REPORT ON VISIT TO WORLD HYDROGEN SUMMIT 2024 AT ROTTERDAM , NETHERLANDS



COLLEGE OF ENGINEERING MUTTATHARA

UNDER CO-OPERATIVE ACADEMY OF PROFESSIONAL EDUCATION (CAPE)

ESTD. BY GOVT. OF KERALA

VALLAKKADAVU P.O, THIRUVANANTHAPURAM-695008

AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY (KTU)

Detailed Report on the Visit to World Hydrogen Summit 2024 held at Rotterdam, Netherlands

Date: May 13 - May 17, 2024
Location: Rotterdam, Netherlands
Delegation: Team of Faculty members from College of Engineering Muttathara
Occasion: Achievement in Hydrogen Hackathon organized by Impact Hydrogen, University of Groningen, and Kingdom of Netherlands during February 2024

Overview

A five-member team of Faculty members from the Department of Electrical and Electronics Engineering, College of Engineering Muttathara, CAPE, Govt. of Kerala, Thiruvananthapuram attended the World Hydrogen Summit 2024(WHS ‘24) in Rotterdam, Netherlands. This visit was in recognition of the team’s achievement in the Hydrogen Hackathon. The team's itinerary included attending sessions, exhibitions, networking events, and meetings with key officials and stakeholders in the Green Hydrogen sector. This report encapsulates the significant outcomes and experiences of the team's visit to the WHS ‘24, marking a pivotal step in promoting hydrogen technology research and applications at various institutions in Kerala.

Team Members

1. Dr. Sreekanth C , Associate Professor & Head, Department of Electrical & Electronics Engineering
2. Mr. Anas S R, Assistant Professor, Department of Electrical & Electronics Engineering
3. Mrs. Beenu Mary Panicker, Assistant Professor, Department of Electrical & Electronics Engineering
4. Mr. Abilash R S, Assistant Professor, Department of Electrical & Electronics Engineering
5. Mrs.Salini M Venugopal ,Assistant Professor, Department of Electrical & Electronics Engineering

Flying Details:

May 12, 2024, 10 A.M (IST): Departure from Trivandrum International Airport
May 12, 2024, 8.30 P.M (Netherland Time): Arrival at Schipol Airport, Amsterdam
May 18, 2024, 9.45 P.M (Netherland Time): Departure from Schipol Airport, Amsterdam
May 19, 2024, 7 P.M (IST): Arrival at Trivandrum International Airport

SUMMIT ACTIVITIES

Day 1 (May 13, 2024):

- Welcome Breakfast and Registration
- Introductory meeting with Embassy and Impact Hydrogen officials of Netherlands
- Attended the Summit welcome address by Rob Jetten, Ministry of Economic Affairs and Climate Policy, Govt. of Netherlands
- Attended Keynote Address by Christian Pho Doc, Chief Technology Officer, Hydrogen Advisory Board, Netherlands
- Visited the Indian Pavilion set up by MNRE, Govt. of India and carried out discussions about potential collaborations and funding opportunities with Dr.Prasad A Chapekar, Deputy Secretary, MNRE, Govt. of India, Dr.Anita Gupta, Scientist G & Head-CEST, DST, Govt. of India, Dr.Ranjith Krishna Pai, Scientist F, DST, Govt. of India
- Attended the Session “Leading Global Hydrogen Projects” headed by Dr.Dean Bialy, CWP Global
- Participated in Networking Lunch
- Visited various stalls in the Exhibition showcasing cutting-edge hydrogen technologies and innovations.
- Attended the Session “Hydrogen Transportation, Distribution and Storage headed by Willemien Terpstra, CEO, Gasunie
- Attended the Discussion on “Clean Energy Storage Solutions for a Net Zero Future” headed by Celia, CEO, Hydrogen Energy Solutions
- Attended the Discussion on “Low Carbon Hydrogen Production headed by Jeroen Steens, Director, Port of Rotterdam
- Participated In the Gala Dinner (6.30 PM to 9 PM).

Day 2 (May 14, 2024):

- Attended Keynote Address by Mr.Shin Hosaka, Vice-Minister for International Affairs, Japan
- Attended the Session “Electrolyser Developments” headed by Mattijs See, CEO, Battolyser Systems, Netherlands
- Participated in the Networking Coffee Break
- Visited various stalls in the Exhibition showcasing cutting-edge hydrogen technologies and innovations.
- Attended the Session “ U.S National Clean Hydrogen StrategyPerspectives” by Mr.Joseph Stanford, Department of Energy, U.S
- Attended the Session “ Renewable Hydrogen Production” headed by Christian Pho Doc, Chief Technology Officer, Hydrogen Advisory Board, Netherlands
- Participated in a Networking Lunch Chaired by Mr.Bhupinder Singh Bhalla, Secretary, MNRE, Govt. of India. He addressed the gathering of Global leaders and Business Officials in the Hydrogen sector. Dr.C.Sreekanth shared our team’s experience of winning the Hydrogen Hackathon with the gathering.
- Attended the Discussion on “Financing Hydrogen Projects” headed by Ms.Susana Moreira, Executive Director, H2 Global Foundation.
- Attended the Session “Realizing Offtake Agreements and Demand for Hydrogen” headed by Sonia Maleky, Director of Hydrogen Technology, Microsoft.
- Attended the Session “Standardization, Certification and Regulations” headed by Dr.Jan Strybol, Deputy General, European Industrial Gases Association(EIGA).
- Participated in a networking Dinner arranged by the Embassy of Netherlands to the Indian Delegates. Interacted with various Officials and Business Executives and discussed the available funding opportunities for the research in the green hydrogen sector and also for the Startups for Carbon Neutrality.

Day 3 (May 15, 2024):

- Attended the Opening keynote address by Bhupinder S Bhalla, Secretary , MNRE, Govt.of India.
- Attended session on “European Hydrogen policies” by Karlo van Dam from the Ministry of Economic affairs, Netherlands.
- Attended session on “Global ports leading the energy transition to a hydrogen economy” by Madadh MacLaine from Zero emissions ship technology association
- Attended session on “Leading cities spearheading Hydrogen Development” by Lieuwe Brouwer from the City of Rotterdam.
- Visited the iconic windmills at Kinderdijk in the afternoon.
    - Learned about the historical significance and engineering marvels of the windmills.
    - Explored the integration of renewable energy sources like wind power with hydrogen production
    - Participated in a networking dinner organized by the Climate & Energy Response Facility (CERF) during the World Hydrogen Summit 2024 in Rotterdam. It gave the opportunity to finish the summit with an informal networking event and to wrap-up the week together.

Day 4 (May 16, 2024):

- **Visit to Rotterdam port, the largest port in Europe.**
    - The journey started by 9 A.M and it included a 5-hour on sea by boat and a 2-hour road by bus.
- **On the Boat:**
    - Attended presentations on the port's hydrogen-based developments and strategic importance in the hydrogen supply chain.
    - Discussions on the logistics of hydrogen transportation and the role of ports in the hydrogen economy.

- Networking lunch with stakeholders from the hydrogen sector, including industry leaders, policymakers, and researchers.

- **On the Bus:**
  - Visited the 200 MW electrolyzer installation at the port.
    - Gained insights into its operational capabilities and the technology behind large-scale hydrogen production through electrolysis.
    - The 200 MW electrolyser was constructed in the port of Rotterdam and produces up to 60,000 kilograms of renewable hydrogen per day.
    - The renewable power for the electrolyser will come from the offshore wind farms
    - The renewable hydrogen produced will supply the Shell Energy and Chemicals Park Rotterdam, through a pipeline where it will replace some of the grey hydrogen usage in the refinery. This will partially decarbonise the facility's production of energy products like petrol and diesel and jet fuel. As heavy-duty trucks are coming to market and refueling networks grow, renewable hydrogen supply can also be directed toward these to help in decarbonising commercial road transport.

Day 5 (May 17, 2024):

- Visited the Delft University of Technology (TU Delft).
  - Presented our innovative idea on hydrogen production in front of Dr.Aravind, Professor and Chair of Energy Conversion, University of Groningen & Dr.Jules Van Lier, Professor, Wastewater Treatment / Environmental Engineering,Delft University of Technology.
  - Discussed the feasibility, challenges and opportunities of the idea.
  - Discussed the possibilities of potential partnerships between Kerala Technological University and TU Delft, focusing on collaborative research activities under CoE.
  - Key discussions centered around innovation support, venture capital availability, and research funding.

Conclusion:

The visit to the World Hydrogen Summit 2024 provided the faculty team from the College of Engineering Muttathara with valuable insights into the global hydrogen economy, potential collaborations, and advanced hydrogen technologies. The interactions and presentations facilitated during the summit are expected to pave the way for future partnerships and funding opportunities, significantly contributing to the development of hydrogen production technologies and its research initiatives in Kerala.

Recommendations:

1. Establish a dedicated research center on Hydrogen Production Technology under APJ Abdul Kalam Technological University as a part of the proposed Centre of excellence titled 'Centre for Sustainability & Carbon Neutrality'.
2. Initiate collaboration agreements with Delft University of Technology and Groningen University, Netherlands
3. Develop a Curriculum by including Hydrogen Energy and Technology as an Elective Subject for B.Tech., which educates the students and promotes sustainable energy solutions.
4. Leverage the insights gained to apply for funding through various national and international agencies.
5. Conduct Seminars and Webinars to disseminate the knowledge gained to the students and faculty members of various colleges.
6. Explore the possibilities for joint projects with industry partners and governmental agencies.
7. Invite Impact Hydrogen representatives to the proposed center of excellence for future collaborations.

These all initiatives will play a vital role in preparing the next generation to contribute to a sustainable and Hydrogen Powered Future.

****





Winners of Hydrogen Hackathon (Faculty Members from College of Engineering Muttathara affiliated to APJ Abdul Kalam TechnologicalUniversity(KTU), Kerala, India) at World Hydrogen Summit 2024 Venue, Ahoy, Rotterdam

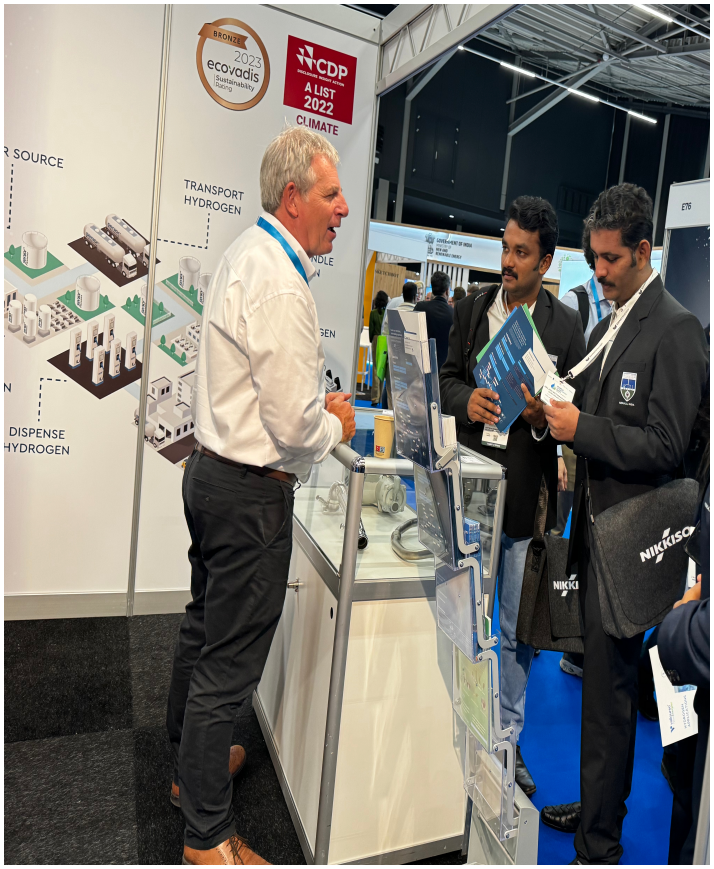




Hydrogen Hackathon winners at Indian pavilion of WHS 2024 with DST Officials & Official of Netherlands Energy Response Facility







Attending Sessions at WHS 2024 and interaction with industry experts





Interactions with experts from the field of hydrogen



Networking Lunch with MNRE Deputy Secretary Dr. Prasad A Chaphekar



Networking Lunch with Industrial Expert





Glimpses of various sessions





Networking lunch with MNRE Secretary Shri. Bhupinder S Bhalla.



Presentation at Networking Lunch chaired by MNRE Secretary

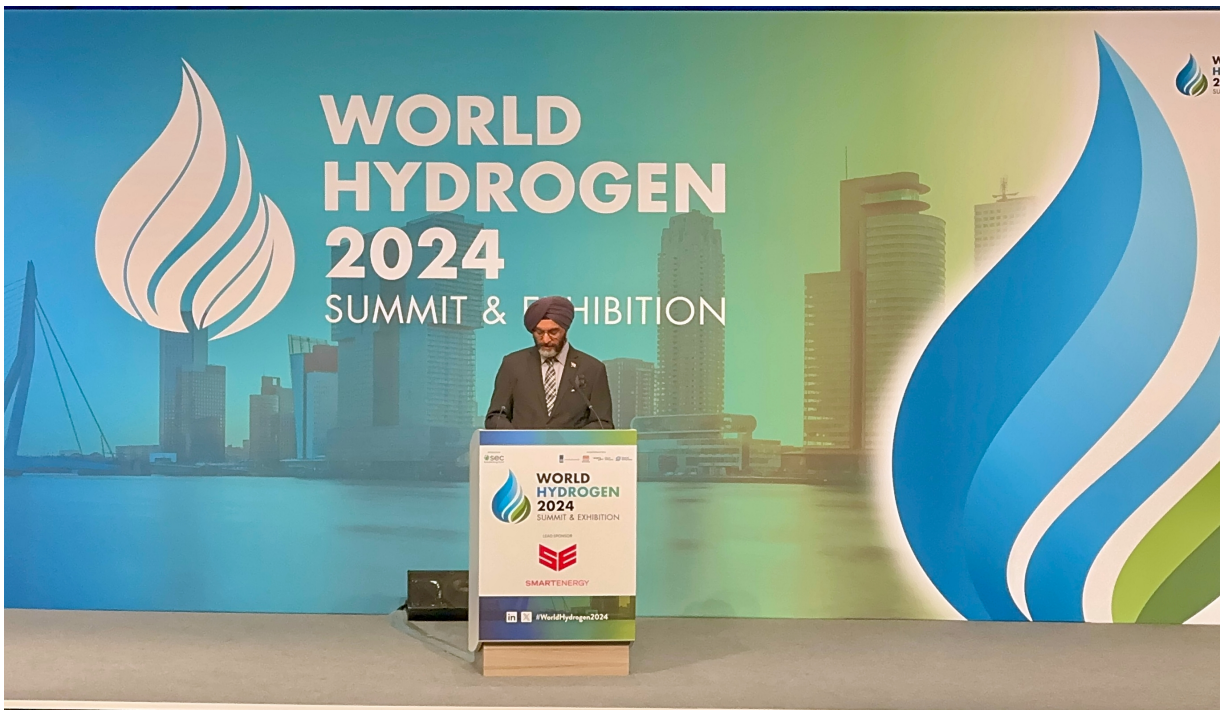


With officials of Impact Hydrogen, Embassy of Netherlands & CERF





Interactions at Exhibition Floor



Key note address by MNRE Secretary Shri. Bhupinder S Bhalla.



Sessions on India -EU Hydrogen Partnerships & Energy transitions to Hydrogen with respect to ports





Interaction with representatives of leading electrolyzer firm NEL





At Kinderdijk ancient windmills with group of french students



At the deck of boat, journey through Rotterdam port ,biggest in Europe



200MW Electrolyzer installede by Shell Co.Ltd powered by offshore windmills at Rotterdam Port





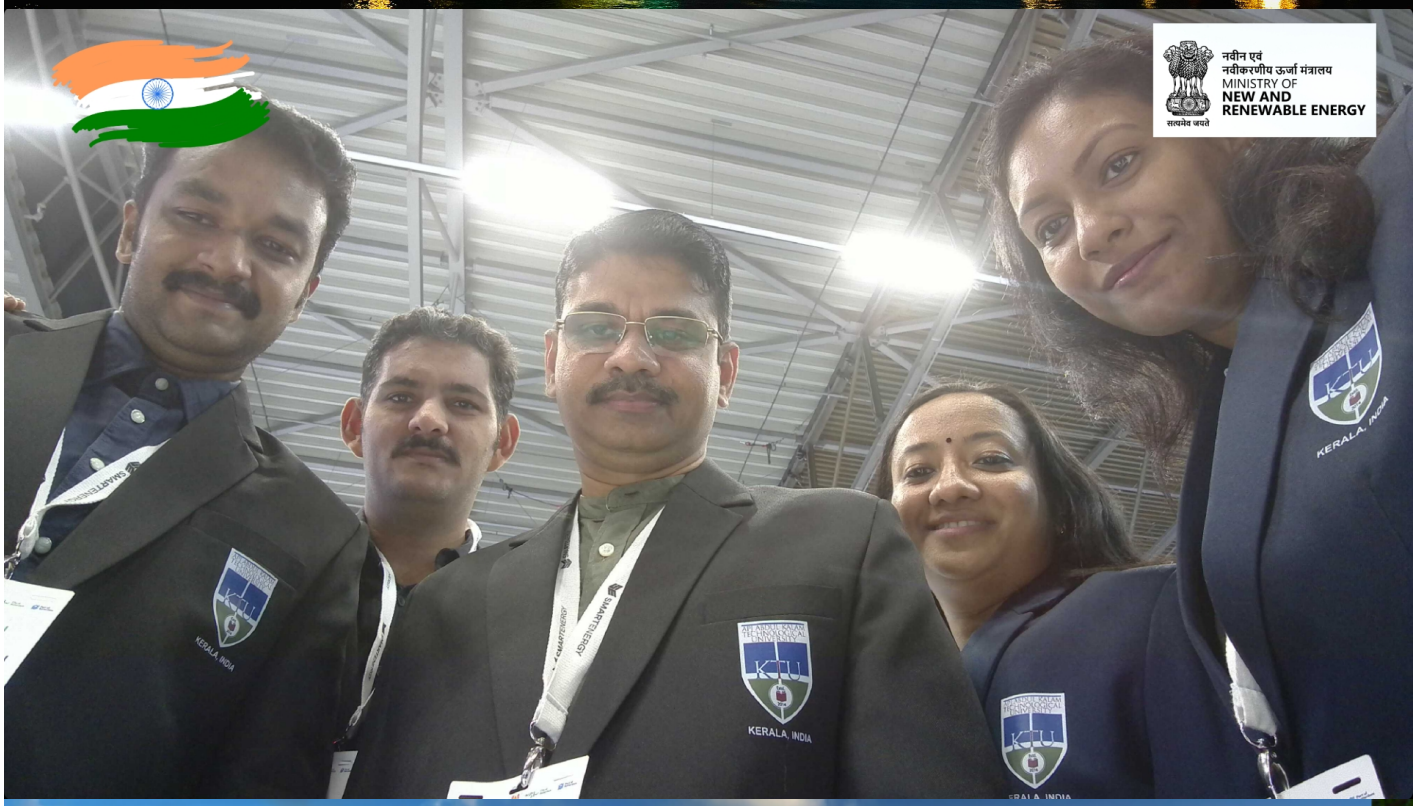
Presentations & Interactions with Dr.Aravind, Professor and Chair of Energy Conversion, University of Groningen & Dr. Jules Van Lier, Professor, Wastewater Treatment / Environmental Engineering, Delft University of Technology.





Glimpses from TU Delft Visit




नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY
सत्यमेव जयते
KERALA, INDIA


COLLEGE OF ENGINEERING MUTTATHARA