



**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
(AUTONOMOUS)

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## Department of Mechanical Engineering

### Guest Lecture Report on

# “HOME ENERGY MANAGEMENT IN THE CURRENT PANDEMIC SITUATION” and “ FLOATING SOLAR POWER PLANT”

Date / Duration: 22<sup>nd</sup> December, 2021, 2.00 PM to 4.15 PM

### Resource Person(s)

**Speaker 1: Mr.G.Harihara Iyer, PCRA Faculty, Vizag**

**Speaker 2: Mr.K.R.Ramana, PCRA Faculty, Vizag**

Sub Regional Office, Ministry of Petroleum Oil and Natural Gas, Govt of India, Visakhapatnam.

**Mr.G.Harihara Iyer**, is working as the PCRA Faculty at Sub Regional Office, Department of Oil and Natural Gas, Govt of India, Visakhapatnam. His qualifications are Graduate in Mechanical and Mining Engineering and Certified Energy Auditor from Bureau of Energy efficiency since 2006. He is the Recipient of several awards for significant professional contributions from Institutions of Engineers (India), Mining, Geological and Metallurgical Institution of India, NEDCAP, Hyderabad Etc. He is the President of the Indian Association of Energy Management Professionals (IAEMP) is a group of highly qualified, committed and dynamic conscience keepers to nation on energy matters.

**Mr.K.R.Ramana**, is a Certified Auditor for ISO 9001, 14001, OHSAS 180001, undergone Training for implementation of Energy Management System ISO 50001, Certified Energy Auditor by Bureau of Energy Efficiency, Ministry of Power, Government of India and Competent project leader in Oil, Gas & Sector with over 45 years of experience in Fire, Marine, Engineering Insurance Surveys, Project Management, Construction Management, Accident investigation, Insurance Surveys, Inspection, Testing, Quality, Occupational Health Safety & Environmental Management Systems Audits. Government Approved Competent person under Factories Act and Rules ( in accordance with API Standards) Static & Mobile Pressure Vessels (Unfired) Rules ( India ) such as Bullets Petrochem, Horton’s Sphere for LNG, LPG , Shale Gas , Hydrogen etc (as per ASME Section VIII Part I & Part II.. He is the Empanelled Faculty and

Trainer with petroleum conservation research association, Ministry Of Petroleum And Natural Gas, Government Of India.

**Name of the Coordinators:**

- 1. Dr. P.Vijay Kumar, Professor,
- 2. Mr. K.V.Viswanadh, Sr.Asst.Professor

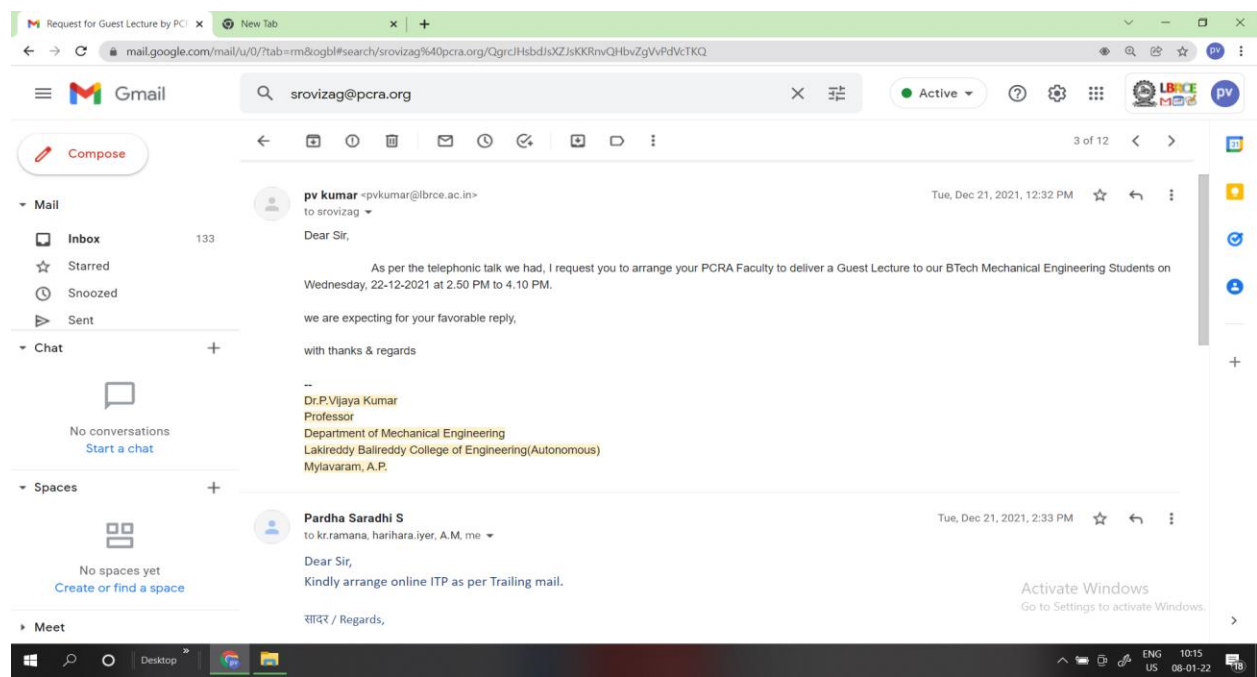
**Audience:** B.Tech Mechanical Engineering 1st and 2<sup>nd</sup> Year Students

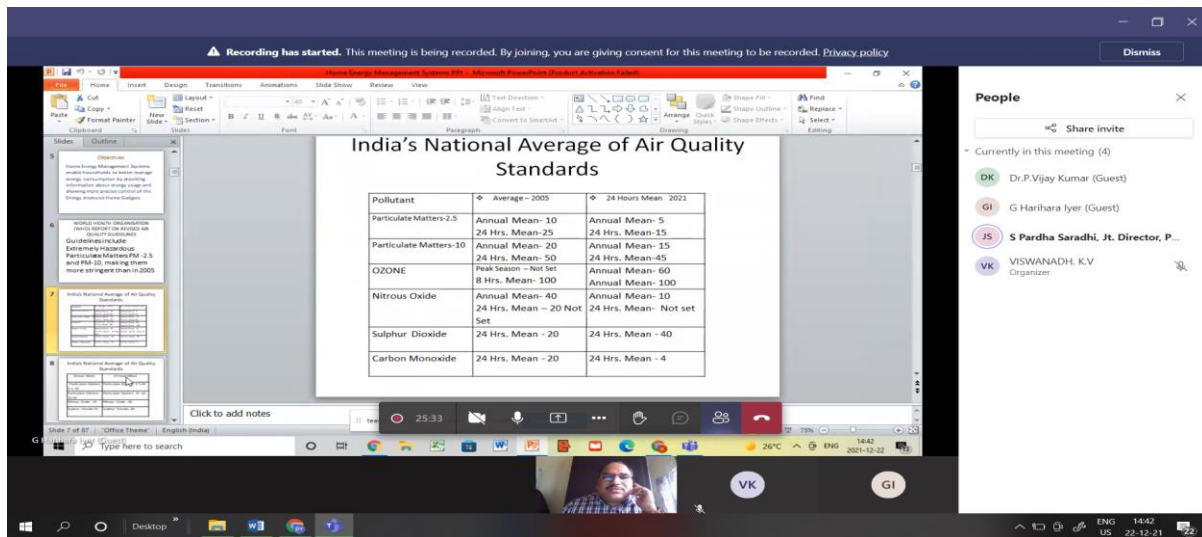
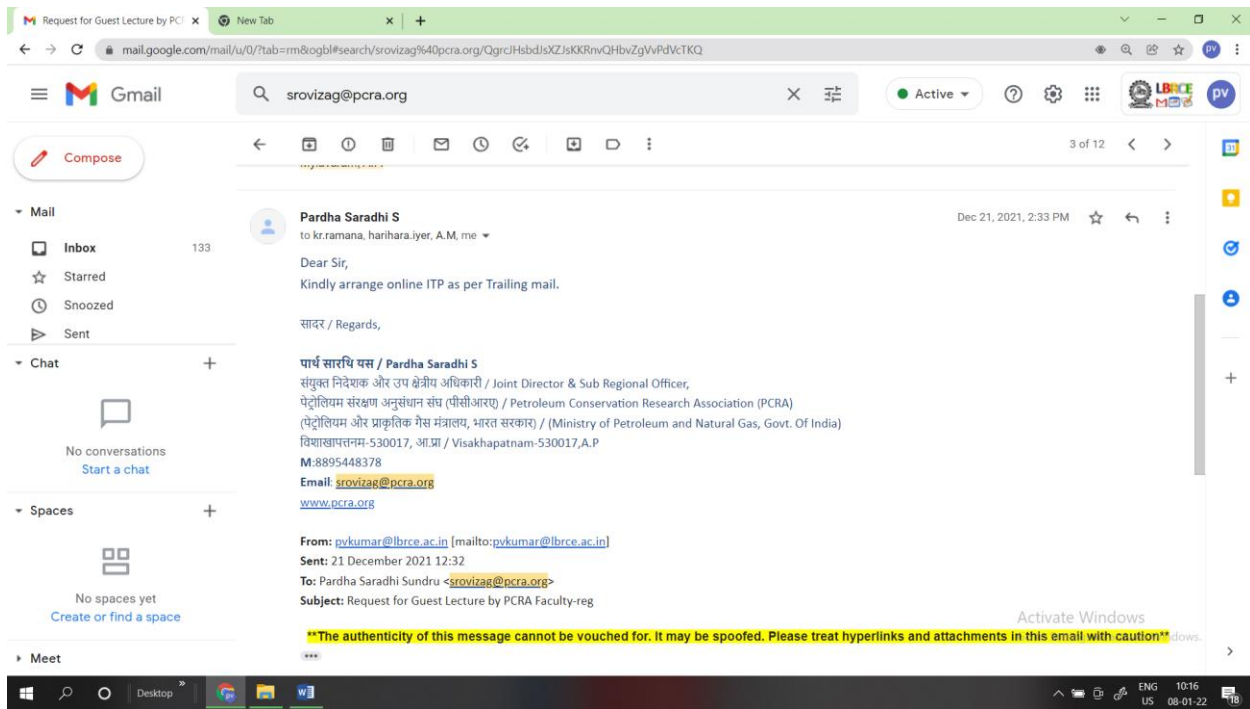
**Total Number of Participants:** 109

**Topics covered in the Guest Lecture:** Different ways of home energy conservation and management, energy scenario, energy use, energy rating, energy efficient thermal systems and opportunities of energy conservation in utilities for home energy management. After this the next speaker covered about the Floating solar power plant concept, its development for harnessing solar energy adopted by Simhadri power plant.

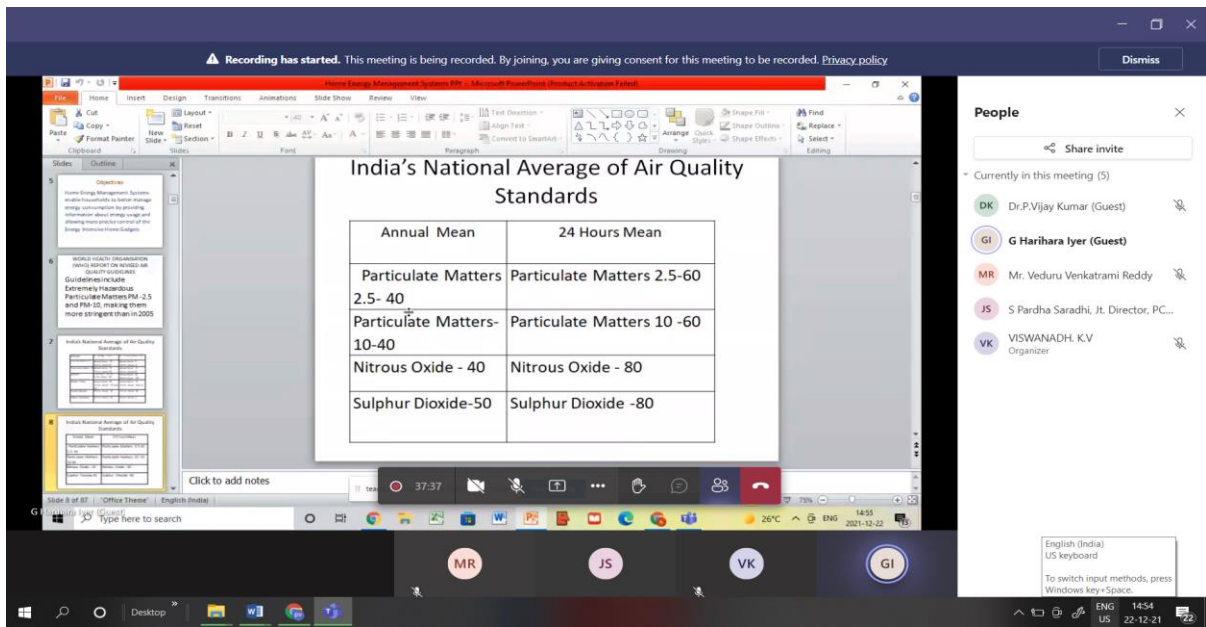
**Objective of the Event:** To make the students aware of the home energy management in the current pandemic situation and the introduction to the new concept of Floating solar power plant.

Screen Shots of Guest lecture delivered by Mr.G.Harihara Iyer, PCRA Faculty 22-12-2021

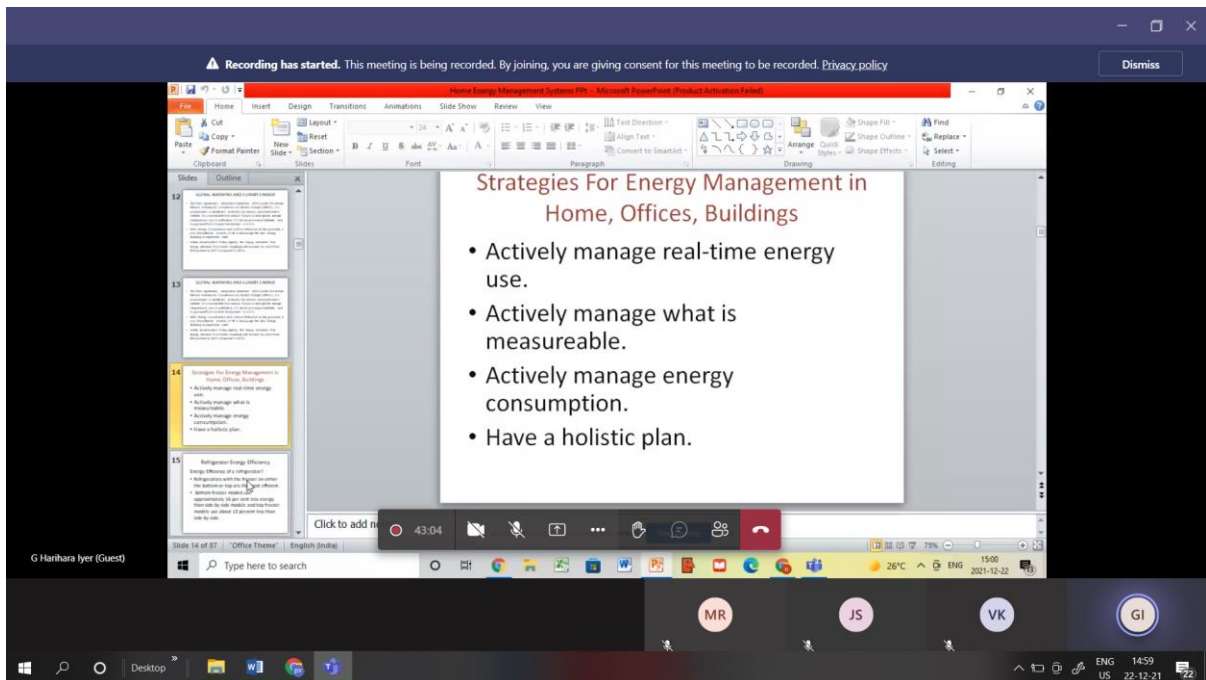




Mr.S.Pardha Saradhi, Deputy Director, Sub Regional office, PCRA, Visakhapatnam addressing during the inaugural session of Guest Lecture on 22-12-2021



Mr.G.harihara Iyer, PCRA Faculty, Sub Regional office, PCRA, Visakhapatnam delivering a talk during the first session of Guest Lecture on 22-12-2021





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Power Consumption Calculation

**Refrigerator Power Consumption Calculation:**

Let us take an example of 165-liter refrigerator which is rated @ 150Watts with an operating hour of 24 hours (6 Hours compressor + 18 hour non-compressor).

Per hour consumption = 150 Watts

**Per day consumption:**

While running with the compressor the Refrigerator consumes full wattage and without compressor, it consumes only 10% of the wattage, hence

Per day consumption = (6 x full wattage + 18 x 10% of the wattage) / 1000.

45:25

G Harihara Iyer (Guest)

MR JS VK GI

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Power Saving Tips (1)

1. Replace old refrigerator  
Old refrigerators and freezers absolutely guzzle electricity, so you should give serious thought to buying a new appliance.
2. Buy an energy-efficient appliance  
The information on the energy label gives a clear indication of a refrigerator's energy efficiency
3. Never place your refrigerator next to a heat source such as an oven, hob or radiator, and avoid direct sunlight. Regardless of whether you have a freestanding appliance or a built-in one, always ensure that refrigerator has sufficient ventilation so that the compressor does not end up running continuously. Note:
4. The optimum temperature for refrigerator operation is 5°C, and -18°C for freezer operation.  
As a rule of thumb, each additional degree of refrigeration output about six percent more electricity is used. An accurate temperature setting therefore directly saves Energy
5. Every time the refrigerator door is opened, cold air escapes and warm ambient air enters. To compensate for the temperature increase in its interior, the refrigerator must then use energy to bring the temperature back down. Always avoid opening the door unnecessarily and for too long.

48:01

People

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- DK Dr.P.Vijay Kumar (Guest)
- GI G Harihara Iyer (Guest)
- JS S Pardha Saradhi, Jt. Directo...
- VK VISWANADH, K.V Organizer

JS VK GI

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Microsoft PowerPoint (Direct Collaboration Feature)

### COVID PROTOCOLS

For COVID-19, the first steps in reducing the indoor concentrations of the virus are wearing face masks, physical distancing, and reducing occupancy levels. Improved ventilation is an additional prevention strategy.

For ventilation systems, increasing outdoor air above the code minimum requirements, increasing total ventilation, and increasing filtration efficiencies are more effective at controlling infectious disease transmission than controlling indoor temperature and humidity.

However, the use of temperature and/or humidity to reduce the risk of disease transmission should be considered on a case-by-case basis, taking into account the building enclosure, heating, ventilation, and air-conditioning (HVAC) system capabilities, level of control and/or building automation, local COVID-19 transmission rates, any unique clinical features of the building and its climate.

Click to add notes

01:18:17

Chat in channel meetings is only available to team members.

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### EFFECTS OF HUMIDITY IN PANDEMICS

- Humidity significantly reduces transmission of SARS-CoV-2 beyond the level resulting from good ventilation and filtration. ICTV announced "severe acute respiratory syndrome coronavirus 2"
- [SARS-CoV-2] as the name of the new virus on 11 February 2020. This name was chosen because the virus is genetically related to the coronavirus responsible for the SARS outbreak of 2003. While related, the two viruses are different
- Research studies show that the survival of viruses, reduced when the relative humidity is in the 40–60% range.
- However, the reductions are modest and there are outliers to these findings.
- Neither ASHRAE nor CDC (Centre for Disease Control) recommends introducing humidification for the sole purpose of limiting transmission of COVID-19.
- there are studies that while not affecting transmission, suggest preventing excessive dryness in the air could help maintain the effectiveness of the human body's immune system.

Click to add notes

01:18:42

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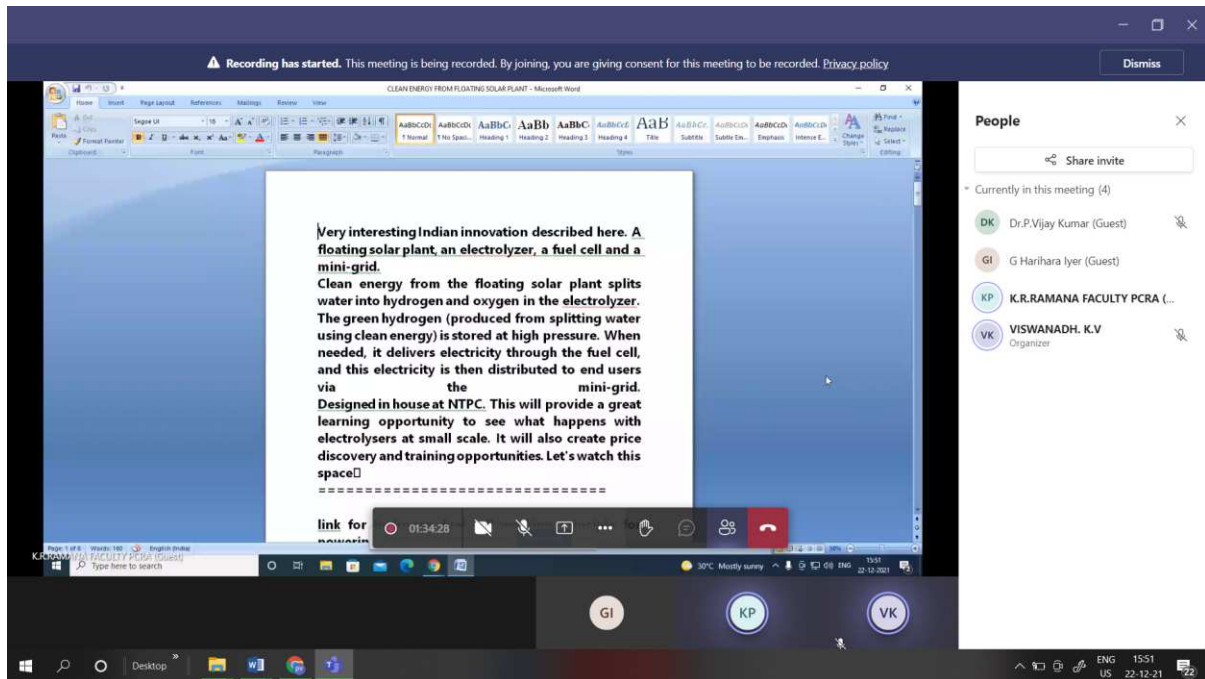
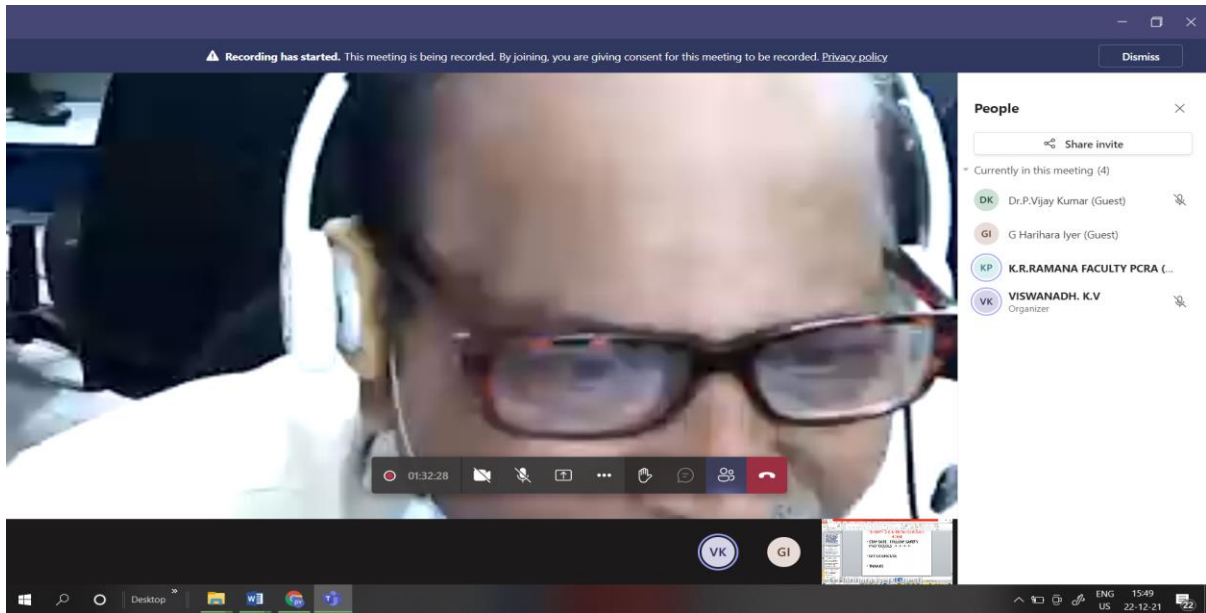
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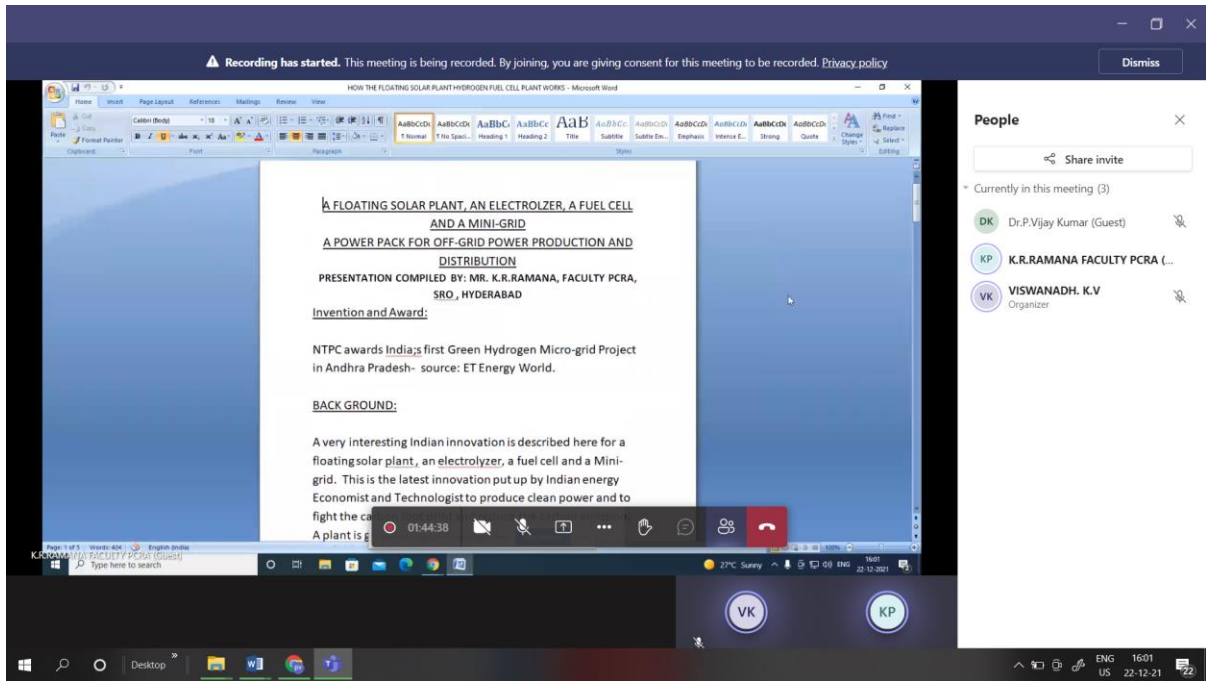
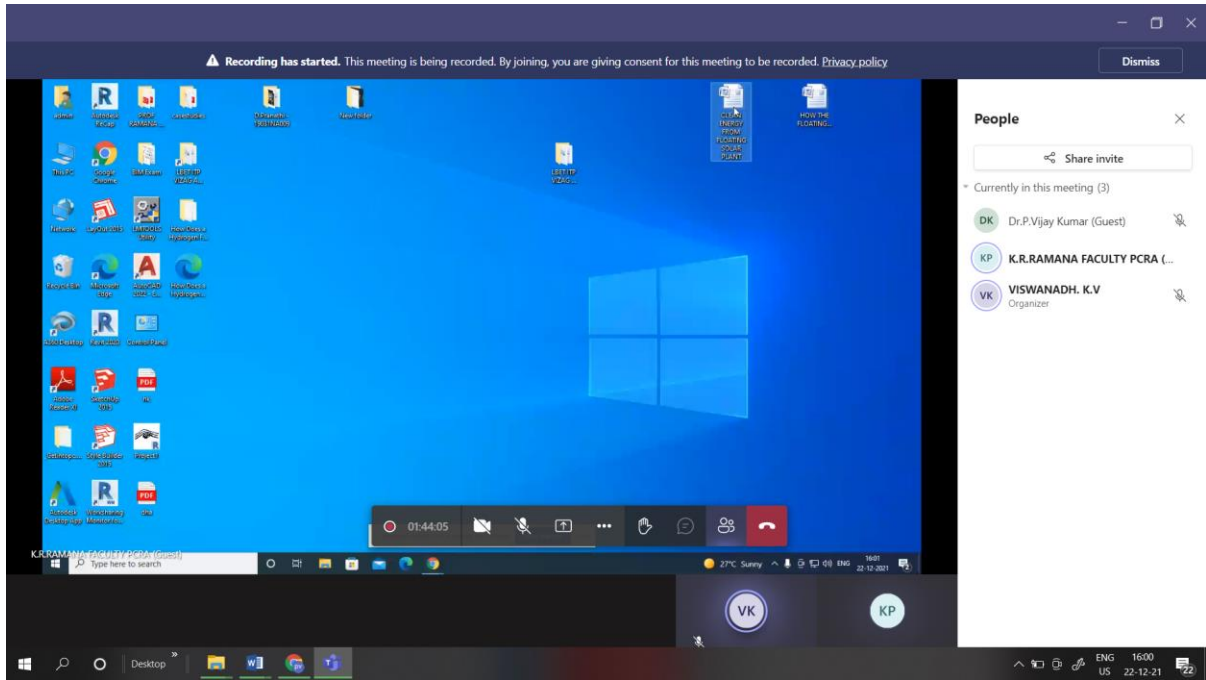
Session-2, Screen shots of Mr.K.R.Ramana, PCRA Faculty during the Technical talk on 22-12-2021











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Dismiss

HOW THE FLOATING SOLAR PLANT HYDROGEN FUEL CELL PLANT WORKS - Microsoft Word

FLOW DIAGRAM:

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    graph TD
      A[FLOATING SOLAR POWER PLANT CLEAN ENERGY PRODUCTION] --> B[POWER SUPPLIED TO]
      B --> C[SOLID OXIDE ELECTROLYSER 240 KILO WATT]
      C --> D[HYDROGEN AND OXYGEN SPLIT IN THE ELECTROLYSER.]
  
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01:45:46

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VK KP

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27°C Sunny 1602 US 22-12-21

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Microsoft Meeting (ok - ...)

Meeting | Microsoft Teams

World's Largest Floating solar fa... | How Does a Hydrogen Fuel Cell

undymc.com/how-does-a-hydrogen-fuel-cell-work/

The Benefits of Low Flow High Head Centrifugal Pumps  
How do Diaphragm Compressors Work?  
View all posts

**Polymer Electrolyte Membrane Fuel Cell**

- Hydrogen fuel enters the anode side of the fuel cell - and oxygen from the air enters the cathode side of the cell.
- At the Anode, a platinum catalyst splits the Hydrogen into positive Hydrogen ions (protons) and negatively charged electrons.
- At the Cathode, the negative Hydrogen electrons (having already produced electricity) reunite with the positively charged Hydrogen ions, where they combine with oxygen to form H<sub>2</sub>O, or water, which simply flows out of the cell.

Hydrogen gas

Oxidized fuel

Anode (Negative)

Cathode (Positive)

Polymer electrolyte membrane

Water

The Polymer Electrolyte Membrane (PEM) allows only the positively charged ions to pass through it to the cathode.

01:49:24

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Microsoft Meeting (m - reg - i) x Meeting | Microsoft Teams x World's largest floating solar fa... x World's largest floating solar... x

youtube.com/watch?v=1Tq6iW0XpIw

Search

World's largest floating solar farms being built in Singapore

77,936 views · Mar 17, 2021

01:54:33

VK KP

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ENG 16:11 US 22-12-21

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youtube.com/watch?v=1Tq6iW0XpIw

Search

SOLA POWER

World's largest floating solar farms being built in Singapore

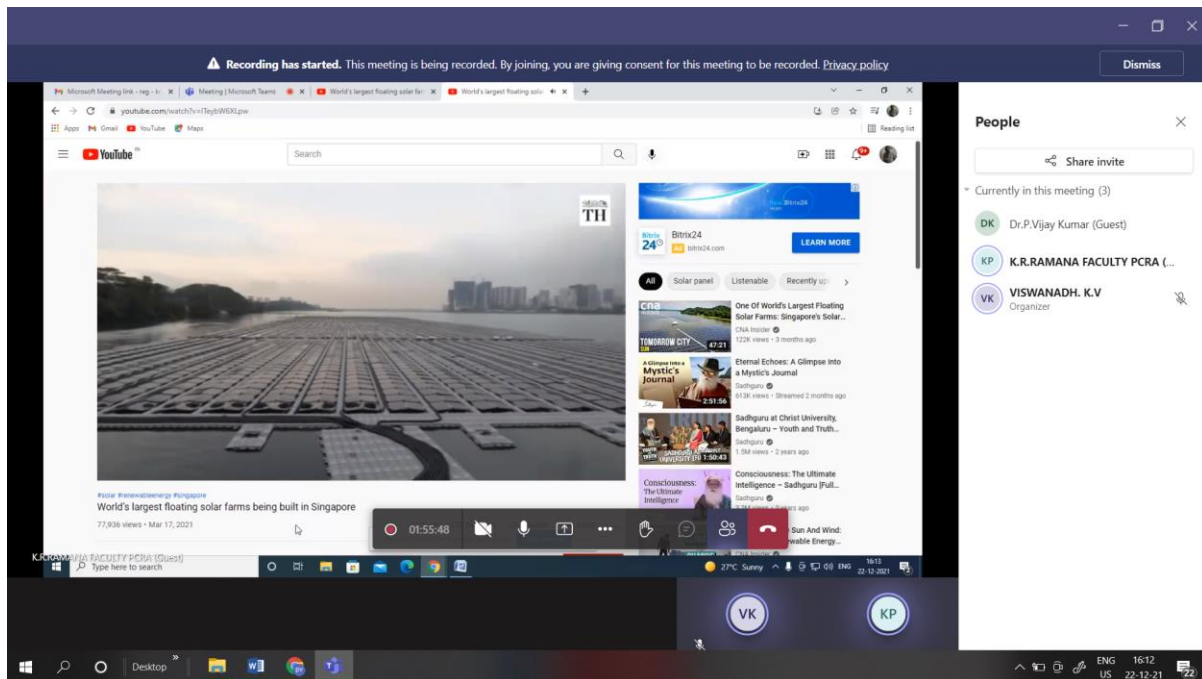
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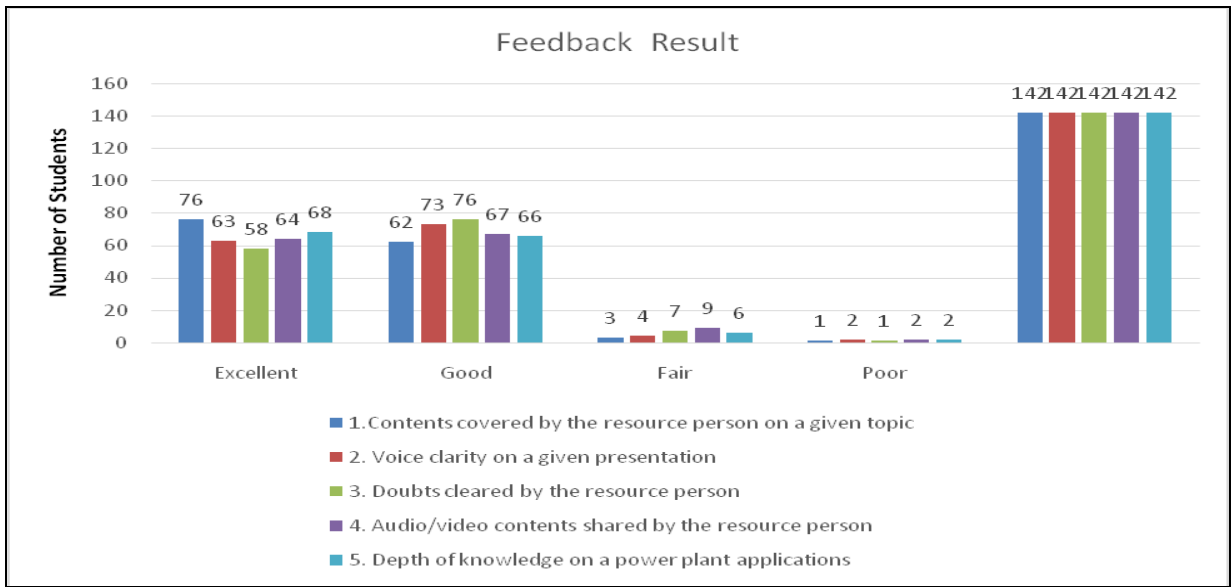
**Outcome of the Event:** The 104 participants who attended the webinar gave their feedback on the guest lecture and gained knowledge on the scope of home energy conservation and management and the introduction to the new concept of Flaoating solar power plant.

**Feedback / Suggestions:**

1. Play the related videos of the topic delivered wherever necessary for better understanding
2. Explain some case studies from industries and R&D centres

**Feedback Report:** The student participants gave their feedback on the guest lecture and the responses were shown in the form of graph given below.





  
 HEAD  
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