POORNIMA
COLLEGE OF ENGINEERING

Promoted by Shanti Education Society, Affiliated to Rajasthan Technical University & Approved by AICTE

A Report on 2-day International Conference on Advances in Refrigeration & Energy Systems

TITLE AND DURATION: "Advances in Refrigeration & Energy Systems" (April 7-8, 2018)

SPONSORS: NIL

SUPPORTERS: NIL

ORGANIZING PARTNERS: ASHRAE, India Chapter

PUBLISHER(S): Nil

THEMES / TRACKS:

- RAC Components, Standards and Test Facilities
- CFD Simulation and Modeling in RAC
- Refrigerated Cold Chain, Transport and Cold Storage
- New Refrigeration Techniques
- Cold/Heat Recovery and Energy Efficiency
- Low Temperature Applications
- Automobile Air Conditioning
- Alternative Refrigerants & Technologies
- IC Engine Applications
- Heat Transfer and Fluid Flow
- Solar Thermal and PV Techniques
- Wind Energy Systems
- Hydropower Applications
- Bio fuel Technology

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- Fuel Cell and Hydrogen Technology
- Geothermal Systems
- Renewable Energy in Smart Cities
- Sustainable and High Performance Buildings
- Building Simulations and Energy Modeling
- Alternate Fuels
- Waste Heat Recovery
- Mechatronics
- Energy saving for Vehicular Technology, Electric Machinery and Power Electronics
- Life Cycle Assessment
- Energy and Environment Policy Regulations

OBJECTIVES:

Realizing that intellectual competitiveness is vital to India in achieving the status of a vibrant global leader in the growing knowledge age and technical and management education has created for itself a critical niche area, the PJ Foundation, as an umbrella body, will devote itself to formulation of desired policies and providing broad directions, guidance and support to the managements of the participating colleges.
The main objectives are to:
- Create industry effective curriculum and courses
- Establish effective collaboration and cooperation among institutions
- Initiate fellowships, scholarships and awards
- Identify new growth areas
- Create new research and development platform
- Provide orientation and approach/practices for efficient institutional management
- Ensure effective execution of teaching learning processes

The areas indicated are only illustrative and do not limit the scope of the Foundation's guidance/assistance. It may contribute in any other area(s) conducive to the attainment of its broad Mission. The endeavor will be to develop and implement mechanisms and practices to supplement engineering/technical education with knowledge of management and social sciences and inculcate interpersonal skills so as to make the students more enterprising and competitively oriented.

The PJ Foundation will serve as a 'think tank' to deliberate on all aspects of technical/professional education and reorientation of approach/ practices adopted for the efficient management of the colleges/ institutions. The Foundation is also committed to providing quality research in technology and management and their specialized areas.
The directions/ guidelines issued by the PJ Foundation will be followed and adhered to by the participating colleges in all seriousness. In the day-to-day management of the individual colleges, the foundation will have no direct role and they will have full freedom of approach and practice. The foundation is not intended to interfere in their working except [illegible]

of seeing that the directions/guidelines, if any, issued by it is any specific matter (s) are duly followed.

EXPECTED OUTCOMES:

It's palpable that Refrigeration and Energy System are of primary importance and modern society requires an ever increasing amount of energy resources. Refrigeration is considered as the most important engineering achievements of the 20th century having its large impact on industry, lifestyle, agriculture etc. Following the same ideology, the conference acts as the forum for the high intellectuals to discuss the scope of future research emphasizing the need and availability of energy resources and the applications of refrigeration system.
The conference will provide a platform to academicians, students and researchers for showcasing the different innovative ideas related to research and applications of mechanical engineering. The presentations and expert talks will demonstrate the significance of Refrigeration & Energy System in different professional prospects. In this conference, deliberations on Refrigeration & Energy System will take place through the gathering of renowned personalities and expertise opening the new arenas of knowledge and professions for engineers and entrepreneurs.

DETAILS OF CONFERENCE:

Department of Mechanical Engineering, Poornima College of Engineering, Jaipur organized an International Conference on "Advances in Refrigeration & Energy Systems" on April 7 & 8th,2018 with technical support of green-assocham (GEM), Indian Society of Heating Refrigeration & Air Conditioning Engineering (ISHRAE) and TWIGA as a Table Partner. The conference took place to emphasize the need and importance of refrigeration and energy in current scenario.

On this occasion, Dr. Bruce D. Hunn, Consultant, Building Energy Analysis & Former Director, Strategic Technical Programs, ASHRAE, graced the occasion as the Chief Guest along with Mr. Priyank Garg, President, ASHRAE India Chapter, Guest of Honor, Mr. Indrajit Bhattacharya, General Manager, U.P. Twiga Fiberglass Limited, Guest of Honor , Dr. Jyotirmay Mathur ,Prof. Department of Mechanical Engineering ,MNIT Jaipur ,Mr. K.K. Mitra, Past President, ASHRAE India Chapter, Mr. Sunil Bajaj, ASHRAE India Chapter, Dr. Om Prakash Sharma, Director, Poornima College of Engineering, Mr. Shailendra Kasera, Head & Asst. Prof., Dept of Mech. Engg. and Dr. Arun Kumar Behura, Associate Prof. Dept. of Mech. Engineering.

The conference began with the floral welcome of the dignitaries followed by felicitation ceremony and releasing of the Souvenir. It got initiated with the welcome address & introduction of ICARES -2018 which was given by Dr. Om Prakash Sharma, Director PCE. He motivated the students and thanked the dignitaries for their precious time. He urged the students to witness such conference in future for their academic benefits. After this, Mr. Priyank Garg, President, ASHRAE India Chapter spoke about ASHRAE India Chapter. He handed over the certificate of Best Student Chapter Award to Dr. Om Prakash Sharma and Mr. Shailendra Kasera.

The Chief Guest Dr. Bruce D. Hunn, Consultant, Building Energy Analysis & Former Director, Strategic Technical Programs, ASHRAE delivered the inaugural [illegible]

described the implementation procedures for the performance measurement protocols documented in the 2012 ASHRAE publication ***Performance Measurement Protocols for Commercial Buildings: Best Practices Guide.*** This how-to guide provides practical steps and tools for continuously monitoring, evaluating, and improving the performance of commercial buildings throughout their service life. He stated that it supports integrated commissioning and all activities of the O&M team to ensure that their buildings are green, energy efficient, highly productive, and healthy. A process and tools are provided to quantitatively evaluate building performance at three levels of application for this. The inaugural ceremony ended with the vote of thanks given by Mr.Shailendra Kasera. Various technical sessions were also organized in this conference.

BROCHURE / POSTER / LEAFLET / FLYER:

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Director
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Sitapura, JAIPUR

PROGRAM OUTLINE/ PROGRAM SCHEDULE/ INAUGURAL SESSION:

ICARES-2018 Program Schedule

Day-1

Venue: CG05, PCE **Anchors: Mr. Saket Verma and Puneet Suthar**

S.No	Activity	Time
1	Reporting and Registration of Delegates	08:30-09:30 am
2	Welcome of Dignitaries by the anchors Request the dignitaries for lighting of lamp (Parallel Saraswati Vandana)	09:30-09:40 am
3	Felicitation of Chief Guest , Guest of Honor and Other Dignitaries	09:40-09:45 am
4	Release of Souvenir by Dignitaries on Dias	09:45-09:55 am
5	Welcome Address & Introduction of ICARES-2018 by Dr. Om Prakash Sharma, Director, PCE	09:55-10:00 am
6	About ASHRAE India Chapter and Handing Over the Best Chapter Award by Mr. Priyank Garg, President, ASHRAE India Chapter to Director, PCE and HOD, Dept of Mech Engg, PCE	10:00-10:10 am
7	Inaugural Speech by Chief Guest Dr. Bruce D Hunn, Consultant, Building Energy Analysis & Former Director, Strategic Technical Programs, ASHRAE	10:10-10:20 am
8	Vote of Thanks by Mr. Shailendra Kasera, Head & Asst. Prof., Dept of Mech Engg, PCE	10:20-10:25 am
9	Poornima Gaan followed by National Anthem	10:25-10:30 am
10	Request the dignitaries to leave the Dias	10:30 am
11	Technical Sessions	10:30-11:30 am

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	Lecture by Dr. Bruce D. Humm on Best Practice for Evaluating and Improving the Performance of Commercial Buildings	
12	Lecture by Dr. S.C. Bhaduri on Impact of Kigali amendment on refrigeration industry	11:30-12:05 pm
13	Lecture by Dr. Jyotirmay Mathur on Radiant Cooling	12:05-12:40 pm
14	Presentation by U.P. Twiga Fiberglass Limited	12:40-01:05 pm
15	Photo Session (PCE Porch)	01:05- 01:15 pm
16	Lunch at PCE Mess	01:15-2:00 pm
17	Lecture by Mr. Sameer Maithel on Energy Efficient Building Envelope for Residential Buildings	02:00 - 02:30pm
18	Lecture by Mr. Kanagraj Ganeshan on Low Energy Cooling Systems	02:30 -03:00 pm
19	Lecture by Mr. Neeraj Arora, Senior Director, ASSOCHAM on Green Building – Stop Nature being a Historical topic	03:00-03:30 pm
20	High Tea	03:30-04:00 pm
21	Lecture by Dr. Jorge E. Hernandz on Critical Applications	04:00-04:45 pm
22	End of day one-Vote of Thanks by Anchors	04:45 pm

Day - 2

(Venue: CG-05 Seminar Hall, PCE, Jaipur)

S.No	Activity	Time
1	Breakfast at PCE Mess	08:30-09:30 am

2	Registration	09:30-09:45 am
3	Technical Parallel Session	09:45-12:00 noon
4	Photo Session (Outside PCE, Main entrance)	12:00-12:05 pm
5	Lunch at Poornima College of Engineering (Mess)	12:05-01:00 pm
6	**Valedictory Session** a. Brief overview of the conference b. Discussion on issues related to Refrigeration and Energy Systems c. Feedback of participants d. Distributions of certificates e. Vote of Thanks and concluding remarks	01:00-01:30 pm
7	Poornima Gaan followed by National Anthem	01:30-01:35 pm

DETAILS OF RESOURCE PERSONS/ ORGANIZING COMMITTEES:

Poornima foundation advisor committee

Mr. M. K. M. Shah Director (Admin. & Fin.), PF

Dr. Om Prakash Sharma Director, PCE

Mr. Rahul Singhi Director, PF

Ms. Renu Singhi Advisor, Alumni Association, PF

Dr. Rekha Nair Dean Academic, PF

Dr. Neeraj Jain Dean (Admissions), PF

Er. Rajeev David Proctor-in-Chief, PF

Mr. Ashwini Lata Dean, Hostels, PF

Ms. Dipti Lodha Chief TPO, PF

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Technical advisor committee

Dr. Essam Eldin Khalil Cairo, University

Dr. Max Sherman Lawrence Berkeley National Laboratory, USA

Mr. James Kurt Vallort ASHRAE

Mr. E. Mitchell Swann MDC Systems, Paoli, USA

Mr. Hoy Bohanon Hoy Bohanon Engineering PLLC, USA

Dr. P.M.V. Subbarao IIT, Delhi

Dr. S. C. Kaushik IIT, Delhi

Dr. K. Srinivasa Reddy IIT, Madras

Dr. S.P. Harsha IIT, Roorkee

Dr. P.K. Sahoo IIT, Roorkee

Dr. M. Mishra IIT, Roorkee

Dr. S. K. Mohapatra IIT, Bhubaneswar

Dr. A. M. Sidpara IIT, Kharagpur

Dr. S.L. Soni NIT, Uttarakhand

Dr. Shishir Chandra Bhaduri JKLU, Jaipur

Dr. Jyotirmay Mathur MNIT, Jaipur

Dr. Dilip Sharma MNIT, Jaipur

Dr. G. D. Agarwal MNIT, Jaipur

Dr. Amar Patnaik MNIT, Jaipur

Dr. R. K. Prasad NIT, Jamshedpur

Dr. L. Prasad, NIT, Jamshedpur

Dr. A. K. Prasad NIT, Jamshedpur

Dr. A. Satapathy NIT, Rourkela

Dr. S.S. Mohapatra NIT, Rourkela

Dr. Gulshan Sachdeva NIT, Kurushetra

Dr. S. Mondal Jadavpur University, Kolkata

Dr. D. Dhupal VSSUT, Burla

Dr. C. R. Deo VSSUT, Burla

Dr. B. C. Routra KIIT, Bhubaneswar

Dr. K. B Sahu KIIT, Bhubaneswar

Dr. P. C. Jena VSSUT, Burla

Dr. S. R. Das VSSUT, Burla

Dr. C. P. Mohanty VIT, Vellore

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Mr. Priyank Garg ASHRAE India Chapter

Mr. K. K. Mitra ASHRAE India Chapter

Mr. Indrajeet Bhattacharya ASHRAE India Chapter

Mr. Sunil Bajaj ASHRAE India Chapter

Local Organising committee

Dr. Hemat Kumar Gupta Professor, ME, PCE

Mr. Rajeev David Proctor-in-Chief, PCE

Mr. Punit Shukla Registrar, PCE

Dr. Virendra Sangtani HOD, EE, PCE

Dr. Ajay Khunteta HOD, CS, PCE

Mr. Amol Saxena HOD, IT, PCE

Dr. Garima Mathur HOD, ECE, PCE

Mr. Md. Tarique HOD, Civil, PCE

Mr. Shirish Nagar HOD, Ist Year, PCE

Local Organising Members

Dr. Jayant Kishor Purohit ME, PCE

Dr. Robin Gupta ME, PCE

Mr. Peeyush Vats ME, PCE

Mr. Bhavesh Devra ME, PCE

Mr. Amit Mandal ME, PCE

Ms. Asha Kumawat ME, PCE

Mr. Yogesh Mishra ME, PCE

Mr. Praveen Tyagi ME, PCE

Mr. Rizwan Khan ME, PCE

Mr. Dhananjay Kumar ME, PCE

Mr. Ashish Dubey ME, PCE

Mr. Sagar Kumar ME, PCE

Mr. Prashant Mishra ME, PCE

Mr. Prince Dawar ME, PCE

KEYNOTE SPEAKERS:

SN	Name	Paper	Confirmation
1	Dr Bruce D Humm	Best Practice for Evaluating and Improving the Performance of Commercial Buildings	Yes
2	Dr SC Bhaduri	Impact of Kigali amendment on refrigeration industry	Yes
3	Dr Jyotirmay Mathur	Radiant Cooling	Yes
4	Mr. Sameer Maithel	Energy Efficient Building Envelope for Residential Buildings	
5	Mr. Kanagraj Ganeshan	Low Energy Cooling Systems	Yes
6	Mr. Neeraj Arora, Senior Director, ASSOCHAM	Green Building – Stop Nature being a Historical topic	
7	Dr. Jorge E. Hernandz	Latest Developments in the HVAC world	Video Conferencing

Brief profile of Chief Guest:

Dr. Bruce D. Hunn is a consultant in building energy analysis residing in Raleigh, North Carolina, USA. He is the former Director of Technology/Director of Strategic Technical Programs at ASHRAE (1997-2010) in Atlanta, Georgia, and continues as an active technical volunteer with ASHRAE. He chairs Technical Committee 7.6 on Building Energy Performance and is a member of Standard Project Committee 211 (Standard for Commercial Building Energy Audits) and a consultant to the Building Energy Quotient Committee. He is an ASHRAE Fellow, Life Member, and recipient of the Distinguished Service Award. Dr. Hunn holds BS, MS, and Ph.D degrees in Mechanical Engineering from Stanford University and a BA in Engineering from the University of Redlands.

Hunn has authored or co-authored more than 110 articles, technical reports and papers, along with eight books or chapters.

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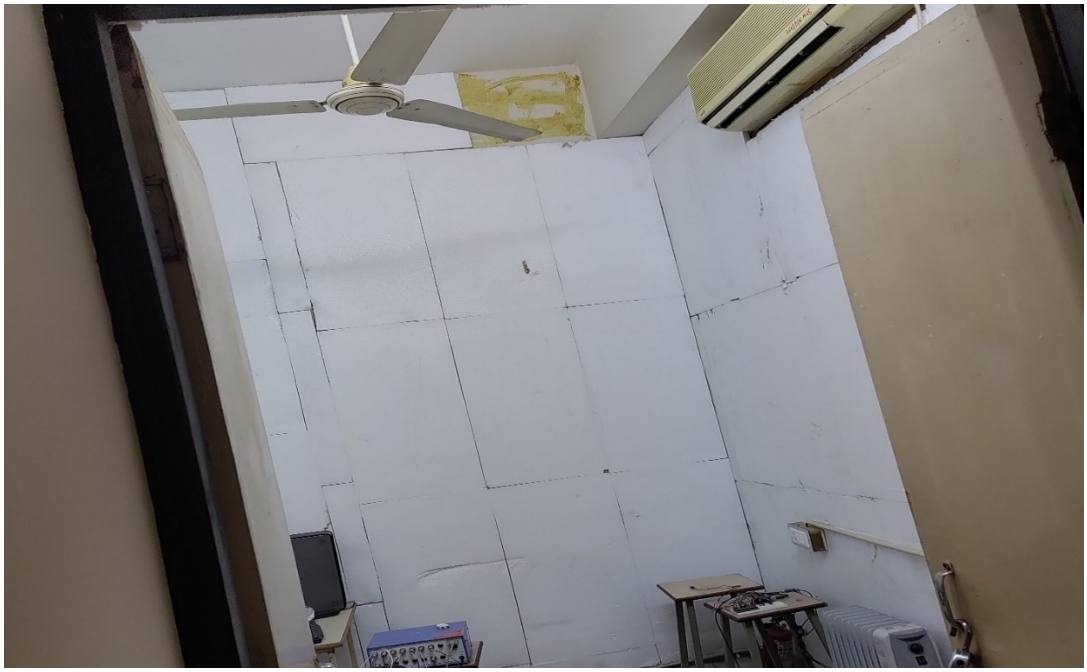
Best Practice for Evaluating and Improving Commercial Building Performance

This presentation describes the implementation procedures for the performance measurement protocols documented in the 2012 ASHRAE publication Performance Measurement Protocols for Commercial Buildings: Best Practices Guide. This how-to guide provides practical steps and tools for continuously monitoring, evaluating, and improving the performance of commercial buildings throughout their service life. It supports integrated commissioning and all activities of the O&M team to ensure that their buildings are green, energy efficient, highly productive, and healthy. A process and tools are provided to quantitatively evaluate building performance at three levels of application. Examples of applications to the ASHRAE Headquarters Building are presented.

CONTENT DELIVERY / PRACTICAL SESSIONS:



GLIMPSES OF PRESENTATIONS:

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LIST OF PARTICIPANTS:

		ALL VENUES-POORNIMA COLLEGE OF ENGINEERING	DATE-08-04-2018		
		TECHNICAL SESSION I (FACULTY CO-ORDINATOR-YOGESH MISHRA)			
S No	**PAPER ID**	**TITLE**	**AUTHORS**	**TIMING**	**VENUE**
1	ICARES-2018/01	Simulation and Performance Analysis of Shell and Tube Heat Exchanger	Nishant Wadhwa, Geetanjali Raghav	09:45-10:00AM	
2	ICARES-2018/02	A Review of Variable Refrigerant Flow Systems (VRF)	Zoe Dickson, Marc Armitage, Ritvik Mathur, Shailendra Kasera	10:00-10:15 AM	
3	ICARES-2018/03	Thermal Performance Analysis of the Pulsating Heat Pipe for Hybrid Vehicle Applications	Surajit Choudhury, Dr. Ashok K Dewangan	10:15-10:30 AM	

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4	ICARES-2018/04	Energy Performance Evaluation of R600a as a Drop-In Substitute for R134A	Prof. Shishir Chandra Bhaduri, Shailendra Kasera	10:30-10:45 AM	
5	ICARES-2018/05	Use Of Green Energy for Smart City: a Review	Yogesh Mishra, Gaurav Kumar, Bhawani Singh	10:45-11:00 AM	CG-05
6	ICARES-2018/06	Generation of Electricity using Human Power	Chetan Khemraj, Abhisekh Singh, Neeelam Singh, Sushma Barahate	11:00-11:15 AM	
7	ICARES-2018/07	Performance Of Collector Parameters for Three Sides Artificially Roughened Solar Air Heaters	Dr. Ashwini Kumar Dr. Arun Kumar Behura Dr. Ravi Kumar	11:15-11:30 AM	
8	ICARES-2018/08	Analysing Effects Of Cracks on Natural Frequency and Vibrations in Cantilever Beam by FEM And FFT	Sanjay Kumawat, Arvind Singh Mirola, Atul Sharma	11:30-11:45 AM	
9	ICARES-2018/09	A Review On Hybrid Air Conditioning System	Deepak Singh, Prof.(Dr) Ravi Goyal	11:45-12:00 PM	
10	ICARES-2018/10	Issues in the Automative Parts Remanufacturing Industry-A Discussion	Digvijay Singh Nirwan, Devesh Pratap Singh, Ankur Agrawal	12:00-12:15 PM	
		TECHNICAL SESSION II (FACULTY CO-ORDINATOR-BHAVESH DEVRA)			
				TIMING	**VENUE**

11	ICARES-2018/11	Basic Study of Steam Turbine	Dheeraj Kumar Dabhi, Abhay Singh	09:45-10:00AM	
12	ICARES-2018/12	A Study of Automobile Air Conditioning System	Aditya Kumar, Dharma Raj Yadav, Dhruva Khandal	10:00-10:15 AM	
13	ICARES-2018/13	Prevention of Air Pollution at the Very Generation and It's Purification: A Review	Anshul Maheswari And Chandan Kumar	10:15-10:30 AM	
14	ICARES-2018/14	Block chain Technology	Anurag Jain & Sakshi Mishra	10:30-10:45 AM	
15	ICARES-2018/15	A Comprehensive Review on Small Scale Wind Turbines	Amit Mandal	10:45-11:00 AM	AB-05
16	ICARES-2018/16	A Review on Dual Clutch Transmission	Anshu Kumar Patel	11:00-11:15 AM	
17	ICARES-2018/17	Evaluation of Performance and Vibration Analysis Of Annular Disc by Using Finite Element Method	Asha Kumawat , Ankit Saharan, Akshay Shrivastav	11:15-11:30 AM	
18	ICARES-2018/18	Analysis of Thermal Performance in Three Sides Artificially Roughened Solar Air Heaters	Dr. Arun Kumar Behura, Dr. Ashwini Kumar, Dr. Ravi Kumar	11:30-11:45 AM	
19	ICARES-2018/19	Review on 3D Printing Technology	Devesh Pratap Singh, Digvijay Singh Nirwan	11:45-12:00 PM	
20	ICARES-2018/20	Building Energy Simulation –A Case Study in Composite Climate in India	Dinesh Chand Sharma, Abhay Raj	12:00-12:15 PM	
		TECHNICALSESSION III (FACULTY CO-ORDINATOR-PRAVEEN KUMAR TAGYEE)			

21	ICARES-2018/21	Issues in the Solar Power Air Conditioning-A Discussion	Himanshu Sharma, Ankuj Sekhawat, Govind Kumar Parashar	09:45-10:00AM	
22	ICARES-2018/22	Mass Customized Manufacturing Practices: The Role Of Big Data and Analytics with Multiple Indian Cases	Dr. J.K. Purohit, Dr. Miland Kumar Sharma, Dr. A.S. Chauhan	10:00-10:15 AM	
23	ICARES-2018/23	Introduction to Self Inflating Tyre	Bhartendu Singh, Kapish Sharma	10:15-10:30 AM	
24	ICARES-2018/24	Combustion Instabilities in Liquid Propellant Rockets	Prashant Kumar Rawat Rahul Sharma Ashish Dubey	10:30-10:45 AM	
25	ICARES-2018/25	Dynamic Hysteresis Scaling of Ferroelectric Hysteresis Parameters of Ceramics	Ankit Kumar, Sudhanshusingh, Shatrughan Singh, Ashok Kumar Yadav	10:45-11:00 AM	CONFERENCE HALL
26	ICARES-2018/26	Thermal Analysis of Rapid Tooling Mold Integrated with Conformal Cooling Channels	Sagar Kumar, Vikas Kumar	11:00-11:15 AM	
27	ICARES-2018/27	Experimental Investigation of Surfactant Effect on Heat Transfer Characteristics in Non-Boiling Spray Cooling Of Water	Praveen Kumar Tyagi, Dr. Arun Kumar Behura	11:15-11:30 AM	
28	ICARES-2018/28	Road Power Generation by Flip Plate Mechanism- A Discussion	Atal Bihari Bairangi, Parbat Singh, Mohammad Ali	11:30-11:45 AM	
29	ICARES-2018/29	Experimental Investigation of Waste Cooking Oil Methyl Esters (Wcome) as Fuel in CI Engine	Chandrashekhar, P. K. Mandal, Ashok Kumar Yadav	11:45-12:00 PM	
30	ICARES-2018/30	Issues in the Direct Utilisation of Geothermal Energy- A Discussion	Pawan Kumar, Mohit Pareek, Ball Kish	12:00-02:15 PM	

31	ICARES-2018/31	Fractional integral and beta transform formulas for the extended appell-lauricella hypergeometric functions	Shilpi Jain, Praveen Agarwal, Onur Kiymaz	12:15-12:30 PM	
		TECHNICAL SESSION IV (FACULTY CO-ORDINATOR-DHANANJAY KUMAR)			
				TIMING	**VENUE**
32	ICARES-2018/32	Project Loon	Anila Dhingra, Gaurav Saxena & Suman Kumari	09:45-10:00AM	
33	ICARES-2018/33	Exploration of Gmelina Arborea Biodiesel as A Fuel for Diesel Engine	Iftikhar Ahmed Khan, S.K. Singh, Ashok Kumar Yadav	10:00-10:15 AM	
34	ICARES-2018/34	Phase Change Materials and Thermal Energy Storage for Buildings	Sagar Kumar, Shivmani Kumar	10:15-10:30 AM	
35	ICARES-2018/35	Advancement in Hydraulic Pumps-A Review	Yogesh Mishra, Bhagraj Choudhary, Ashish Mali, Ashish Agarwal	10:30-10:45 AM	
36	ICARES-2018/36	Evolution of Performance and Vibration Analysis of Smart Structures by Piezoelectric Material	Asha Kumawat ,Siddhant Singh	10:45-11:00 AM	AB-14
37	ICARES-2018/37	Variable Refrigerant Flow- A Review	Madhavendra	11:00-11:15 AM	
38	ICARES-2018/38	Digital Design and Manufacturing Software and Services on Cloud Fusion 360	Nishant Yogi , Himanshu, Shreyansh, Dr. Robin Gupta	11:15-11:30 AM	
39	ICARES-2018/39	Plastic Bag Disposal Machine"	Rahul Sharma, Sambhav Saxena, Ri[illegible]	11:30-[illegible] AM	

			Kumar, Vivek Viswakarma		
40	ICARES-2018/40	Eco-Cooler	A.Sharma, G.Singh, S.Gupta, T.Singhal, R.Gupta	11:45-12:00 PM	
41	ICARES-2018/41	Review on Grain Refinement on A356 Aluminium Alloy	Nitin Verma, Pranish Arora, Robin Gupta	12:00-12:15 PM	

LIST OF REGISTERED CANDIDATES/LIST OF ATTENDED CANDIDATES

S No	PAPER ID	AUTHORS	TITLE
1	ICARES-2018/01	Nishant Wadhwa, Geetanjali Raghav	Simulation and Performance Analysis of Shell and Tube Heat Exchanger
2	ICARES-2018/02	Digvijay Singh Nirwan, Devesh Pratap Singh, Ankur Agrawal	Issues in the Automative Parts Remanufacturing Industry-A Discussion
3	ICARES-2018/03	Surajit Choudhury, Dr. Ashok K Dewangan	Thermal Performance Analysis of the Pulsating Heat Pipe for Hybrid Vehicle Applications
4	ICARES-2018/04	Prof. Shishir Chandra Bhaduri Shailendra Kasera	Energy Performance Evaluation of R600a as a Drop-In Substitute for R134A
5	ICARES-2018/05	Yogesh Mishra, Gaurav Kumar, Bhawani Singh	Use Of Green Energy for Smart City: a Review
6	ICARES-2018/06	Chetan Khemraj, Abhisekh Singh, Neeelam Singh, Sushma Barahate	Generation of Electricity using Human Power
7	ICARES-2018/07	Dr. Ashwini Kumar Dr. Arun Kumar Behura Dr. Ravi Kumar	Performance Of Collector Parameters for Three Sides Artificially Roughened Solar Air Heaters
8	ICARES-2018/08	Sanjay Kumawat, Arvind Singh Mirola, Atul Sharma	Analysing Effects Of Cracks on Natural Frequency and Vibrations in Cantilever Beam by FEM And FFT

9	ICARES-2018/09	Deepak Singh, Prof.(Dr) Ravi Goyal	A Review On Hybrid Air Conditioning System
10	ICARES-2018/10	Zoe Dickson, Marc Armitage, Ritvik Mathur, Shailendra Kasera	A Review of Variable Refrigerant Flow Systems (VRF)
11	ICARES-2018/11	Dheeraj Kumar Dabhi, Abhay Singh	Basic Study of Steam Turbine
12	ICARES-2018/12	Aditya Kumar, Dharma Raj Yadav, Dhruva Khandal	A Study of Automobile Air Conditioning System
13	ICARES-2018/13	Anshul Maheswari And Chandan Kumar	Prevention of Air Pollution at the Very Generation and It's Purification: A Review
14	ICARES-2018/14	Anurag Jain & Sakshi Mishra	Block chain Technology
15	ICARES-2018/15	Amit Mandal	A Comprehensive Review on Small Scale Wind Turbines
16	ICARES-2018/16	Anshu Kumar Patel	A Review on Dual Clutch Transmission
17	ICARES-2018/17	Asha Kumawat , Ankit Saharan, Akshay Shrivastav	Evaluation of Performance and Vibration Analysis Of Annular Disc by Using Finite Element Method
18	ICARES-2018/18	Dr. Arun Kumar Behura, Dr. Ashwini Kumar, Dr. Ravi Kumar	Analysis of Thermal Performance in Three Sides Artificially Roughened Solar Air Heaters
19	ICARES-2018/19	Devesh Pratap Singh, Digvijay Singh Nirwan	Review on 3D Printing Technology
20	ICARES-2018/20	Dinesh Chand Sharma, Abhay Raj	Building Energy Simulation –A Case Study in Composite Climate in India
21	ICARES-2018/21	Himanshu Sharma, Ankuj Sekhawat, Govind Kumar Parashar	Issues in the Solar Power Air Conditioning-A Discussion
22	ICARES-2018/22	Dr. J.K. Purohit, Dr. Miland Kumar Sharma, Dr. A.S. Chauhan	Mass Customized Manufacturing Practices: The Role Of Big Data and Analytics with Multiple Indian Cases
23	ICARES-2018/23	Bhartendu Singh, Kapish Sharma	Introduction to Self Inflating Tyre

24	ICARES-2018/24	Prashant Kumar Rawat Rahul Sharma Ashish Dubey	Combustion Instabilities in Liquid Propellant Rockets
25	ICARES-2018/25	Ankit Kumar, Sudhanshusingh, Shatrughan Singh, Ashok Kumar Yadav	Dynamic Hysteresis Scaling of Ferroelectric Hysteresis Parameters of Ceramics
26	ICARES-2018/26	Sagar Kumar, Vikas Kumar	Thermal Analysis of Rapid Tooling Mold Integrated with Conformal Cooling Channels
27	ICARES-2018/27	Praveen Kumar Tyagi, Dr. Arun Kumar Behura	Experimental Investigation of Surfactant Effect on Heat Transfer Characteristics in Non-Boiling Spray Cooling Of Water
28	ICARES-2018/28	Atal Bihari Bairangi, Parbat Singh, Mohammad Ali	Road Power Generation by Flip Plate Mechanism- A Discussion
29	ICARES-2018/29	Chandrashekhar, P. K. Mandal, Ashok Kumar Yadav	Experimental Investigation of Waste Cooking Oil Methyl Esters (Wcome) as Fuel in CI Engine
30	ICARES-2018/30	Pawan Kumar, Mohit Pareek, Ball Kishan	Issues in the Direct Utilisation of Geothermal Energy- A Discussion
31	ICARES-2018/31	Anila Dhingra, Gaurav Saxena & Suman Kumari	Project Loon
32	ICARES-2018/32	Iftikhar Ahmed Khan, S.K. Singh, Ashok Kumar Yadav	Exploration of Gmelina Arborea Biodiesel as A Fuel for Diesel Engine
33	ICARES-2018/33	Sagar Kumar, Shivmani Kumar	Phase Change Materials and Thermal Energy Storage for Buildings
34	ICARES-2018/34	Yogesh Mishra, Bhagraj Choudhary, Ashish Mali, Ashish Agarwal	Advancement in Hydraulic Pumps-A Review
35	ICARES-2018/35	Asha Kumawat ,Siddhant Singh	Evolution of Performance and Vibration Analysis of Smart Structures by Piezoelectric Material
36	ICARES-2018/36	Madhavendra	Variable Refrigerant Flow- A Review
37	ICARES-2018/37	Nishant Yogi , Himanshu, Shreyansh, Dr. Robin Gupta	Digital Design and Manufacturing Software and Services on Cloud Fusion 360
38	ICARES-2018/38	Rahul Sharma, Sambhav Saxena,	Plastic Bag Disp[illegible] Machine"

		Rishu Kumar, Vivek Viswakarma	

SAMPLE COPY CERTIFICATE:

International Conference
on
ADVANCES IN REFRIGERATION & ENERGY SYSTEMS -2018

April 7-8, 2018

Department of Mechanical Engineering

ASHRAE India Chapter

POORNIMA
COLLEGE OF ENGINEERING

Affiliated to Rajasthan Technical University, Kota & Approved by AICTE, New Delhi

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Certificate

This is to certify that Prof./Dr./Mr./Ms. Asha Kumavat
from JJT University has participated
as Delegate/Author/Co-author in the **INTERNATIONAL CONFERENCE ON ADVANCES IN REFRIGERATION & ENERGY SYSTEMS-2018 (ICARES-2018)** organized by Poornima College of Engineering, Jaipur.
He/She presented a paper entitled Evolution of performance and vibration analysis of smart structures by Piezoelectric Material

(Dr. Arun Kumar Behura)
Convener: ICARES -2018

(Mr. Shailendra Kasera)
Convener: ICARES -2018

(Dr. Om Prakash Sharma)
Director, PCE

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Dr. Mahesh Bundele
B.E., M.E., Ph.D.
Director
Poornima College of Engineering
ISI-6, RIICO Institutional Area
Sitapura, JAIPUR

FEEDBACK ANALYSIS:

2. The organization of the conference was?

1 2 3 4 5

3. Technical Sessions were informative and managed well.

1 2 3 4 5

4. How do you rate Keynote Speaker's talk? *

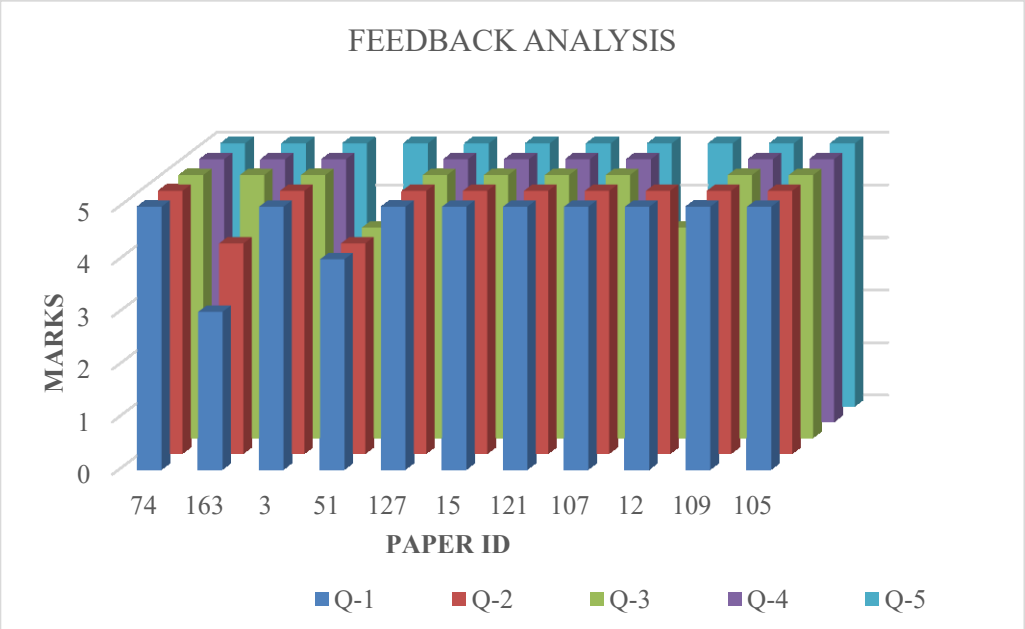
1 2 3 4 5

5. Knowledge sharing during the conference? *

1 2 3 4 5

6. Timely Information sharing with participants, and responses from the organizers

1 2 3 4 5



SWOT ANALYSIS: Nil

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BUDGET & ACTUALS:

S.No	Heads	Amount
1	Domestic Travel	15000
2	International Travel (not more than 25olo of the total budget)	45000
3	Accommodation	20000
4	Food Expenses for Pa rticiDants	150000
5	Honorarium to Paper Writers	20000
6	Organizational Expenses (including Venue Bookings, Transport. Stationery, Xeroxing, Secretarial assistance, Contingency)	55000
TOTAL		**305000**

PROJECT FUND EXPENDITURES (Given by ASHRAE)

ITEM	BUDGET
Danfoss DC Compressor for R290	$1000
Solar photovoltaic System (PV array, Charge Controller, Battery, Charge and Discharge meter)	$1500
Data acquisition system	$700
Condenser, Capillary tube and evaporator	$300
Measuring equipments (Thermocouples, pressure transducer, Watt Meter, Pyranometer, Mass flow meter, Environment Chamber)	$1000
R290 refrigerant, Nano-particle, Milk for testing	$500
TOTAL	$5000

ASSOCIATED PROJECT DETAILS:

About ASHRAE:

ASHRAE is the premier international body in the HVAC&R field and has more than 50000 members worldwide. The mission of ASHRAE is to advance the arts and sciences of heating, ventilation, air conditioning, refrigeration and related human factors to serve the evolving needs of the public and ASHRAE members. It is the foremost and authoritative source of technical and educational information, standards and guidelines. ASHRAE's Core Values are Excellence, Commitment, Integrity, Collaboration and Volunteerism ASHRAE India Chapter (AIC) is the first and oldest (1990) of the ASHRAE Chapters in the country. It has more than 300 ASHRAE members located in North and Eastern India. The Indian chapters belong to Region-At-Large (RAL), the largest of the 14 regions of ASHRAE.
RAL was formed in 2001 and contains individual members and chapters in Europe, Africa, Middle East and the Indian Sub-Continent.
ISHRAE, started at Delhi in 1981 as an International Associate of ASHRAE. It is promoted and funded by the ISHRAE Foundation Trust. ISHRAE focuses on the following areas in order to build the engineers more proficient in field of technology. The objectives of ISHRAE are:

- ✓ Advancement of the sciences of Heating, Refrigerating and Air conditioning Engineering and related Sciences.
- ✓ Providing the career guidance, financial assistance and consultancy services Conduction of Training Courses, Workshops, Seminars and Certifications.
- ✓ Encouragement of Scientific Research with facilities establishment.
- ✓ To impart education in the fields of Air-Conditioning, Refrigeration and Allied Sciences.
- ✓ To disseminate and make available information relating to said sciences through the various publications.

Project Title	Performance analysis of solar operated milk refrigerator using hybrid nanomaterials
Executive Summary of Project (Brief Description not exceeding 50 words**)**	In this project, an experimental investigation on performance of solar power driven vapor compression milk refrigerator with R290 refrigerant using hybrid nanomaterials will be carried out in high ambient conditions. It is based on the concept of Variable Refrigerant Flow (VRF).
Project Details **Objective:** • Use of solar DC power to run the milk refrigerator • Performance assessment of solar DC operated milk refrigerator using hybrid	

nanomaterials and R290 base fluid

Outcome of the proposal: Various performance parameters i.e. coefficient of performance, cooling capacity, energy consumption, PV efficiency of Milk refrigerator will be investigated using various combination of nanomaterials i.e.Al_2O_3-TiO_2, Al_2O_3 – CuO, Al_20_3 –ZnO using R290 base fluid

•This project will promote the use of renewable energy (solar) and simultaneously solve the global issues i.e. ozone depletion and global warming.

•Energy efficient refrigeration facility can be made available for rural areas that are not connected to the grid.

Work Plan: In this project, performance test will be carried out in an experimental apparatus that consists of two loops: Solar Photovoltaic loop and Refrigeration loop. Solar Photovoltaic loop consists of Stand-alone solar Photovoltaic system which fundamental components are given below:

- Solar photovoltaic panels of capacity 2kW
- Charge controller
- Lead acid battery bank of 200 AH

Crystalline silicon solar photovoltaic cell is chosen due to its higher conversion efficiency from solar irradiance to electricity. The solar panel with available rated voltage at 17.5 V was selected taking consideration of 12 V from a battery. Charge controller is an essential part of solar PV system. It is necessary to avoid frequent over-charging and over-discharging to maintain the battery in proper operation condition, which is required for battery to last for longer lifetime. The function of the battery in this project is to store the electrical energy generated from Solar PV when it can provide more energy than that required for the load. If PV electricity is not available due to fluctuation of irradiation, the battery can provide the electrical energy.

Refrigeration loop consists of vapor compression cycle which fundamental components are given below:

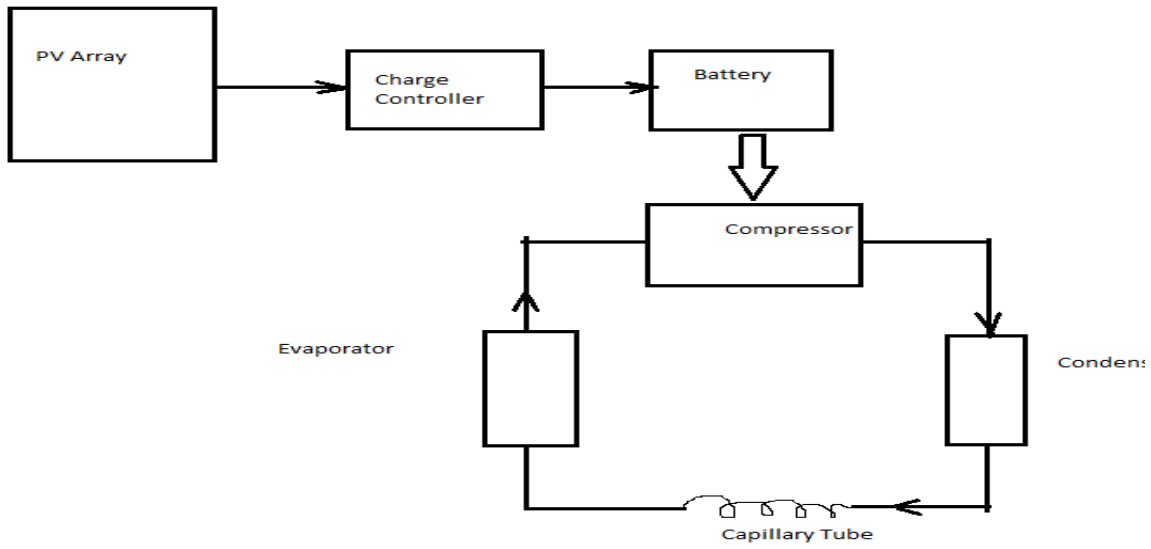
- DC compressor compatible with R290 refrigerant (12-24 volts, 500 W energy consumption)
- Air Cooled Condenser
- Capillary tube
- Evaporator

DC compressor provides a "soft-start" which means that the typical [illegible] of

AC compressor running on an inverter is eliminated. A normal AC compressor will draw up to 500% more amps on startup, meaning that when running on an inverter, the inverter must be oversized accordingly. Oversized inverters are much less efficient. The DC compressor not only avoids needing an inverter, they also minimize the surge or spike at time of startup.

The test facility provides the thermodynamic state of refrigerant along with the various system parameters using following instruments

- T- Type Thermocouple with a temperature range of -270-200ºC
- Pressure transducer with a range 0-30 bar
- Digital Watt meter to measure the power in the range of 0-3kW
- Coriolis-effect mass flow meter operating in the range of 0-2 kg/min
- Pyranometer to measure the solar irradiation



Preparation of Hybrid nanorefrigerant:

Nanorefrigerant is one kind of nanofluids, in which the host fluid is conventional pure refrigerant. The term hybrid refers to two different types of Nanomaterial. Nano particle of Al_2O_3-TiO_2, Al_2O_3 – CuO, Al_20_3 –ZnO will be mixed in R290 with concentration from 0.01-0.05 wt%. It will be measured by digital weight balance. Ultrasonication will be done for 4 hours in order to stabilize the dispersion of the nanoparticles.

Testing:

The primary operating principle of present system is as following: when the power generated by PV array is higher than the chiller power, the chiller is completely operated by PV array while the excess power generated by PV array is stored in the battery bank.

When the PV generated power is less than the load power of refrigerator, the power required by the load is provided by PV array and battery simultaneously. When the PV generated power is zero, as in the evening, the battery may power the refrigerator completely.

One objective of this work is to evaluate the efficiency of different components in the system using above mention Hybrid nanorefrigerant. Photovoltaic array is used as the energy source in present system. Hence, it is important to find out the PV efficiency.

The average PV conversion efficiency is defined as the ratio of total energy delivered from the photovoltaic array to the energy of the solar radiation on the PV.

$$\eta_{pv} = \frac{E_{pv}}{E_{sol}}$$

where E_{pv} is the electricity generated by the PV array, and E_{sol} is the energy of solar radiation.

State of discharge of battery bank is defined as the ratio of remainder power of battery bank (E_r) to the maximum power discharged by battery banks (E_{max}).

$$SOC = \frac{E_r}{E_{Max}}$$

Performance of refrigerator is given by Coefficient of performance, which is ratio of desired output, by required input.

$$COP = \frac{Q_c}{W_{in}}$$

Where Q_c is desired cooling and W_{in} is power input to compressor.

Desired cooling is calculated by $Q_c = mc_p (T_i - T_f)$ where m is mass of milk, C_p is specific heat of milk, T_i is initial temperature of milk and T_f is final temperature of milk.

Similarly, Solar Coefficient of Performance is given by

$$COP_{solar} = \frac{Q_c}{E_{Sol}}$$

Solar Fraction (SF) is defined as the ratio of the electrical energy provided by the solar energy to the total electrical energy used to drive the refrigerator.

Solar Direct Consumed Ratio (SDCR) is defined as the ratio of the electrical energy directly used by the refrigerator generated by PV to the total electrical energy generated by PV. When SDCR is higher, the battery storage capacity can be reduced.

Result and Analysis

Following performance parameters of solar milk refrigerator will be calculated for different ambient conditions and Hybrid nanorefrigerant

i. COP

ii. COPsolar

iii. PV Efficiency

iv. State of discharge of battery bank

v. Solar Fraction

vi. Solar Direct Consumed Ratio

vii. Cooling capacity

viii. Energy consumption

Time Schedule

S.No	Activity	No of Weeks
1.	Procurement of Material	10
2.	Assembly	2
3.	Testing for different ambient conditions	52
4.	Result and Analysis	4
5.	Report/paper writing	4
	Total	**72**

Involvement of students and guide

S.No	Students/Guide	Responsibility
1	Students	Fabrication and Testing
2	Guide	Design and Management

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