



सत्यमेव जयते



सीएचटी न्यूज बाइट्स CHT

NEWS BYTES No. 20



ISO 9001:2015

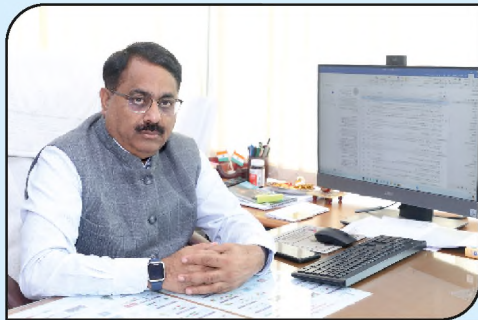
(Oct-Dec 2023)

उच्च प्रौद्योगिकी केन्द्र
पैट्रोलीयम 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!!

I am delighted to share the 20th edition of CHT News Bytes covering various events and major activities carried out by CHT during Oct-Dec, 2023.

In its endeavor to knowledge dissemination and information sharing, Centre for High Technology (CHT) fostering a vibrant platform where information thrives, the latest technology and knowledge is shared relentlessly. Through an array of engaging webinars, interactive meetings, and immersive workshops, we connect industry professionals, enthusiasts, and experts, creating a platform that propels innovation and excellence in the field. In this line following events have been

organized by CHT since the last edition of the CHT News Bytes:

- **Activity committee Meet on "Role of Oil & Gas Sector R&Ds in Energy Transition"**
- **Activity Committee Meet on "Captive Power Plant & Grid Power Import"**
- **Activity Committee Meet on "Energy Business and Financial Management"**
- **Webinar on the topic "Gasification in the Emerging Energy Scenario"**
- **Webinar on "Fluid Catalytic Cracking Unit"**

CHT has been carrying out benchmarking study of PSU refineries as well as pipelines infrastructure. The result of last benchmarking study was shared by consultant with CO's Management as well as with MoPNG. Where the industry has shown marked improvement in some of the parameters, however, there is ample scope to continue our journey towards performance improvement & catch up with the best global performers.

Recently, the 28th Conference of Parties (COP-28) was held in Dubai, (UAE), from 30th November to 12th December 2023, where India showcased its balancing act on the energy landscape & climate commitments.

As we are witnessing the start of a new year 2024, I extend my wishes to each and every one of you. The year 2023 has been a testament to our collective resilience, dedication, and unwavering spirit. May this year be filled with joy, success, and personal growth for all of us. Happy New Year! 2024

**(Alok Sharma)
Executive Director, CHT**

1.0 MoA Signing of Approved R&D Projects:



MoA signing of following 4 R&D projects has commenced on 4th Oct'23:

1. Production of 2.5 KW Fuel Cell PSGIAS/PSGiTech/IIT Palakkad/BPCL
2. Multi-layer Plastic Pyrolysis: IIT-M/VIT-V/CPCL/ITC/SWC
3. Flame Retardant Materials: ICT/VFC/BPCL
4. Porous Organic Polymer Adsorbents: IICT/BPCL

2.0 Enzyme Sub-Committee Meeting:

As appointed by SAC of MoPNG, CHT held 2nd meeting of enzyme sub-committee with members from IOCL, HPCL,

BPCL, ICGEB, DBT on 21st Oct'23 at CHT.



The agenda of the committee meeting was to promote & support indigenous development of enzymes in the country

which can support 2G ethanol Projects and hence reduce opex.

3.0 Activity Committee Meet (ACM) on "Role of Oil & Gas Sector R&Ds in Energy Transition"

Associate organizer: HP Green R&D Centre

Date: 17-18 October 2023

Venue Location: HP Green R&D at Bengaluru

Total Participants: 102

Inaugurated by: Dr. Anil Kakodkar, Chairman, SAC

Participating companies: Scientists/ technocrats from IOCL, BPCL, HPCL, ONGC-OEC, GAIL, OIL, CSIR labs, IITB, IISc, Technip, W.R Grace, LanzaTech

Total no. of paper presented: 25 presentations in 6 technical sessions and a panel discussion

Topics covered: R&D Performance Benchmarking and Best Practices; Selection of Projects and Partners; Role of Oil & Gas

Sector R&Ds in Energy Transition; R&D in O&G sector - Opportunity and Challenges; Execution Methodology for Projects of National Importance - Demonstration and

Commercialisation; Monitoring and execution of Research Projects- Demand driven R&D; Scale up and commercialization of successful product formulation and processes.



Few takeaways

- Double transition (Development + Global warming) is the key to decarbonisation.
- Gas will play major role in transition and CBG should be targeted.
- Renewable electricity generation and electrification of economy is the key to Net Zero.
- Aviation fuels to see major growth. Policy decision required to maximise SAF production.
- Stage gate mechanism to exit the research projects at right stage & adherence to the time lines are essential.
- R&Ds to develop the ability to translate the research work into value through TRL ladder.

- Funding for the demonstration of developed technology is a challenge. National Energy Council may be created to fund the demonstration of projects of National Importance.
- It is necessary to establish better connect between business conglomerates and R&D. The investor should get higher share of benefits.
- Collaboration with simultaneous competition among Oil companies is the key to successful innovation.
- Inter-ministerial collaboration and cooperation are essential for promoting innovation.
- Focus on research in material science particularly new materials required for batteries, FC, Hydrogen.

4.0 CHT Activity Committee Meet (ACM) on “Captive Power Plant & Grid Power Import”

Associate organizer: Indian Oil Corporation Ltd, Paradip Refinery

Date: 2-3 November 2023

Venue Location: Paradip Refinery

Total Participants: 104

Inaugurated by: Kausik Basu, ED & Refinery Head, IOCL-PDR

Participating companies: NTPC Green Energy Limited, EIL, BHEL, Dupont, Solvina, GE, Taprogge, Redstack, PSU Refineries

Total No. of paper presented: 24 presentations

Topics covered:

Green Energy Initiatives; Best Practice and troubleshooting experiences in CPP operation and Grid Power Import in refineries; Experiences during parallel operation with grid power import; Steam & water management from net zero perspective; Design & optimization of captive power plant for minimizing carbon footprint and improve efficiency; Reliability improvements in Power & Utilities; Implementation of advanced technique for transformer inrush mitigation; Experience sharing and Energy Efficiency Schemes.



Key Takeaways:

- As an alternate to instrument air, nitrogen line provision for GT Naphtha & HSD CVs and 3-way fuel change over valve may ensure uninterrupted GT operation during Instrument aircrisis

- NTPC renewable energy target by 2032 60 GW (40 GW Bid based, 15 GW Bilateral merchants, 5GW Green Hydrogen) from existing 3.3 GW
- Concentrated Solar Thermal (CST) is an approach to

generate thermal energy through mirrors. The mirrors reflect, concentrate and focus sunlight onto a specific point delivering high efficiency thermal energy for industrial process heat (Hot water/Steam).

- Gas Turbines Units which are configured for naphtha firing are suitable for methanol firing too for enhancing the fuel flexibility

5. CHT Activity Committee Meet on "Energy Business and Financial Management"



Associate organizer: Indian Oil Corporation Ltd, Guwahati Refinery

Date: 22-23 November 2023

Venue Location: Hotel Vivanta, Guwahati

Total Participants: 95

Inaugurated by: Shri Bhaskar Jyoti Phukan, Managing Director of NRL, Shri Anuj Jain, Director Finance IOCL, Shri Alok Sharma, Executive Director of Centre for High Technology, and Shri GK Goyari, Head of Guwahati Refinery

Participating companies: IOCL, HPCL, BPCL, CMAI, GAIL, NRL, CPCL, GST Consultant

Total No. of paper presented: 12 presentations

Topics covered: GST concepts and best practices, Impact of GST on the hydrocarbon sector, Progress through Value Creation, Capital Financing and Effective Project Financing

Strategies, Green Finance, Payment management and the implementation of central payment system, Vendor management, Treasury management, Gross refinery margin

Key Takeaways:

It was the first Activity Committee Meet on Finance. The speakers and participants deliberated on crucial aspects of energy business and financial management. The sessions featured by eminent speakers, GST Guru, who provided insights into the impact of GST on the hydrocarbon sector and emphasized various best practices. Secretary-General of the Carbon Markets Association of India, provided valuable insights into Green Finance. This ACM proved to be a platform for industry experts to share knowledge, discuss emerging trends, and explore innovative strategies, contributing to the collective growth of the hydrocarbon sector.

6.0 Workshop on "How to use data" by Solomon Associates on 6-7 November-2023

As a part of refinery benchmarking study cycle 2022, CHT organized a 2 days' workshop on "How to use data" in association with M/s Solomon Associates during 6-7 November 2023.

More than 100 participants across all PSU refineries participated in the workshop. M/s Solomon Associates explained the benefits of using the Solomon fuel study results,

understanding the gaps, demystifying the non-energy opex and energy gaps, understanding the competitive and efficiency indicators, identifying refinery ranking compared to competition in key areas, peer groups and financial metric/pricing. Various hands on exercise were also conducted during the workshop to make refiners more familiar with the study results. The feedback from the participants was very impressive and positive.



7.0 Pipeline Benchmarking study result presented by Solomon Associates on 9th November 2023

M/s Solomon Associates carried out a Benchmarking Study of Participative Pipeline assets of PSUs (IOCL, GAIL, BPCL, HPCL, OIL, HMEL (a JV of HPCL & Mittal Energy Limited) for

the Study Cycle -2022. Previously, such studies were conducted by M/s Solomon Associates for the study cycle 2018 and 2020.



Total pipelines offered by the participating companies for the study cycle 2022 were 41 (35 Liquid and 6 Natural gas pipelines). In addition to the pipelines 5 crude Oil unloading terminal performance were also benchmarked. The study period was 12 months and it contained 3 milestones. 2nd milestone completed on 1st September after delivering soft copy of results to all PSUs by M/s Solomon Associates. 3rd and final milestone contained study report and the presentation to

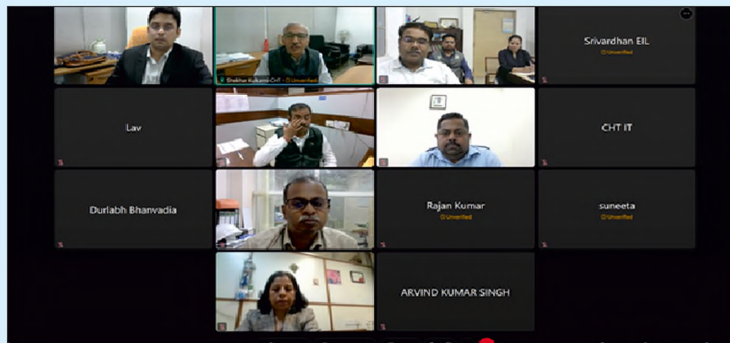
Executives of PSUs and MoPNG. A presentation was given by Solomon at CHT office on 30th October 2023 to the senior executives of PSUs. Workshop on 'How to use result data' was done for participating PSUs on 1st November at Delhi and 3rd November at Mumbai. Thereafter, a presentation was made to MoPNG in the meeting at ministry office chaired by Secretary, MoPNG on 9th November 2023.

8.0 Webinar on "Gasification in the Emerging Energy Scenario" on 23rd November 2023

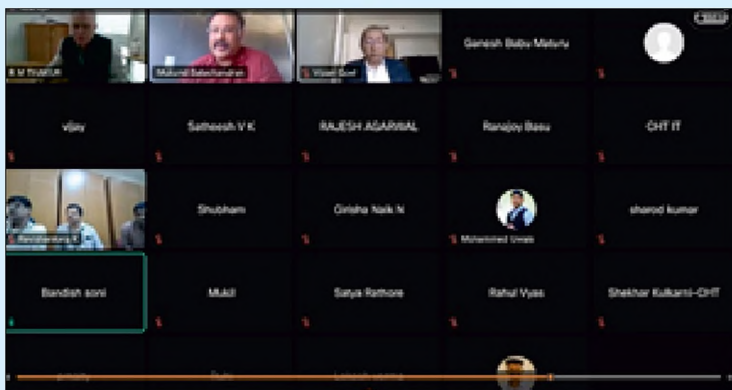
A webinar on "Gasification in the Emerging Energy Scenario" was organized by CHT on 23rd November 2023. Shri R.C Agarwal, Director-CHT, welcomed all the dignitaries and participants and highlighted the crucial role of Gasification Technologies in transforming the energy sector. He also emphasized the key areas of focus for further advancements.

During the webinar, speakers from six organizations/institutions, namely the Indian Institute of Science, CSIR-Central Institute of Mining and Fuel Research, M/s Thermax, M/s Ankur Scientific Energy Technologies Pvt. Limited, M/s Talcher Fertilizers Limited, and M/s Jindal Steel Private Limited, shared their valuable insights and experiences regarding the feature of gasification technologies in the realm of the emerging energy scenario. The session covered topics such as "Biomass as a Route for Fuels and Chemicals," "Fluidized Bed Coal Gasification Technology for Indian Coal," "Indian Coal

Gasification: Strategy and Roadmap," and "Biomass & Waste Gasification Solutions for the Generation of Energy, Fuels & Chemicals," which garnered significant attention from the participants.



9.0 Webinar on "Fluid Catalytic Cracking Unit"



Technology (CHT) organized a "Webinar on Fluid Catalytic Cracking Unit (FCCU)" on 14th December 2023. Director CHT, Sh R C Agarwal welcomed the eminent speakers and participants from the entire hydrocarbon industry. In his welcome address, he emphasized the importance of FCC in refinery operation and margin generation. He added that the FCC is an important technology employed in oil refineries for conversion of low value heavy hydrocarbon streams into value added lighter ends and petrochemical feedstock. He emphasized on vital role of FCC catalyst and catalyst additives in achieving the product selectivity. Topics were selected towards advancing the FCC technology for reduction in carbon footprint. M/s Lummus technology presented the features and benefit of INDMAX FCC Technology and M/s Reliance Industry elaborated on Single Step Conversion of Oil to Chemicals in Multizone Cat-Cracker for upgrading Low Value Refinery

With an objective of knowledge dissemination and sharing information on recent advances in technology, Centre for High

Streams, Plastic Pyoil, and Oxygenates. M/s W R Grace presented on catalyst management. Other topics covered were FCC hardware and cases of Troubleshooting. Technology developers and domain experts were selected as speakers in

the webinar.

The webinar was attended by more than 275 participants from refineries, R&Ds, catalyst suppliers & technology providers.

10.0 New R&D Proposals:

7 New R&D proposals, which were received at CHT, were

reviewed by CHT on 2nd November 2023. Call for R&D proposals submission date extended to 15th Dec'23.

11.GTE PROPOSALS PROCESSED

During the period from Oct-Dec-2023, CHT received 27 proposals from the Oil & Gas PSUs (BCPL-02, BPCL-08, GAIL-02, HPCL-03, IOCL-08, MRPL-03, NRL-01) for CHT

recommendation to go for GTE. Out of these 27 proposals, 5 proposals were returned to the companies with comments. The remaining 22 proposals are forwarded to MoPNG with technical recommendation for GTE approval. Proposals currently with CHT for review & recommendation: NIL.

Details tabulated below:

STATUS	EXEMPTED PROPOSALS	NON EXEMPTED PROPOSALS	TOTAL
RECOMMENDED BY CHT	22	0	22
RETURNED BY CHT	5	0	5
PROPOSALS WITHDRAWN BY PSUs (IOCL-2 &NRL-1)	3	0	3
CURRENTLY WITH CHT	0	0	0

12. 2G Ethanol Project Developers & Technology Provider meeting at CHT:

On 29th Dec'23, CHT organized a meeting involving stakeholders of PM JI-VAN Yojana. The agenda of the meeting was to discuss the issues faced in the implementation of the technology & its way forward. The meeting was attended by officials from IOCL, BPCL, HPCL, ABRPL & Praj Industries.



13. Applications for Essentiality Certificates

During the period GAIL (India) has submitted 3 applications for

issuing Essentiality Certificates, out of which two applications were forwarded to MoPNG with recommendation and one was returned to GAIL with CHT comments.



A very Happy New Year 2024!

Team - CHT



CENTRE FOR HIGH TECHNOLOGY

Ministry of Petroleum & Natural Gas, Govt. of India

OIDB Bhawan, Tower 'A', 9th Floor, Plot No. 2,

Sector- 73, Noida, Uttar Pradesh 201301

Website: www.cht.gov.in