



सत्यमेव जयते

# सीएचटी न्यूज बाइट्स

# CHT

## NEWS BYTES No. 22



ISO 9001:2015

(Apr-Jun 2024)

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!!

Refiners are faced with a more challenging and complex market, in which remaining competitive will be the long-term challenge. With increasing electrification of the economy including mobility & building sectors and decarbonization of industry, the energy mix shall transition to renewable electricity, biofuels and green hydrogen. In the interim period, low-carbon options like gas shall play its role. Driven by a range of factors, the deployment of renewables in different sectors will occur on different timeframes and scale for different reasons including availability, techno-economic consideration, regulatory push, etc. Therefore, all renewable resources should be viewed as a complement to other alternative energy sources rather than a standalone solution. In the period of transition even role low

carbon options cannot be ignored.

India is set to achieve its short term and long term targets under the Panchamrit action plan, like- reaching a non-fossil fuel energy capacity of 500 GW by 2030; fulfilling at least half of its energy requirements via renewable energy by 2030; reducing CO<sub>2</sub> emissions by 1 billion tons by 2030; reducing carbon intensity below 45% by 2030; and finally pave the way for achieving a Net-Zero emission target by 2070. Diversifying India's energy sources and reducing reliance on fossil fuels can enhance energy security and reduce vulnerability to price fluctuations in the global market. Investing in renewable energy and sustainable practices can create new job opportunities and stimulate economic growth in sectors such as clean energy and technology. The transition to net zero emissions brings its own challenges and may require significant investments in infrastructure and technology, which could pose financial challenges for India, especially in the short term.

Another area, which will drive future of refining, is Petrochemicals, whose demand is ever growing and so is their import. Among various petrochemicals, Ethylene and Propylene are the most important. The economics of the ethylene will depend upon the cost of the plant, the cost of the feedstock, the yield pattern, and the logistics cost. Under changing scenario, Petrochemical production and feed stock generation through conventional refining technology is not attractive any more. Given the fact that India is disadvantaged in terms of petrochemical feedstock, to become a low-cost producer of petrochemicals, various other cheaper alternative feedstocks viz., gas, ethane, condensate, propane, butane, LPG, etc. need to be evaluated and considered. The gaseous feed stocks viz, ethane and propane significantly reduce Capex & Opex and also yield lower production of low value byproducts. Technologies for Crude Oil to Chemicals are also under development.

The various Activity Committee Meetings (ACM)/ webinars organized by CHT on the challenges faced by Oil & Gas industries and emerging energy transitions. The objective of these meets is to provide a forum for exposition of recent advances and technological developments, which are of direct relevance to the Energy sector and in particular to the Refining and Petrochemicals sector. CHT organised following ACMs/ webinars since the last edition of the CHT News Byte and the major takeaways from the above events have been captured here for ready information;

1. ACM on "Best Inspection Practices of Refineries, Petrochemicals, Oil & Gas Installations and Pipelines"
2. ACM on "Best Procurement Practices for Refineries"
3. ACM on "Compressed Bio- Gas"
4. Webinar on "Crude Oil to Chemicals"

Meeting of the Working Group on Refineries (WG) was held at CHT under the chairmanship of Smt. Sujata Sharma, JS (M&OR), MoP&NG. The WG reviewed Refinery Performance w.r.t. Crude Throughput, Distillate yield, Operational Availability (OA), Specific Energy Consumption (EII & MBN), Process Utilization (PU), water consumption, etc. CHT shared the details of the shutdown plan of PSU refineries during 2023-24 as well as the plan for 2024-25. WG also discussed issue of sharing of intermediate streams by refineries, which is rendered unviable due to the dual tax regime of VAT and GST.

CHT celebrated World Environment Day on 5th June in which various activities were organised. International Day of Yoga was also celebrated with participation of all officers and staff.

CHT has proposed to organize 27th Energy Technology Meet in 2nd fortnight of November 2024 in association with IOCL and the approval is awaited from MoP&NG shortly.

CHT is committed to improve its services for the stakeholders and solicit your suggestions in this regard.

(Rajesh Agarwal)

Executive Director (Act. I/C), CHT

## ACM on “Best Inspection Practices of Refineries, Petrochemicals, Oil & Gas Installations and Pipelines”

**Associate organizer:** HMEL, Bhatinda

**Date:** 24-25 April 2024

**Venue Location:** Club House, HMEL Township

**Total Participants:** 110

**Participating companies:** IOCL, BPCL, HPCL, EIL, GAIL, Nayara, NRL, MRPL, BPCL R&D, CPCL, Kinben Innovation Pvt. Ltd., TCR, Petrobot Technology Pvt. Ltd., Alleima India Pvt. Ltd., HTRI India, Detect Technologies Pvt. Ltd., Ami Polymers, etc

**Total No. of paper presented:** 36 presentations

**Topics covered:** Corrosion Simulation and Assessment Studies of Gas Pipelines, Methodology adopted for salvaging the Ethylene Furnace radiant tubes, Accelerated corrosion of stabilizer overhead

circuit and its mitigation measures in CCRU, Ultrasonic Inspection of Austenitic welds, Managing Microbiologically Influenced Corrosion (MIC) in Oil and Gas Pipelines, corrosion in Naphtha handling systems, Case study on evaporator tube failure in HRSG, Fitness for service an essential for AIM and life expansion, On-stream Robotic inspection of live storage tanks, Unusual Failure in Boiler Water wall tube, Inspection of Fired Heater System, Avoid CUI in low temperature lines of Safety Insulation, RCA of joint failure in Reformer inlet line in new HGU, Digital initiatives and best inspection practices, Corrosion of Vent Gas circuit in Regeneration section of CCR, No Inspection- Use of Teflon TM Coatings For The Petroleum Industry, HIC in Carbon Steel CBD Vessel due to Metallurgical Anomaly, etc.



### Key takeaways:

- Accelerated Corrosion of Stabilizer Overhead Circuit in CCRU - Chlorination agent (PCE) dosing rate in CCR unit shall be controlled.
- Naphtha Handling System- Post revamp and due to Stabilizer limitation, excess Naphtha was bypassed directly to tank without proper treatment. This has caused corrosion in downstream piping and storage tank due to free water and H<sub>2</sub>S/Mercaptans carryover.
- Failures in vent gas circuit of CCRG - Heat tracing leaks and insulation damages shall be included in piping external inspection checklist.
- Evaporator Tube Failure in HRSG- Under deposit corrosion at tube internal due to high phosphate concentration in the dosing. Boiler Water chemistry limits shall be strictly adhered.
- Asset Integrity through digitalisation- IOW dashboard are essential. Auto generated heat map report of reformer tube survey data for clarity & attention (Formulae based factoring temp. correction).
- Gold cup survey + thermal imager comprehensive survey employed to cross-check current efficacy of TWT monitoring.
- Asset Integrity Management for Run length Improvement- Erosion-prone zone additional protection for FCCU RR - New cyclones were provided with additional ARL lining on cyclone volute & dip leg conical portions. Additional protection extended the life of cyclone without any repairs to 8 years.
- Non-Piggable Under Ground Pipeline Inspection using Phonon Diagnostics Technology (PDT)- The principal purpose of PDT is to identify all different types of Defects (corrosion, crack-like and anomalies). Defects with size less than 10% are not included in defect list.
- Unusual Failure In Boiler Water Wall Tubes (SA 192) In Thermal Power Station- While Approving/ planning for OLS clamp in Boilers or any other equipment, risk of injection material getting introduced to system.

# Activity Committee Meet (ACM) on "Best Procurement Practices For Refineries"

**Associate organizer: Mangalore Refinery And Petrochemicals Limited.**

**Date:** 8 - 9th May, 2024

**Venue Location:** The Ocean Pearl, Mangaluru

**Total Participants:** 100+

**Participating companies:** IOCL, BPCL, HPCL, GAIL, NRL, MRPL, ONGC, OMPL, ISPRL. The event was also attended by government officials from the Government e-Marketplace (GeM), distinguished chief guests Mr. Sanjay Aggarwal of the Ministry of Finance and Mr. Mrityunjay Jha from MoP&NG.

Total No. of paper presented & panel discussions: 19 presentations in 5 technical sessions & one panel discussion

Topics covered:

Effective procurement practices / Systems. Development & Improvement of Procurement Systems: Digitalization, E-Procurement Platforms, Data Analytics Materials Supply Chain Challenges faced during exigencies (case studies, how it was overcome) Ensuring Uninterrupted Refinery Operations (Strategic Stockpiling, Emergency Procurement Protocols, Supplier Diversity, Collaboration) Strategic Sourcing, Indigenization efforts (Skill / vendor Development, Infrastructure Development, Ease of Doing business) Governing Laws & Guidelines, Technology Utilization & challenges etc.



## Key Takeaways:

- Governing Laws & Guidelines
  - Adherence to the Constitution of India (Article 299) and laws such as the Competition Act 2002, IT Act 2000, and others.
  - Guidelines from GFR 2017, CVC, GeM, and sector-specific manuals like C&P Manual.
- Technology Utilization
  - Use of e-procurement systems, vendor portals, e-EMD process, and digital signatures.
  - Implementation of SAP, M-Junction, AAROHAN, and RPA for automating tasks.
- Best Practices:
  - Vendor Diversification: Ensuring at least two vendors for bulk chemicals from different manufacturers.
  - Inventory Control: Utilizing Annual Rate Contracts (ARCs) for bulk chemicals and routine goods to manage inventory effectively.
  - Contract Duration: Revising contract lengths based on market conditions to address challenges like those experienced during the Covid crisis.
  - Local Vendor Engagement: Procuring non-critical, routinely used goods from local vendors

to support local businesses and ensure timely availability of goods

These practices aim to optimize procurement processes, reduce costs, and support local economies.

- Challenges :
  - Inventory Management: Managing inventory levels effectively to optimize resources
  - Procurement through GeM: Increasing procurement activities through the Government e-Marketplace (GeM) while addressing its unique challenges
  - Non-moving Spares: Reducing or optimizing the inventory of non-moving spares to prevent stockpiling
  - Vendor On boarding: Creating a common data sharing platform for new vendors on boarded for critical items

The challenges emphasize the need for efficient inventory control, digital platform utilization for procurement, and streamlined vendor management processes. There is a need for strategies like Just-In-Time (JIT) delivery systems and industry standardization to address these challenges.

- Way Forward :

- Collaboration: Working together with other refineries for common spares management and contracts
- Inventory Management: Implementing just in time (JIT) delivery and sharing critical spares among peer companies.
- Support Systems: Utilizing in-situ support from OEMs for overhauling of spares and creating a

common platform for knowledge sharing.

- Indigenization: Focusing on local manufacturing for high-value imported items and keeping updated with government guidelines.

These points aim to improve procurement processes, reduce costs, and support domestic manufacturing

## Activity Committee Meet (ACM) on “CBG”

**Associate organizer:** HPCL-Biofuels

**Date:** 6-7 June 2024

**Venue Location:** Radisson Blu, Bareilly

**Total Participants:** 80

**Participating companies:** IOCL, BPCL, HPCL, GAIL, Nayara, Growdiesel, GPS Renewables, PPAC, TERI, CEEW, PRESPL, IBA, etc.

**Total No. of paper presented:** 24 covered in 6 sessions including visit to HPCL CBG plant at Budaun.



**Topics covered:** Overview & Emergence of CBG business presented by CHT, Policy framework for CBG, CBG CGD Synchronization Scheme, Challenges in feed stock sourcing supply chain & Storage philosophy, Technical presentation on Microbiology, Challenges & way forward for Bio Gas Quality parameters, Digester & GAS Processing section, Manure & By product valorization, Original Equipment Manufacturer's outlook for critical CBG plant equipment like Shredder, Screw presses and CO2 Capture in Gas Purification System.

### Key takeaways

India has set a target to increase the share of gas in energy consumption from the current 7 per cent to 15 per cent by 2030. According to the PPAC, the country's gas production stands at 29,769 million

metric standard cubic metres (MMSCM), while consumption is 55,256 MMSCM, indicating a significant shortfall of 25,488 MMSCM. This constitutes 46.12 per cent of the total consumption, which is met through imports. Compressed biogas (CBG), as a domestic renewable energy resource,

holds substantial promise to bridge this gap and achieve the country's clean energy objectives.

Basis the experience shared by various Project Proponents and other stake holders involved in setting up of CBG plants where Gas production has commenced, need was felt to initiate collaboration on following key aspects:

- Evaluation of standards / specs for CBG line of business to meet statutory requirements
- Relook on Material of Construction and Package design to optimize Capex cost
- Increase yield efficiency in Digesters / Gas Processing Section
- Improve CBG process to lower energy consumption foot print in perms of per NM3 of Raw Bio Gas
- Explore direct connect of Farm/ Farmer to CBG plant schemes, where farmer can be benefitted as initiator of capturing of ambient CO2 and supplier of Agro Residue

## Webinar on "Crude Oil to Chemicals" on April 25th , 2024

Shri R.C Agarwal, ED-CHT, welcomed all the dignitaries & participants and highlighted the demand pattern of petroleum products and how standalone COTC technologies can be economical in comparison to integrated petrochemical configuration. ED-CHT also highlighted that in energy transition scenario, the refining capacity must evolve to match a shift in product mix and to meet petrochemical demand. Refiners will need to find ways to make much less gasoline, marginally less diesel, and more jet fuel and petrochemicals.

During the webinar, speakers from six organizations, namely CHT, S&P Global, Lummustech, M/s Axens, Reliance Industries, and IOCL, shared their valuable insights and experiences regarding the virtues of Crude Oil to Chemical in the realm of the emerging petrochemical technologies and demand. The session

covered topics such as "Introduction of COTC", "Position of India in Global Market", "Innovative Pathways for COTC", "India's Self-reliance in Chemical Sector and "New feedstock availability and Its Management" which garnered significant attention from the participants.



## Call for Proposals for R&D and Energy Domain on Manthan Platform

On 26<sup>th</sup> June'2024, CHT has floated EOI for proposals under R&D and Energy domain (Earlier Managed by

PCRA) areas. The proposals can be submitted on Manthan platform or CHT website. The last date for submission of proposals is 30<sup>th</sup> Sep'2024.

## Scheme for providing Financial assistance to Compressed bio Gas (CBG) producers for procurement of biomass aggregation machinery (BAM)

BAM scheme portal was opened between 1st April 2024 and 30th April 2024 for the submission of applications from CBG producers for procurement of BAM sets. Total 15 nos. of applications were received on the portal. Applications are reviewed by three

meetings of the Project Appraisal Committee and qualifying applications are approved by the Project Approval Board of the scheme. Total fund Sanctioned is Rs. 29.09 Crore.

## 22<sup>nd</sup> meeting of the Working Group on Refineries

The 22<sup>nd</sup> meeting of the Working Group (WG) was held on 24<sup>th</sup> April 2024 at CHT office, Noida. The meeting was chaired by Smt. Sujata Sharma, Joint Secretary (M&OR), MoPNG. At the outset, ED CHT welcomed the Chairperson & all the participants and CHT made a presentation on the following salient points Review of Refinery Performance Crude Throughput, Distillate yield, Operational Availability (OA), Specific Energy Consumption (EII & MBN), Process Utilization (PU). CHT also presented data on streams currently being shared as well as the potential for sharing in future. The stream sharing is rendered unviable due to the dual tax regime of VAT and GST. While major refinery products

fall under the state's VAT regime, GST is levied on intermediate streams resulting in the non-availability of Input Tax Credit (ITC) on GST. CHT also shared the details of the shutdown plan of PSU refineries during 2023-24 as well as the plan for 2024-25. During Working Group Meeting, the targets for CO2 reduction for achieving scope-1 and 2 Net zero were also shared by refineries. Chairperson advised that the details of their yearly / monthly action plans need to be shared amongst OMCs and It was decided to further discuss the Net zero action plans of OMCs in the next meeting of the WG. The meeting ended with the vote of thanks to the chair.

## GTE Proposals Processed from April to June 2024

CHT received a total of 25 proposals from Oil & Gas PSUs (BPCL: 03, CPCL: 07, HPCL: 04, IOCL: 10, NRL: 02) seeking CHT's recommendation for GTE.

Out of these, 5 proposals were withdrawn, and 2 were returned to the respective companies with comments.

The remaining 18 proposals were forwarded to MoPNG with technical recommendations for GTE approval. Currently, there are no proposals under review.

**Essentiality Certificates** During the same period, we received and processed 2 applications for Essentiality Certificates.

## हिन्दी कार्यशाला

उच्च प्रौद्योगिकी केन्द्र में 28.05.2024 को हिन्दी कार्यशाला का आयोजन किया गया जिसका शीर्षक भारत सरकार की राजभाषा नीति था। इस अवसर पर उपस्थित मुख्य अतिथि के तौर पर उपनिदेशक (हिन्दी), पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, श्रीमति शोभना श्रीवास्तव जी का स्वागत श्री राजेश अग्रवाल जी ने पौधा देकर स्वागत किया। श्रीमति शोभना श्रीवास्तव जी ने भारत सरकार की राजभाषा नीति के बारे में बताया साथ ही हिन्दी में काम करने की प्रेरणा दी। मुख्य अतिथि श्रीमति शोभना श्रीवास्तव जी तथा श्री राजेश अग्रवाल, कार्यकारी निदेशक, महोदय द्वारा हिन्दी कार्यशाला का समापन समारोह किया गया और सभी प्रतिभागियों की उपस्थित होने पर धन्यवाद किया।



## विश्व पर्यावरण दिवस – 2024

पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय, भारत सरकार के दिशानिर्देशों के अनुपालन में, उच्च प्रौद्योगिकी केंद्र, ओआईडीबी भवन में 5 जून 2024 को विश्व पर्यावरण दिवस मनाया गया। 5 जून 2024 को विश्व पर्यावरण दिवस के अवसर पर श्री राजेश अग्रवाल, कार्यकारी निदेशक (कार्यवाहक, प्रभारी), सीएचटी द्वारा ओआईडीबी भवन के उद्यान क्षेत्र में वृक्षारोपण किया गया।

सीएचटी अधिकारियों और संविदा कर्मचारियों ने मिलकर ओआईडीबी भवन के उद्यान क्षेत्र और गौर सिटी के पास हिंडन रिवर बैंक में पौधे लगाए। विश्व पर्यावरण दिवस के प्रति जागरुकता फैलाने के लिए जगह-जगह बैनर लगाए गए और लोगों को पर्यावरण बचाने की जानकारी दी गई।



## दसवाँ अंतर्राष्ट्रीय योग दिवस – 2024

भारत सरकार के तेल एवं प्राकृतिक गैस मंत्रालय के दिशा-निर्देशों के अनुरूप उच्च प्रौद्योगिकी केन्द्र में दिनांक 21 जून 2024 को दसवाँ अंतर्राष्ट्रीय योग दिवस मनाया गया। इस अवसर पर कार्यालय के सभी अधिकारियों एवं कर्मचारियों ने सीएचटी कार्यालय की बालकनी में ही योगाभ्यास किया। जिसमें अधिकारियों एवं कर्मचारियों ने विभिन्न प्रकार की योग क्रियाएँ 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।

