



Green Hydrogen : Opportunities in Sugar & Distillery Industry

One-day workshop entitled 'Green hydrogen: opportunities in sugar & distillery industry' was organized by the Department of Alcohol Technology and Biofuels, at Vasantdada Sugar Institute Pune, on December 18, 2022 with the active participation of sugar mills and distilleries from different States across the Country.

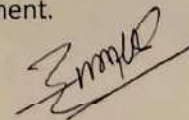
In this workshop Eminent Delegates & Speakers comprising as Mr. Sharad Pawar, Hon. President, VSI, Pune, Member of Parliament (Rajya Sabha); Dr. Chinnakonda S. Gopinath, Scientist-H, CSIR-NCL, Pune; Dr. Bharat Kale, Director General, CMET, Pune; Prof. Rajnish Kumar, IIT, Madras; Prof. VV Mahajani, Adviser to RGSTC, Prof. (Retd.) ICT, Mumbai; Mr. Siddharth R. Mayur, MD, h2e, Pune; Mr. Sambhaji Kadupatil, Director General, VSI; Mr. Shivajirao Deshmukh, Advisor, VSI; Prof. SV Patil, Professor Emeritus, Alcohol Tech & Biofuels, VSI; Dr. KS Konde, Head, Professor & Technical Adviser, Alcohol Tech & Biofuels, VSI were present. Approximately 182 participants from sugar mills and distilleries attended the workshop.

The workshop began with registration of representatives participating from different followed by inauguration. During the inauguration function, welcome address was given by Mr. Sambhaji Kadupatil. He welcomed all the guests, sugar mill representatives and VSI staff. He thanked the president for gracing the event with his presence. He said that the sources of fossil fuels are becoming appallingly scarce day by day and on the other hand, the greenhouse gases which are emitted by combustion of these fossil fuels are causing significant negative effects on our environment such as global warming. He stated that to mitigate these problems, green hydrogen can prove to be a good alternative as it is a clean fuel and has high energy

density. He also elaborated about 'National Green Hydrogen Mission' and 'National Green Hydrogen Policy' launched by the Government of India. Lastly, he expressed his expectations from the workshop to find sustainable solutions towards the vistas of hydrogen technology.

Hon. President of VSI, Mr. Sharad Pawar delivered the key note address. He briefed us about the existing and projected demand of hydrogen in India and globally. He further said that green hydrogen can be considered as the potential catalyst of the world's shift to sustainable energy and net zero emissions to tackle global warming and climate change. He advised sugar industry to explore the option of producing hydrogen in order to diversify their product portfolio. He said production of hydrogen in sugar complex will provide a win-win opportunity to industry & society. Hon. President informed the participants that this workshop organized by VSI is intended to facilitate deliberations on various challenges and exchange of knowledge to pave our path to future. Various issues related to storage, transportation, long term govt. policies, etc. should be addressed in this workshop. Hon. President said, he is sure that the discussions in this workshop will be very fruitful and will definitely lay-down path for sugar industry to venture in this emerging field of green hydrogen.

During the technical session-I, Dr. CS Gopinath gave a presentation on 'Green Hydrogen Economy - India's Ambitions'. He briefly discussed the India's ambitious climate action plan and their set targets. He said that the opportunities lie across hydrogen value chain. His talk was mainly focused on basic concepts of green hydrogen and current technology and R & D development.



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Dr. Bharat Kale delivered presentation on the topic entitled 'Hydrogen: Overview of Photocatalytic Process'. Dr. Kale briefed overview of available facilities & ongoing projects at CMET, Pune. In his talk, he emphasized mainly on nanocatalysts and their application for hydrogen production. He also explained about nanocomposites and their applications.

Prof. Rajnish Kumar gave presentation on the topic entitled 'Challenges & Opportunities in CCUS'. He explained different techniques for CO₂ capture, and its sequestration. He mentioned regarding the techno-economic assessment of CO₂ capture, and its sequestration (30 -50 USD/tonne). He also explained method for CO₂ capture where hydrogen is converted to hydrates. He emphasized that the CO₂ capture methods are sustainable, however, industries have to invest huge amount for the same.

In the technical session-II, **Dr. KS Konde**, gave lecture on 'Hydrogen production opportunities in sugar & allied industry'. He discussed various possible routes of green hydrogen production in sugar complex i.e.

electrolysis using cogen electricity, biogas to hydrogen via steam methane reforming and via biogas gasification. He also explained the economics and production cost of all three routes.

Dr. VV Mahajani delivered talk on 'Hydrogen Production from Methane and Bagasse'. He elaborated on the process used for Hydrogen and explained in detail about the process of Steam Methane Reforming (SMR), Partial oxidation technique and Biomass gasification.

Mr. Siddharth Mayur talked on 'Future of energy- Green Hydrogen'. He explained different techniques for electrolysis, and different types of electrolyzers used for it. He elaborated on the new approach for sugar complex where, green hydrogen, ammonia and sustainable aviation fuel (SAF) can be produced in sugar factory. He also explained about his company h2e power and about India's first ever green hydrogen pilot plant commissioned at Jorhat.

The programme was concluded with discussion and vote of thanks which was given by Prof. SV Patil.



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