

Expert Presentation, Panel Discussion and Showcase on “ Clean Fuel and Energy Efficiency- Need of Hour”

Brief: In the era of growing industrialization and automations, the usage of fuels is increasing. Along this growth ,comes the challenge of pollution, energy losses and impact on health of human. There are various developments happening in this field, many of solutions are research phase, few are in patent stage, while most of it are still in commercialization phase. The standards over Clean fuel need to be made aware to the technical fraternity and all stake holders. **India Technical Centre, Process Industries Division, IMechE**, planned an event comprising Academicians, Industrialist and Government policy(Standard) making agency BIS over this topic.

Q4'19 PD event was planned at Mini Auditorium, Academic Complex, College Of Engineering, Pune on 29th November,19.



Mr. Sunil C Panchbhai, Secretary, Process Division, welcomed the guests and audience. He shared the event outline and introduced impressive resume of speakers and greeted them.



The presentation started with **Ms. Nagamani. T ,Asst. Director Scientist D & Member Secretary of Petroleum Committees Petroleum, Coal & Related Products Department in BIS (Bureau of Indian Standards)**. She is leading technical Committee for Petroleum product and fuels. She explained in brief work of BIS, need of standard ,flow of standards formation . She explained **Petroleum, Coal and related products Division Council (PCDC)** scope and activities. Touching upon India fuel scenario and emphasized need for clean fuel from Greenhouse gas abatement, Resource management, Carbon neutral emissions, Energy Efficiency, Reducing net energy cost. She mentioned alternate and renewable fuels like Biodiesel, Biogas, CNG etc.



Various pertaining available BIS standards were cited by her and also the In Process for releasing were shared.

Quarter IV Event

Process Industries Division ;India Technical Centre

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Second Speaker was **Dr. Milind Atrey Dean R&D IIT Bombay Mumbai , and PD India Chair** , who was represented by **Mr. Aditya Raman , Ph.D** student. He shared a collaborative project with the University of Birmingham, Dearman and Cartwright, on the development of a refrigerated truck using clean energy. The technology is based on the concept of using liquid nitrogen driven Engine. **Its first major application is for transport refrigeration units.** In countries like India, such technology could help to address challenges in food production and delivery, without causing unintended environmental harm.



Dr. M.R Nandgaonkar, Head Of Department , Mechanical ,College of Engineering, Pune (COEP), was the next speaker. He shared automotive data, vehicular pollution and its components. (On his behalf, Dr Deshmukh did the presentation)



Dr. Nandgaonkar shared the gaseous fuels in details like CNG, LPG, HCNG, Bio Methane, Hydrogen. The comparative study with liquid fuels was presented and a detailed SWOT analysis was shared. Trails of hydrogen driven vehicles were discussed and concerns over the safety issues related to it. He also shared the Fuel Cell concept and details over trials of Bio diesel. There was a mention of **LASER Combustion** OF fuels that can improve the efficiency drastically.

Mr. Sidharth Mayur , Founder & CEO H2E Power represented innovation of his organization. In addition to basic details of energy scenario he presented the details and application of SOFC (Solid Oxide Fuel Cell), PEM, AFC, MCFC, its applications and comparative study and range of Fuel cell that can be applied to various products and applications. He cited the Farm and rural applications of fuel cell and his idea to take it forward with a support from Government of India.

He shared **the impressive number of patents registered and owned by his company**, that was applauded by the audience.



Panel Discussions: After the four presentations, the event progressed to Panel Discussions and Q&A session. Mr Sunil Panchbhay, moderated the panel discussions. The discussion was very participative, especially from young students, who were perusing their post graduate studies in related areas. The panellist showed their interest to be part of BIS technical committee and **Ms Nagamani** shared the way how to be part of it, by sharing the email address for contact. She urged active participation by experts to clear the standard formation easily. Over commercialization of the research and industries, **Dr. Nandgaonkar** expressed existence of a gap and expected IMechE or similar organizations to create a platform for such event and discussions on regular basis for mutual benefits.



Mr. Sidhharth shared his views of health concern for women and creating an awareness of clean fuel need to improvement overall health for women those are not privileged to use modern fuels. He shared data and details regarding the fuel and effects of the fuels that are not clean. Students interacted to understand difference between various type of fuel cells. He also invited COEP to visit and create more association of his enterprise and COEP.

Mr. Aditya explained challenges in India for development of his research and how the gap with European development status is being abridged with latest research.

There was a good interaction with the audience ; especially the Post Graduate students whose technical queries were aptly answered by the panellist.

A memento was presented to all the esteemed speakers for their respective contribution in the areas to protect the environment and creating an awareness overall.



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Vote of thanks was given and appreciated Dr. M.R. Nandgaonkar, COEP for making the facilities available for the event and attending the event with his students and faculties.

The even concluded with high tea and networking amongst the attendees.

**Innovations Showcase :**

H2E Power had a display of their innovative products and explained the audience a showcase of the innovation. The rice cooker working prototype was explained to all audience.

