सत्यमेव जयते

सीएचटी न्यूज लेटर
CHT
NEWS LETTER No. 10

सीएचटी
ISO 9001:2015

(April – June 2021)

उच्च प्रौद्योगिकी केन्द्र
पैट्रोलियम और प्राकृतिक गैस मंत्रालय, भारत सरकार

Centre for High Technology
Ministry of Petroleum & Natural Gas, Govt. of India

From the desk of the Executive Director

Esteemed Readers,

Greetings,

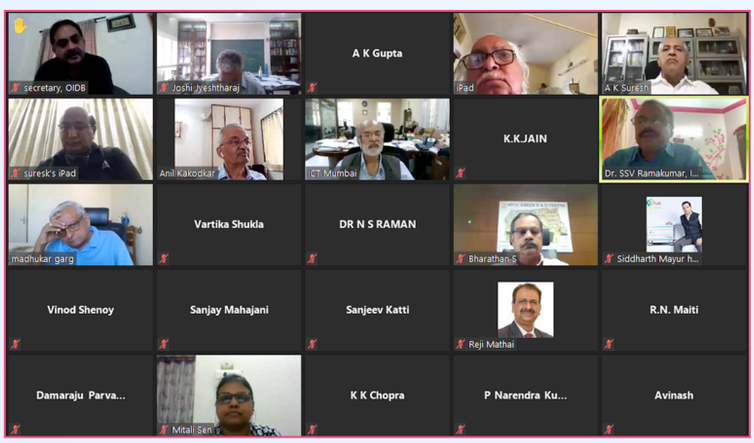
This CHT Newsletter covers updates on important work-in-progress / meetings for the period of April-June 2021 viz. 91st Scientific Advisory Committee Meeting, 1st Activity Committee Meeting on 2G Ethanol Technology and Project Execution, Meeting of Working Group constituted by MoP&NG for "Revisiting Report on Enhancing Refining Capacity by 2040", Processing of 178/204 nos. proposals of Oil PSUs seeking relaxation for Global Tender Enquiry (GTE) for Tenders below Rs. 200 Crore, meeting of Petroleum & Natural Gas – Research Collaboration Committee, 7th International Day of Yoga, etc. CHT along with American Chamber of Commerce in India (AMCHAM) and MoP&NG coordinated a webinar wherein US companies presented technologies focusing on Clean Energy in Refining & Petrochemicals for possible cooperation with Indian Companies from downstream sector. Our endeavor continues to share information and encourage R&D projects and new innovative technologies in the downstream hydrocarbon sector including bio-fuels & Hydrogen.

We look forward for your valuable comments and suggestions for enriching the Newsletter.

(K.K. Jain)
Executive Director, CHT

Scientific Advisory Committee Meeting

91st Meeting of the Scientific Advisory Committee (SAC) on Hydrocarbons of MoP&NG was held under the Chairmanship of Dr. Anil Kakodkar through Video Conference on 5th May 2021.



During the meeting, Shri Sunil Kumar, JS (R) informed about the progress in the PM JI-VAN Yojana amendment and mentioned few changes being proposed in the policy. Chairman expressed happiness that the policy is getting broad based to make it technology agnostic as well as end product agnostic.

During the meeting, SAC deliberated on two new R&D proposals including HCF. After detailed deliberations, SAC recommended both proposals for funding. SAC also had detailed review of the On-going R&D and HCF projects. SAC also noted the progress of 4 commercial and 1 demonstration projects under PM JI-VAN yojana.

ACM on 2G Ethanol Technology and Project Execution

The 1st Activity Committee Meeting on "2G Ethanol Technology and Project Execution: Sharing of Learning" was held on 17th May 2021 via Video Conference. Ms. Vartika Shukla, delivered the theme address. She underlined following efforts that Industry is taking to overcome challenges with the single objective to bring down CAPEX as well as OPEX:

a) All technological pathways to enhance viability of the conversion of Biomass and not looking only at 2G ethanol.
b) Ensuring cost effective feedstock supply chain with proper tie-up with suppliers
c) Vendor development and strategy for fabrication (both site and shop), handing of engineered items

even dovetailing changes by technology providers

d) Indigenization of enzymes production

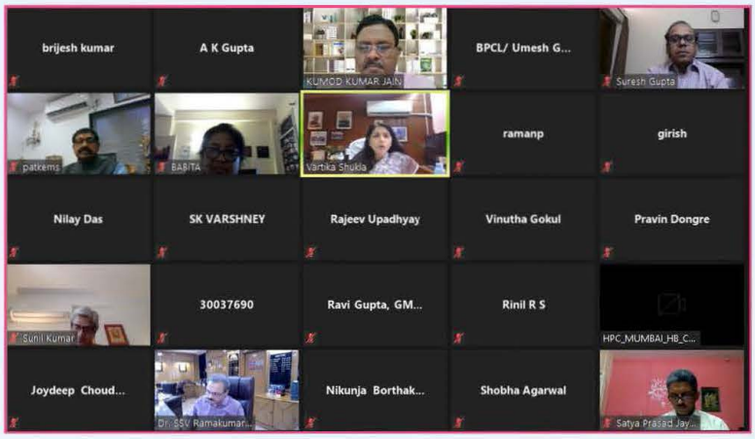
Dr. S.S.V. Ramakumar delivered the Keynote address. He highlighted the following imperatives that need to be addressed to make 2G pathways more successful and commercially viable:

a) Biomass aggregation and supply chain management
b) Bring down OPEX by fine-tuning different technology steps of 2G ethanol
c) Reduce consumption of chemicals (acids / bases)
d) Exploring / understanding pros and cons of steam explosion for pre-treatment step
e) Reduce Hydraulic Retention time (HRT)
f) C5 selective yeast to improve fermentation efficiency and its indigenization.
g) Achieve global benchmark yield of 27%
h) Life cycle emission in the reduction band of 65%
I) Commercial viable pathways for lignin valorization

He informed about innovative experimentation for biomass handling wherein pre-treatment of biomass was done at biomass generation site and the slurry was transported to 5 TPD bio-methanation plant at IOC R&D. This concept can be replicated in 2G Ethanol plants also, which can offer a key answer for formidable challenges of biomass aggregation and supply chain management.

There is an advantage of producing enzyme at site as it would not entail concentration, stabilization and its transportation of enzyme in cryogenic containers, which add to the costs. He also mentioned about another achievement regarding enzymes production by IOC R&D at 5 KL scale. Enzymes have been tested at M/s Praj pilot plant (12TPD) and its performance have been found on par with benchmark enzymes. It was also informed that the demonstration plant which is being put up by IOC R&D at Panipat, envisages on site production of enzyme and also simultaneous hydrolysis and fermentation steps.

Shri Sunil Kumar, JS(R), delivered the inaugural address. He mentioned that private parties have been very much intimidated by the cost, especially OPEX of the 2G plants.The ideas put forth by Ms Vartika Shukla and Dr. Ramakumar would be very useful in mitigating some of the issues related to biomass storage and supply chain and towards viability of these projects. He informed that amendments in PM JI-VAN Yojana will be put up to the Cabinet for approval within 2-3 weeks' time. By allowing bolt-on as well as brownfield projects, the purpose is to reduce CAPEX. He hoped that with modified scheme, more and more proposals will come from private parties also . He invited ideas / discussions to make technology feedstock agnostic so that this can be replicated. He advised to think about standardization and modularization so that these can be replicated elsewhere very easily with minimal cost. He mentioned that Govt. has been very persistent on 2G despite



lukewarm response worldwide. He hoped that India will be a leader in this technology and going to be successful in 3 to 4 years. This COVID has shown one thing that globalization, with some percent of localization is very important and localization of energy is going to happen in the form of bio refineries.

He hoped that ideas would emerge through experience sharing that will help in reducing cost of 2G ethanol technology. And if any feedback or narrative comes about the Policy Changes, Ministry is very open and flexible to assimilate the same.

Thereafter, IOCL, BPCL, HPCL, ABRPL, IOC R&D and EIL shared their experience on project execution strategies, equipment procurement, challenges faced in biomass supply chain management, support needed to expedite the completion, etc.

Shri M.S. Patke, ED (Biofuels), BPCL and Convener of the ACM, summarized the key takeaways as under;

i. Biomass Standardization and Storage: IOCL & BPCL should work jointly to optimize it.
ii. Separate discussion may be held by IOCL and HPCL on Utility consumption at their respective units.
iii. Ash, mud & sludge disposal: 140 TPD of ash/mud disposal for a 100 KLPD plant will be a huge problem. Apart from storage problem, ash will create environment problem also. It is problem area for all companies and there is no readymade solution. If some breakthrough is made with fertilizer or brick manufacturing company, it should be shared with each other.
iv. Manpower requirement: It is now estimated to be more than the initial projections made by M/s Praj. There is a need to carry out Deep scrutiny and optimize manpower as it is going to be a big cost element.
v. Integration of 1G and 2G ethanol plant: More discussion is required regarding facilities and utilities sharing.
vi. Vendor development for various equipment: To bring down CAPEX and may be OPEX in future.
vii. Production of Bio-chemicals: In case of ABRPL, in spite of CAPEX going up, IRR is still favourable due to forward integration with bio-chemicals, like furfural, acetic acid, etc. R&Ds also need to work on

it in parallel, so that in future 2G ethanol projects can become economically viable.

viii. Enzymes and Yeast: IOC R&D has done a lot of work, and should support other companies and take a lead in this particular area. Not only localized production but also in-situ production will greatly reduce the OPEX.

ix. Lignin Valorization: Needs thrust. To improve profitability of the projects.

x. Process optimization: IOC R&D's efforts for Innovations in Pre-treatment step and Integration of hydrolysis and fermentation into single step needs to be closely followed up by all. In the existing project at the execution stage itself if we are able to do something, possibly, we should look at it.

xi. Gasification technology being explored/ implemented at MRPL: The process is feedstock agnostic and even can take MSW. The chemical and utilities consumption is lower. CAPEX is also projected to be relatively low as compared to enzymatic hydrolysis. The technology potentially may be path breaking.

xii. Role of EIL: EIL need to develop the optimized template for 2G ethanol technology and develop new benchmarks

He also suggested to have separate detailed discussion on topics like on-site enzymes production, biomass aggregation, bio-chemicals, etc.

60 nos. of officers from IOCL, BPCL, HPCL, MRPL, NRL and EIL participated in the ACM.

US-India-Energy Webinar on Transition to Clean Energy Technologies in Refining & Petrochemicals

In Feb, 2018, USTDA hosted Indian delegation to US as part of RTM (Reverse Trade Missions) on Refineries Performance Optimisation. As follow up of this visit, after due approval by MoP&NG, an MoU was signed on 8th May, 2018 between American Chamber of Commerce in India (AMCHAM) and CHT on U.S.- India Collaboration in Refining and Petrochemical Industry. A meeting with US companies and Indian Oil PSUs senior officials was held on 4th February 2020 at Scope Complex New Delhi. In continuation of the above, the US-India- Energy webinar on 'Transition to Clean Energy Technologies in Refining & Petrochemicals India' has been jointly hosted by AMCHAM and CHT on 6th April' 2021.

The Webinar was attended by 120 participants including Senior officials from 35 US companies and Indian PSU Oil PSUs refineries, GAIL, IOC (R&D) and EIL.

Following 7 companies made brief presentations which was following by brief Q&A session.

1. Aquatech International
2. Black & Veatch
3. Bloom Energy
4. Dastur Energy
5. Gas Technology Institute (GTI)
6. NxtBrane
7. Trident Desalination Inc.

The Webinar ended with closing remarks vote of thanks by Ms. Ranjana Khanna, Director General C.E.O., American Chamber of Commerce in India.

Working Group Meeting - "Revisiting Report on Enhancing Refining Capacity by 2040"

MoP&NG on 16th June 2021 has constituted a Working Group under the Chairmanship of Joint Secretary (Refinery), MoP&NG for revisiting the Report on Enhancing Refining Capacity by 2040, which was released by the Hon'ble Minister of Petroleum and Natural Gas in Jan, 2018. The Working Group will have a tenure of three months with following terms of reference;

1. To assess primary energy requirement for 2040
2. To assess likely technological development in different energy fields
3. To develop primary energy mix with break-up in terms of gas, oil, coal, nuclear, solar, hydro, hydrogen & biofuels etc.
4. To assess demand for major petroleum products linking with advancements in use, substitution by other forms of energy, drive on enhancing energy efficiency and Government policies

1st meeting of the Working Group was held through VC on 25th June 2021. Shri Sushil William, Dy Secretary, MoP&NG chaired the meeting.

Processing of Proposals of Oil PSUs seeking relaxation for Global Tender Enquiry (GTE) for Tenders below Rs. 200 Crore

In order to Promote Self-reliance, make in India and to promote Micro, Small, and Medium Enterprises (MSMEs), amendments were made in rule 161 (IV) of General financial Rules (GFR) vide OM F.No 12/17/2019-PPD dated 15th May 2020. mandating that no Global Tender Enquiry (GTE) shall be invited up to

200 Crores or such limit as may be prescribed by department of Expenditure from time to time.
Subsequently there were relaxation to Rule 161 (IV) (b) of GFR vide OM No F. 20/43/2020-PPD dated 21st December 2020 & OM No F. 20/44/2020-PPD dated 24th December 2020 for procurement of various items for two years which were critical for operation and expansion of Oil and gas PSUs for Global Tender Enquiry (GTE).

CHT has been made nodal agency to examine and technically recommend GTE proposals pertaining to Downstream and Midstream sector to administrative division of the Ministry for further processing. The proposals have been qualified under three categories:

1. Proposals pertaining to exempted items covered under OM dated 21.12.2020
2. Proposals pertaining to Licensor Mandated items from foreign vendors OM dated 24.12.2020
3. Proposals not covered under exempted items and Licensor Mandated items from foreign vendors

Procurement of spare parts of equipment/Plant & Machinery etc. on nomination basis from OEM/OES or OPM are exempted from GTE approval process.

Accordingly, total 204 proposals were received from many OPSUs namely IOC, NRL, CPCL, HPCL, BPCL, GAIL during April-June 2021 and 178 proposals were forwarded to Ministry for further processing.

Petroleum & Natural Gas – Research Collaboration Committee

Meeting of "Petroleum & Natural Gas – Research Collaboration Committee" was held under the Chairmanship of Dr. S.S.V. Ramakumar, Dir (R&D), IOCL on 17th June 2021 through Video Conference. Shri K.K. Jain, ED(CHT) and member secretary of the Committee welcomed the Chairman, Committee members and the participants. ED-CHT briefed that last meeting of the Committee was held on 11th May'21. The Committee deliberated on 2 proposals out of 9 proposals of National Importance. Remaining 7 proposals shall be discussed during next meeting of the Committee.

आईएसओ 9001:2015 ऑडिट

द्वितीय आवधिक आईएसओ 9001:2015 ऑडिट मेसेर्स आईसीएस द्वारा 28 जून 2021 को सीएचटी में सफलतापूर्वक आयोजित किया गया था। ऑडिटर ने सीएचटी के विभिन्न तकनीकी प्रक्रियाओं और परियोजनाओं सहित, मानव संसाधन, वित्त कार्यों की समीक्षा करके, इस ऑडिट को ऑनलाइन किया।

7वाँ अन्तराष्ट्रीय योग दिवस

भारत सरकार के तेल एवं प्राकृतिक गैस मंत्रालय के दिशा–निर्देशों के अनुरुप उच्च प्रौद्योगिकी केन्द्र में दिनांक 21 जून 2021 को सातवाँ अंतर्राष्ट्रीय योग दिवस मनाया गया। इस अवसर पर देश भर मे कोरोना महामारी की वजह से कार्यालय के सभी अधिकारियों एवं कर्मचारियों ने अपने घर पर ही योगाभ्यास किया जिस में अधिकारियों एवं कर्मचारियों ने विभिन्न प्रकार की योग क्रियायेँ की जैसे कि अनुलोम–विलोम, आँखों के व्यायाम, सूर्य नमस्कार, ताड़ासन योग, वृक्षासन योग, सुखासन योग आदि। इनमें से कुछ क्रियाएँ कार्यालय में भी की जा सकती हैं तथा योग का लाभ उठाया जा सकता है।
इस अवसर पर सीएचटी के अधिकारियों के परिवार के साथ योग करते हुवे कुछ झलकियाँ