

## Registration

The Participants can register using the following link. The workshop registration fee ₹500/- (including GST), including snacks, coffee and lunch on both days.

<https://events.vit.ac.in/>

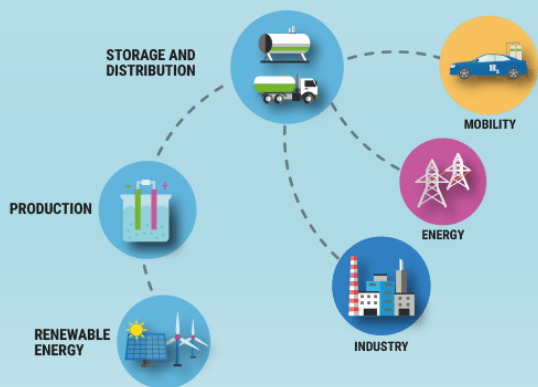


SCAN HERE

## Accommodation

Accommodation can be booked (and paid) directly with the VIT, Vellore, payment basis.

In case of questions, please contact **Dr. Aruna Kumar Behura**  
Mobile : **+91 - 98614 33991** or Email: **arun.behura@vit.ac.in**



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## Convenor

**Dr. Aruna Kumar Behura**, +91 9861433991

**Dr. Chinmaya Prasad Mohanty**, +919438480248

**Dr. Tapano Kumar Hotta**, +91 9799647730

**Dr. Bibhuti Bhusan Sahoo**, +91 9437350031



# A Two-Day Workshop on Green Hydrogen Production, Storage and Transportation: A Green Energy Prospective

March 14 – 15, 2024



Organised by

School of Mechanical Engineering  
Vellore Institute of Technology, Vellore, India

Sponsored by **DST-SERB**

## Vellore Institute of Technology (VIT)

Vellore Institute of Technology was founded in 1984 as Vellore Engineering College by the Founder and Chancellor Dr.G.Viswanathan. University status was conferred in 2001 by MHRD Govt. of India in recognition of its excellence in academics, research and extracurricular initiatives.

### Ranking & Accreditation

VIT has emerged as one of the best institutes of India and is aspiring to become a global leader. Quality in teaching-learning, research and innovation makes VIT unique.

- ❖ Engineering and Technology subject areas of VIT are the 240<sup>th</sup> best in the World and the 9<sup>th</sup> best in India, and eight subjects of VIT are within the top 500 in the world (as per QS World University Rankings by Subject 2023).
- ❖ The 8<sup>th</sup> best University, the 11<sup>th</sup> best research institution and the 11<sup>th</sup> best engineering institution in India (NIRF Ranking, Govt. of India 2023).
- ❖ Ranked among the top 600-800 Universities of the world (THE World University Ranking 2024).
- ❖ NAAC Accreditation with A++ grade (3.66 out of 4).
- ❖ The 173<sup>rd</sup> best Institution in Asia (QS - Asia University Rankings 2023).

### School of Mechanical Engineering (SMEC)

The School of Mechanical Engineering is one of the oldest and most prestigious schools of VIT. This school started functioning right from 1984, the year in which our institution began. The School of Mechanical Engineering offers 3 undergraduate and 6 post-graduate programs. The school has a team of highly qualified faculty members, many holding PhDs from elite institutes across the globe, to teach and train this country's best minds. The pride of the school lies in the significant research funding received from several National and International agencies such as DST, DRDO, MNRE, CSIT, CVRDE, CPDO, IE, AR&DB, BRNS, ISRO, UGC, NRB, Royal Academy of Engineering etc. The Department of Science and Technology, Govt. of India has recognized the school for its research activities and supported it in 2003, 2010 and 2022 under the FIST scheme. The school has modern facilities, enabling cutting-edge research in a wide spectrum of niche technological areas. The school is ranked 501-600 in the World as per THE World University Subject Ranking in 2021. Mechanical and Manufacturing Engineering is ranked within the top 10 in India and top 251-300 in the world as per QS World University Rankings by Subject 2023.

## Introduction to the Workshop

India is determined to achieve net zero CO<sub>2</sub> emissions by 2070 as promised at the UN Climate Change Conference in Glasgow (COP26). Green Hydrogen is a potential solution to de-carbonize various industrial and automotive sectors. India has declared the 'National Hydrogen Mission' on February 17, 2022. The sustainability of hydrogen production, storage, and transport is a critical challenge. Green hydrogen is produced using electrolysis of water with electricity generated by renewable energy. Central to the green hydrogen production process is the electrolyzer technology; Alkaline and Polymer Electrolyte Membrane (PEM) electrolyzers are the promising ones for the same.

Storage tanks are the simplest and economical way to store and transport hydrogen usually in the form of compressed and cryo-compressed hydrogen. The challenge for compressed hydrogen storage is its low density which requires large containers. Hence, Chemical storage in the form of Liquefied Organic Hydrogen Carriers (LOHCs) like methanol and toluene, and hydrides such as ammonia (NH<sub>3</sub>) are also gaining prominence.

Hydrogen can be transported using pipelines which are the cheapest way to move hydrogen over longer distances. Tanker ships are beginning to be used for larger volume, longer distance transport, mainly moving liquid hydrogen (LH<sub>2</sub>). Shipping of hydrogen is currently expensive due to added conversion costs (liquefaction or chemical conversion).

### Technical Program

This workshop supports the Government of India's National Green Hydrogen Mission and accelerates the technological advancements in the domain of Green Hydrogen in India. It is aimed to bring together leading experts from reputed Universities and Industries in the field of Green Hydrogen to share their thoughts on the Production, Storage, and Transportation of Green Hydrogen. The workshop will be organized for two days in a Hybrid Mode at our institute, Vellore Institute of Technology, Vellore concerning the Fuel Cell Production Action Plan in India. The workshop covers a wide range of topics that includes:-

- ❖ Green Hydrogen Technologies
- ❖ Government of India Initiatives towards Green Hydrogen
- ❖ Challenges and Commercialization of Green Hydrogen
- ❖ Modeling and Policy-Making Processes in FCEE

## Program

Day 1	14 <sup>th</sup> March, 2024
09.30 – 09.50	<b>Registration</b>
09.50 – 10.00	<b>Welcome and Inaugural Programme</b>
10.00 - 11.00	Prof. R. Kothandaraman, Professor, Department of Chemistry, IIT Madras. <b>"Hydrogen Storage via Ammonia by Electrochemical Reduction of Nitrogen"</b>
11.00 - 11.15	<b>Tea Break</b>
11.15 - 12.15	Prof. N. Senthil Kumar, Associate Professor, Department of Mechanical Engineering, NIT, Puducherry. <b>"Green Hydrogen Production, Storage and Transportation: A Green Energy Perspective"</b>
12.15 - 01.15	Mr. Dinesh Salem Natarajan, Co-Founder, Sootless Energy Pvt. Ltd., Chennai, India. <b>"In-Situ Production &amp; Consumption of Green Hydrogen"</b>
01.15 - 02.00	<b>Lunch and Networking</b>
02.00 - 03.00	Prof. Tariq Shamim, Chair and Professor of Mechanical Engineering, Northern Illinois University, USA. <b>"Hydrogen &amp; Fuel Cells and its applications"</b>
03.00 - 04.00	Dr. Abhishek Paul, Professor, NIT Silchar. <b>"Future of Green Hydrogen in Road Transport"</b>
04.00 - 04.15	<b>Tea Break</b>
04:15 - 05:15	Dr. G. Santosh Kumar, Professor, NIT AP. <b>"Material for Hydrogen storage systems and future of green hydrogen in road transport"</b>

Day 2	15 <sup>th</sup> March, 2024
10.00 - 11.00	Prof. Anil Kumar, Professor, Department of Mechanical Engineering, IIT Tirupati. <b>"Hydrogen storage for stationary and mobile applications"</b>
11.00 - 11.15	<b>Tea Break</b>
11.15 - 12.15	Dr. Anil Kumar, Professor, Delhi Technological University. <b>"Hydrogen: Future Fuel Prospects"</b>
12.15 - 01.15	Dr. Mrinalini Mishra, Professor, University of Tsukuba, Japan. <b>"Hydrogen Generation Efficiency of Hydrogenated Ta3N5 and nitrides in general."</b>
01.15 - 02.00	<b>Lunch and Networking</b>
02.00 - 03.00	Prof. P. Muthu Kumar, Professor, Department of Mechanical Engineering, IIT Guwahati <b>"Design, development and testing of large scale metal hydride systems for hydrogen storage, compression and purification applications"</b>
03.00 - 04.00	Prof. Gaurav Dwivedi, Assistant Professor, MANIT Bhopal. <b>"Prospect of Hydrogen as fuel in CI engine"</b>
04.00 - 04.15	<b>Tea Break</b>
04:15 - 05:15	Prof. Vinod Kumar Sharma, Professor, NIT Calicut. <b>"Thermodynamic applications of solid-state hydrogen storage (metal hydrides)"</b>
05.15 – 05.45	<b>Valedictory Session and Workshop closure.</b>