringing Low GWP and Environment Friendly Refrigerants to the sub-continent for various applications.



For more information, contact

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