



75  
Azadi Ka  
Amrit Mahotsav

# सीएचटी न्यूज बाइट्स CHT



ISO 9001:2015  
(Oct-Dec 2022)

सत्यमेव जयते

NEWS BYTES No. 16

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



*Hydrogen has become a buzzword globally. In India, scalability and making hydrogen production economical, is key to promoting hydrogen. Work is being done to improve the efficiency of steam methane reforming process. Major innovation in the production of hydrogen is the gasification of biomass and municipal solid waste. Blue hydrogen may be a major and prominent player in the coming decades for a lot of reasons in terms of scalability, robustness, reliability and the cost at the end of the day and till infrastructure is in place. Green ammonia will also play a major role, because of the way it is produced, and as CO2 is mostly captured for urea production.*

*During the quarter, International Conference on Hydrogen and Fuel Cells was organized by Hydrogen Association of India (HAI) at The Lalit Hotel, New Delhi during 4-6 Dec 2022. There was considerable support and cooperation from NITI Aayog, MoPNG, ONGC, HPCL, BPCL, IOCL and many more organizations. Dr. R K Malhotra, President, HAI delivered welcome address followed by a series of*

*special addresses by distinguished guests. Sh. Pankaj Jain, Secretary, PNG reiterated India's commitment of 50% of installed capacity from non-fuel fossil fuels and reduction in emissions intensity by 45% below 2005 levels by 2030; to be energy independent by 2047; and net zero by 2070. Energy consumption in India, is intended to be replaced by 5 MMT green hydrogen by 2030.*

*This edition of CHT News Bytes highlights some of the key events of the last quarter, viz. ACM on Lubes and Grease at IOCL Haldia; Workshop on Bio-fuel and Carbon Market by EKI; Data co-ordination seminar by M/s Solomon Associates for Refinery Benchmarking; ACM on Best Inspection Practices at MRPL, my participation in panel discussion at IIT Delhi on Industry Day; Meeting of EC; Meeting of GC; Meeting of Scientific Advisory Committee, etc.*

*I congratulate team CHT for achieving 3rd Rank in 2nd Category of Swachhta Pakhwara – 2022 Award from Hon'ble Minister of Petroleum and Natural Gas, Housing & Urban Affairs, Shri Hardeep Singh Puri.*

*CHT continues to play its role to share information and encourage innovation in Oil and Gas and new energy areas. Keeping in view the overwhelming response of 1st edition of "Oil and Gas Technical Journal, the papers are invited on CHT portal for the 2nd edition up to 15th Feb 2022.*

*In the end, I am signing off with my best wishes for Happy and Prosperous New Year 2023. Your views, suggestions and ideas to improve the CHT Newsletter further are solicited.*

(Alok Sharma)  
Executive Director, CHT

### Swachhta Pakhwara – 2022

Swachhta Pakhwada was organised by Oil & Gas CPSEs, and attached offices of MoPNG during 1-15 July this year. Motivational events were organised with full zeal and enthusiasm to encourage the Petroleum sector fraternity for their active participation and contribution towards Swachh Bharat Abhiyan and making India clean, green and healthy. In order to

ensure a healthy competition and more effective outcome of the Pakhwada, "Swachhta Pakhwada Awards" have been instituted for exemplary performance during the fortnight.

Based on their performance in the event, BPCL was ranked First, IOCL Second, HPCL came Third and ONGC was given Consolation award in the first category. In the second category, EIL was ranked First, PPAC Second and CHT came Third. MRPL was given Consolation Award.

The Swachhta Pakhwara - 2022 Awards were presented to the winners by Minister of Petroleum and Natural Gas, Housing and Urban Affairs, Shri Hardeep Singh Puri, on 21 November 2022,

at MoPNG. Congratulating the winners, Shri Puri said that Swachhta is not only to be practiced during the pakhwada but it should be practiced throughout the year by each one of us.



Shri Alok Sharma, ED, CHT receiving Swachhta Pakhwara-2022 Award from Honourable Minister of Petroleum and Natural Gas, Housing & Urban Affairs, Shri Hardeep Singh Puri.



Honourable Minister of Petroleum and Natural Gas, Housing & Urban Affairs, Shri Hardeep Singh Puri, MoS PNG & MoS Labour and Employment, Sri Rameswar Teli and other dignitaries present during award ceremony

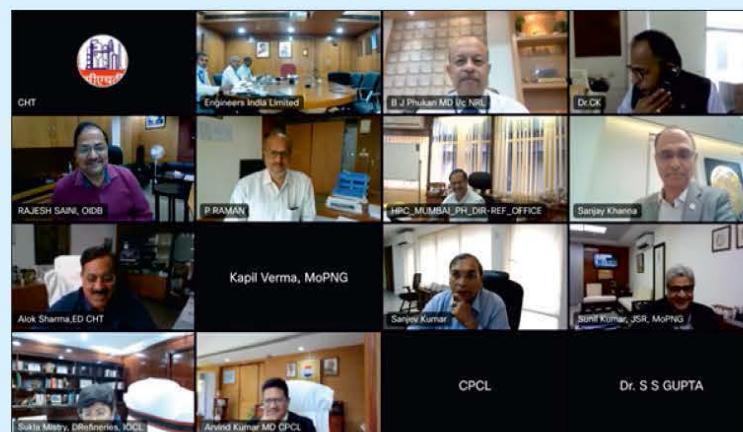
### Executive Committee (EC) Meeting of CHT

The 34<sup>th</sup> Meeting of the Executive Committee of CHT was held under the Chairmanship of Shri Sunil Kumar, Joint Secretary(R) MoPNG through Video Conference on 28<sup>th</sup> October 2022.

A detailed presentation on the progress and status of various activities/initiatives taken-up was made by CHT. The presentation covered the Mission Q-1 by 2030 for Refineries; Performance Benchmarking Study of Refineries & Pipelines for the 2022 cycle; Revisiting Refining Capacity by 2040; Petrochemical Plans by 2030 by Refineries; Refinery Performance Improvement Programme (RPIP) for PSU Refineries; Reduction of Water Footprint in PSU refineries; Refineries MBN Performance Vs PAT cycle targets; Petrochemical Benchmarking; and Status on PM JI-VAN Yojana.

CHT also made a presentation on establishing Hydrogen Loop for evaluation of Pipes and other components for various blends of H<sub>2</sub>/CNG. The essentiality of establishing a hydrogen loop was stressed upon by CHT in view of the push from GOI

towards adopting Hydrogen as a fuel. IOC(R&D) presented its Indigenously developed Magnetic Flux Leakage (MFL) type Intelligent Pig (IPIG) for inspection of operating pipelines.



EC also recommended the following for approval by GC: Adoption of Accounts 2021-22; Revised Budget 2022-23 and Budget Estimate for 2023-24; Appointment of Auditors.

## ED (CHT) participates in Industry Day at IIT Delhi



ED(CHT) participated in the Panel Discussions on "Sustainable Energy, Environment & Climate Changes" conducted by IIT Delhi on 10<sup>th</sup> Dec 2022 under "Industry Day". Senior officials from Honeywell, L&T, NTPC, IIT M were the other participants. Deliberations were held on various aspects regarding penetration of renewable technologies, Hydrogen, Coal Gasification, CCUS, Clean Air, waste management etc.

## 42<sup>nd</sup> Governing Council (GC) Meeting of CHT

The 42<sup>nd</sup> Meeting of the Governing Council of CHT was held under the Chairmanship of Secretary, P&NG at Shastri Bhawan, New Delhi on 8<sup>th</sup> December 2022. ED-CHT, made a detailed presentation on the progress and status of various activities taken up by CHT since the last GC meeting. The presentation covered the Refinery Performance Improvement Programme (RPIP) of PSU Refineries, Reduction of Water Footprint at PSU Refineries, Performance Benchmarking Study of PSU refineries & Pipelines by Solomon, Mission Q-1 by 2030 for Refineries, Petrochemical Plans 2030 by Refineries, Petrochemical benchmarking, and Status on PM JI-VAN Yojana.



GC approved one R&D project under HCF. GC also approved the adoption of Annual Audited Accounts for the Financial Year 2021-22, the appointment of Auditors and CHT budget (RBE for 2022-23 and BE for 2023-24).

## 95<sup>th</sup> Scientific Advisory Committee (SAC) Meet

The 95<sup>th</sup> Meeting of SAC was held on 20<sup>th</sup> Dec 2022 through hybrid mode in Mumbai. The meeting was chaired by Dr Anil Kakodkar, Chairman, SAC. ED-CHT briefed the SAC about and focus areas for research, development & demonstration. The agenda points of the meeting included the review of ongoing 2G ethanol projects under PM JI-VAN Yojana and R&D/Demo projects, New R&D Projects received at CHT. Chairman stressed that since the country is in an Energy transition, selected

R&D projects should be aligned with the vision of GoI in making the country self-reliant concerning its energy needs and achieving the Net Zero targets. 36 New R&D projects were received during last 8 months and 11 of these were shortlisted by a subcommittee were discussed during SAC meeting.



## 10th Technical Committee meeting for Petroleum Refineries under PAT scheme

The Petroleum Refineries are covered under the PAT Cycle-VI and are currently in the assessment year, ending on 31<sup>st</sup> March 2023. In this regard, the tenth Technical Committee meeting was held under the chairmanship of Sh. Alok Sharma, Executive Director, Centre for High Technology, Co-Chaired by Director BEE, Sh. Milind Deore on 29<sup>th</sup> November 2022 in the Conference room of CHT. The status of various activities under PAT cycle VI like submission of Form 1, Status of conducting Mandatory Energy Audit, List of Empanelled Energy Auditing firms for conducting M&V for the Refinery sector and updating the Refinery Proforma were discussed. Some of the refineries informed that they would not be able to achieve their MBN target by Mar'23 due to delays in energy saving project amid Covid-19, and asked for an extension of assessment year or provision of normalization factor to the refineries.

Responding to the apprehension, Director of BEE asked Refineries to provide the details and also highlighted future energy policies like development carbon markets might be in place once approved by Government.

## CHT Activity Committee Meet (ACM) on "Lubes & Greases"

CHT Activity Committee Meet (ACM) on "Lubes & Greases" was held at Haldia Refinery on 14<sup>th</sup> October 2022. Dr. S. S. V. RamaKumar, Director (R&D), IOCL was the Chief Guest at the event. During his Keynote Address, he thanked CHT for selecting this important and relevant topic for the first time for ACM. Shri Partha Ghosh, ED & Refinery Head, Haldia Refinery welcomed the guests and distinguished delegates. Shri Alok Sharma, ED (CHT) delivered the Theme Address and thanked Haldia Refinery Management for hosting the event.



During the meet, there were total 15 presentations from various organizations like Solomon Associates, S&P Global (formally known as IHS Markit), Shell Global, IOCL, BPCL, HPCL, CPCL, Siddharth Greases & Lubes Pvt Ltd., DORF Ketal & IFP Petro.

Key Takeaways from ACM are given below:

- Current Per capita lube consumption in India only 2kg against 18kg in North America and global 4.2kg
- Profitability and Sustainability of Base Oil manufacturing Plants can be further improved by standard benchmarking. As per Solomon Associates, Top Net cash Margin plants do not cut on operating cost and have the lowest cost of production and make most valuable products.
- HPGRDC, Bengaluru has developed HP CoSol process for lube raffinate yield improvement and process for production

of PAO (Polyalpha olefins) and POE (Polyol esters) based synthetic lubricants.

- Indigenous Dewaxing catalyst named BHARAT-Hi2CAT has been developed by BPCL, R&D for production Lube Oil Base Stock (LOBS) having guaranteed 90% total lube yield. Scale up studies for 2nd Generation catalyst has been initiated.
- A Novel Solvent Cut back has been developed by HPCL R&D as Rust Preventive Oil for rapid removal of water from Machined component and protects it with an Oil-Film, Non staining nature and Environmental Friendly product.
- In the era of energy transition, the growth of EV's will not affect adversely the growth in Lubricants and Loss of Engine Oil business in India.

## ACM on Best Inspection Practices/ Case studies of Refineries, Petrochemicals, Oil & Gas Pipelines

CHT in association with MRPL organised an Activity Committee Meet (ACM) on Best Inspection Practices in Refineries, Petrochemicals, Oil & Gas Pipelines installation on 24-25.11.2022. During the inaugural session Theme address was given by Shri Alok Sharma ED-CHT and Shri M. Venkatesh, MD, MRPL, delivered Presidential address. The meet received overwhelming response with participants of more than 100 from across all PSUs, private refineries and pipeline installations. ED CHT mentioned that CHT is a technical body under MOPNG and provides a platform for technological development. In the

changing energy scenario, ACMs have their own importance and new topics for ACM like, Petrochemicals, Oil & Grease, etc have been included.

MD, MRPL briefed that Reliability is very important to ensure the safety of the operating plant and also make the plant ready to operate safely at peak to avoid any environment or safety incident. He stressed upon need to Catch the problem before it catches us that should be the aim of the inspection engineer.

In the 2 days Seminar total of 26 presentations were made including Refineries, ROSEN, HTRI, Ami Polymers and TEMA. During the meet, the various topics related to Inspection were discussed M/s Ami Polymers presented about the availability of coated heat exchangers tube which required no inspection. It was a very interactive and knowledge-sharing session.



Key takeaways from ACM:

- On the basis of detailed analysis on the failed reformer tube sample, it is inferred that the failure of the reformer tube in HGU is attributed to "Creep Damage".
- Currently available NDT techniques used to assess the health of the reformer heater tubes may not be fully reliable and require further research to improve upon.
- Rapid change in feedstock demands a dedicated focus on corrosion control in refineries.
- Modelling studies have reflected that maintaining the pH of boot water alone will not mitigate corrosion in overhead. Optimization of water washing is important to avoid corrosion.
- Any process change needs to be done through MOC (Management of Change) and impact assessment must be carried out.

- If process control is not feasible then a change in process condition needs to be accompanied by suitable metallurgy selection/hardware up-gradation, etc.
- Automated Ultrasonic Testing proved to be a very effective NDT technique to assess the overall condition of the aging mounded vessels. However, the technique required delicate planning, an inspection plan, and experience monitoring based on the expected damage mechanism.
- A single gauge mark/groove/dent/pit may become the problem of tomorrow.
- In the Reformer inlet pigtailed failure case it was understood that because of an improper manufacturing process, intergranular corrosion took place from the leftover water of hydro-tests and subsequently leaked during pre-commissioning.

## Workshop on Bio-fuel and Carbon Market on 18<sup>th</sup> Oct'22 by EKI

Workshop on "Carbon Markets, Carbon Finance, Carbon Footprints & Carbon Neutrality for O&G Sector in India" was organized by CHT in association with M/s EKI Energy Service Limited on 18th October 2022 at OIB Auditorium, Noida. A total of 29 technical representatives from various refineries, PPAC and OISD attended the workshop.

The workshop provided the participants, an insight into the importance of carbon credits in the petroleum sector. Various aspects of carbon footprints and carbon neutrality were also presented in detail by M/s EKI. Other major area which was deliberated in detail was Environmental Social Governance (ESG). Key elements of Paris Agreement on climate change were also presented in the workshop.

Workshop on "Carbon Markets, Carbon Finance, Carbon Footprints & Carbon Neutrality for O&G Sector in India" was organized by CHT in association with M/s EKI Energy Service Limited on 18th October 2022 at OIB Auditorium, Noida. Total 29 technical representatives from various refineries, PPAC and OISD attended the workshop.



The workshop provided the participants an insight on the importance of carbon credit in petroleum sector. Various aspects of carbon footprints and carbon neutrality were also presented in detail by M/s EKI representative. Other major area which was deliberated in detail was Environmental Social Governance (ESG). Key elements of Paris Agreement on climate change were also presented in the workshop.



## Data co-ordination seminar by M/s Solomon Associates

CHT in association with M/s Solomon Associates organized a 2 day "Data co-ordination seminar" at OIB Bhawan, Noida on 10-11th November 2022 for study cycle 2022.

The Data Coordination Seminar (DCS) by Solomon Associates is one of the key milestones for carrying out Refinery benchmarking

as it gives insights on how data formats need to be filled for a better and relevant benchmarking. Sh. P Raman, Director CHT welcomed the Solomon representatives & participants and inaugurated the program.

A total 87 representatives from various departments like Technical services, Maintenance, HR, planning and Finance etc., from 17 PSU refineries participated in the 2 days' workshop.



## 95th Scientific Advisory Committee

The 95th Meeting of SAC was held on 20th Dec 2022 through hybrid mode at Mumbai. The meeting was chaired by Dr Anil Kakodkar, Chairman, SAC. ED-CHT welcomed the Chair, and other Members of SAC and Special Invitees. The agenda points of the meeting included the 2G ethanol projects under PM JI-VAN

Yojana and R&D/Demo projects, New R&D Projects received at CHT. Chairman stressed that since the country is in Energy transition, selected R&D projects should be aligned with the vision of Gol in making the country self-reliant with respect to its energy needs and to achieve Net Zero target. Eleven new projects proposals were presented and six of them were recommended for 50% funding. Review of ongoing R&D and Demonstration projects was also done.



### PM JI-VAN Yojana

Meeting of Steering Committee of PM JI-VAN yojana was held on 10th Oct 2022. 2 Commercial & 2 Demo proposals were approved for financial assistance of Rs 150 Cr each & Rs 15 Cr each respectively.

### RFS-IV for Commercial/ Demo Plants under PM JI-VAN Yojana:

CHT has floated RFS-IV to provide financial assistance for balance 6 New Commercial & 7 Demo proposals on 15th Dec 2022. The RFS will be closed on 15th Mar 2023.

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

During this quarter, CHT have received 61 Nos of proposals from OPSU's i.e from M/s IOCL, BCPL, HPCL, CPCL, GAIL, MRPL, NRL seeking relaxation for GTE for tender below 200Cr.

CHT have recommended 39 proposals in this quarter, 6 proposals are under processing and 16 proposals are awaiting clarification from OPSUs.

*Every science begins as philosophy and ends as art*



सी एच टी

ISO 9001:2015

### **CENTRE FOR HIGH TECHNOLOGY**

Ministry of Petroleum & Natural Gas, Govt. of India

OIDB Bhawan, Tower 'A', 9<sup>th</sup> Floor, Plot No. 2,

Sector- 73, Noida, Uttar Pradesh 201301

Website: [www.cht.gov.in](http://www.cht.gov.in)