

From the desk of the Executive Director



Esteemed Readers,

Greetings!!

It is time that as a responsible global citizen, we all must strive to achieve the common environment goals for this planet. Doing nothing is simply not an option. The focus therefore remains on accelerated energy transitions, the forces that could bring them about – whether from society, policy makers, technology, investors or the industry itself – and the implications that this would have for different parts of today's oil and gas industry. A collaborative effort towards greater integration, developing infrastructure and ensuring a conducive fiscal and regulatory landscape will be instrumental in attracting investments across the Energy sector. At Centre for High Technology, we continue to remain committed to playing a major role in the Indian Industry's Energy Landscape for oil & gas and renewable energy. Going forward, adoption of newer technologies to improve overall efficiency will be the key focus area for the sector.

In this pursuit, this edition of the CHT News Bytes highlights the major important meetings held i.e. Presentation of Swachhta Pakhwada Awards 2021 to Oil & Gas PSUs by Shri Hardeep Singh Puri, Hon'ble Minister of Petroleum and Natural Gas, Housing and Urban Affairs, Govt. of India; 41st Governing Meeting of CHT; 93rd Scientific Advisory Committee Meeting; Study Result Presentation to Secretary, PNG by M/s Solomon Associates for Refineries Performance Benchmarking Study – 2020 cycle; 2 nos. Virtual Activity Committee Meetings – Environment and Water Management and Hydroprocessing & Hydrogen Generation along with new Webinar series commenced in this quarter on Crude to Chemicals, Electrolyser, Bio-fuels; Meetings with various technology providers i.e. M/s Honeywell UOP, M/s Fortum Oyj, Finland, M/s Praj Industries, etc. in help achieving country's sustainability commitments and achieving Net Zero; EOI for Petrochemicals Benchmarking; Saksham Survey 2022; CHT's participation in the New Energy and Industrial Technology Development Organization (NEDO) India Hosted "India – Japan Hydrogen Seminar; Processing of 414/419 nos. proposals of Oil PSUs seeking relaxation for Global Tender Enquiry (GTE) for Tenders below Rs. 200 Crore, etc. This is to also inform all that the 25th Refining & Petrochemicals Technology Meet (RPTM) shall be held in Sept./Oct. 2022.

I am signing off with a firm belief that this festive period of Springtime shall usher colours of happiness, optimism, celebrations, joy, and many more pleasant things in our lives. My best wishes to all for the New year time across our country i.e. Gudi Padava, Navreh, Bohag Bihu, Boisakh, Ugadi, Puthandu.

Your views, suggestions and ideas to improve the CHT News Bytes further are solicited.

(Alok Sharma)
Executive Director, CHT

Swachhta Pakhwada – 2021 Award Distribution Ceremony



Shri Hardeep Singh Puri, Hon'ble Minister of Petroleum and Natural Gas, Housing and Urban Affairs, Govt. of India (seen in the centre) presented the Swachhta Pakhwada - 2021 Awards on 11th March 2022 to the winners at MoP&NG Shastri Bhawan, New Delhi. Also seen in the pic are Shri Pankaj Jain, Secretary, PNG, along with Award winners from IOCL, ONGC, HPCL & Shri Alok Sharma, Executive Director, CHT.



Shri Hardeep Singh Puri, Hon'ble Minister of Petroleum and Natural Gas, Housing and Urban Affairs, Govt. of India presenting the Swachhta Pakhwada - 2021 Award (1st Prize) to Shri Shrikant Madhav Vaidya, Chairman, IOCL.

Shri Hardeep Singh Puri, Hon'ble Minister of Petroleum and Natural Gas, Housing and Urban Affairs, Govt. of India presented the Swachhta Pakhwada - 2021 Awards on 11th March 2022 to the winners at MoP&NG Shastri Bhawan, New Delhi. Congratulating the winners and the participants of the event, Shri Puri said that among all the central programs, Swachhta is more than a scheme. It not only has the physical targets, but also it is a process aimed at generating higher consciousness about cleanliness. He said that the stakeholders in the oil and gas sector have captured this philosophy in their work and their premises have become top class. The Minister also lauded the sector for its contribution in the national economy. The Minister emphasized on making more efforts to make the country Atamnirbhar in the sector.

Swachhta Pakhwada was organised by Oil & Gas CPSEs, and attached offices of Ministry of Petroleum and Natural Gas during 1st -15th July 2021. Motivational events were organized 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.

A Committee was constituted by Ministry under the Chairmanship of ED, CHT, Deputy Director (E & S), MoP&NG and Members from CHT & PCRA to develop methodology, Index and to rank the performance on the basis of activities done. Based on their performance in the event, IOCL was ranked First, ONGC stood Second and HPCL came Third.

As a result of this initiative led by MoP&NG, more than 2 lakh hygiene kits, around 3 lakh masks and around 1.1 lakh eco-friendly bags were distributed. Around 1.3 lakh trees were planted and more than 7 thousand dustbins installed. During the Pakhwada, 140 plastic waste collection centres were set up and more than 4000 online internal & external competitions were organized which saw an active participation of around seventy thousand people.

41st Meeting of the Governing Council (GC) of CHT

The 41st Meeting of the Governing Council of CHT was held on 23rd March 2022 under the Chairmanship of Shri Pankaj Jain, Secretary, P&NG at MoP&NG, Shastri Bhawan, New Delhi. The meeting was attended by GC members from MoP&NG, viz., AS&FA, JS (GP & M), JS (R), OSD(IC) and JS (IFD); C&MD, HPCL; CMD, BPCL; Dir (R), IOCL; CMD, GAIL; CMD, EIL; Dir (Ops), OIL; Director, CSIR-IIP; MD, CPCL; MD (I/c), NRL; MD, MRPL and ED, CHT. Shri Alok Sharma, Executive Director, CHT, welcomed the Chairman & Members of the GC and other participants to the Meeting. Shri Alok Sharma, ED-CHT, made a detailed presentation on the progress and status of the following activities taken up by CHT.

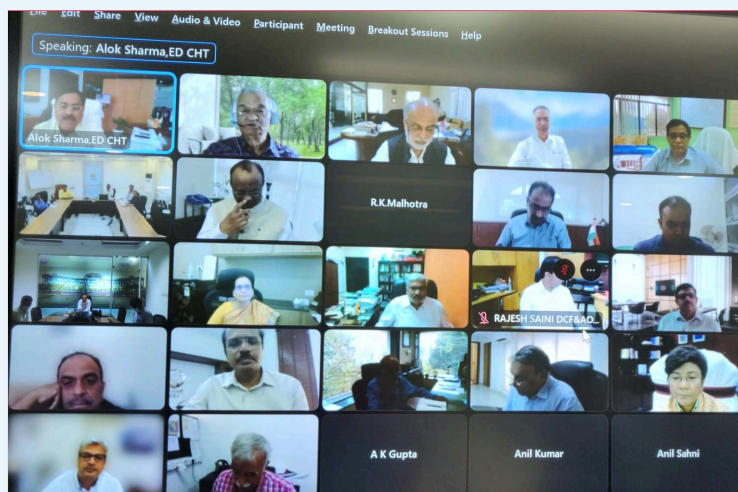
- Refinery Performance Improvement Programme (RPIP) (Phase-I & II) of PSU Refineries
- Performance Benchmarking Study of PSU Refineries by Solomon
- Feasibility Study for manufacture of Reference Fuel by EIL & IOC R&D

- MBN Roadmap and Actual Performance
- Petrochemicals Benchmarking Study
- Organisation of RPTM (ETM)
- Catalyst Manufacturing Unit in India
- Status on PM JI-VAN Yojana
- Energy Efficiency Improvement in PSU Refineries
- Treatment of Assets created under R&D projects subsequent to its closure
- Adoption of Annual Audited Accounts for Financial Year 2020-21 etc.

Secretary, PNG advised all refineries to speed up the Schemes under RPIP-I as well as expedite GTE clearance for RPIP-II. Deliberations also took place in the meeting for the Pricing formula for 2G Ethanol. It was also decided that IOCL shall take forward setting up Reference Fuel Production Facilities.

93rd Scientific Advisory Committee Meeting

Vide Gazette resolution no. R-22012/1/2013-OR-I/E-7712 dated 25th February 2022, the Scientific Advisory Committee (SAC) on Hydrocarbon of the MoP&NG was constituted for a period of three years with effect from 25th February 2022. Subsequently, 93rd 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 30th March 2022. Shri Alok Sharma, ED, CHT welcomed the Dr. Anil Kakodkar, Chairman, Shri Sunil Kumar, JS (R), other esteemed members of the SAC and special invitees. On this occasion, SAC remembered Late Prof. R. Kumar, an esteemed SAC member since October'2010 and paid respect by observing 2-minute silence in honour of him.



Dr. Anil Kakodkar chairing the 93rd SAC meeting held through virtual conference on 30th March 2022. Seen in the pic are Shri Sunil Kumar, JS (R), MoP&NG, Shri Alok Sharma, ED, CHT, and other esteemed members of the SAC along with special invitees.

Shri Alok Sharma, ED, CHT presented the terms of reference of the newly constituted Committee. Shri Sunil Kumar, JS(R), MoP&NG mentioned about the energy transition happening in the West vis-a-vis where we are. He sought the support of SAC in this regard. Chairman mentioned that we are passing through a very crucial phase of energy transition and challenges before India are probably very critical, more than any other country in the world, reason being we are fairly low in the development phase and we need to bridge the gap. He stated that we have to

tune in the transition in a manner that is consistent with the resource profile.

Against the EOI dated 8th December 2021 for call of proposals under the specifically mentioned areas, 16 nos. of proposals were received for funding from CHT/OIDB. These proposals were reviewed by CHT Review Committee through virtual meetings on 21st, 22nd & 23rd February, 2022. The Principal Investigators of respective project proposals made virtual presentation on their proposals to the Committee. The Committee shortlisted 9 proposals for presenting before Scientific Advisory Committee (SAC) on Hydrocarbon of MoP&NG, for its recommendation for CHT/OIDB funding.

During the 93rd meeting, SAC deliberated on nine new proposals, submitted for funding by OIDB. One new R&D project proposal technically recommended in 91st SAC meeting was also deliberated. SAC also had detailed review of the on-going R&D and HCF projects. SAC recommended to form two separate committees for the path forward for of 2 R&D projects. Further, SAC recommended the closure of 2 R&D projects. SAC also noted the progress of 4 commercial and 1 demonstration projects under PM JI-VAN yojana.

Working Group Committee on Crude Selection and procurement

EC in its 31st Meeting advised CHT to carry out a separate meeting with stake holders to deliberate on issues in lining up consultant for studying the crude selection and procurement. A meeting was organized on 16th November 2021 under the Chairmanship of Shri Sunil Kumar, JS(R), MoP&NG and senior representatives from the industry. Accordingly, an inter refinery committee was formed to review the existing crude selection and procurement procedure and suggest path forward to enhance flexibility and to make the system more agile in handling volatility and risk management. The Committee has submitted its draft report.

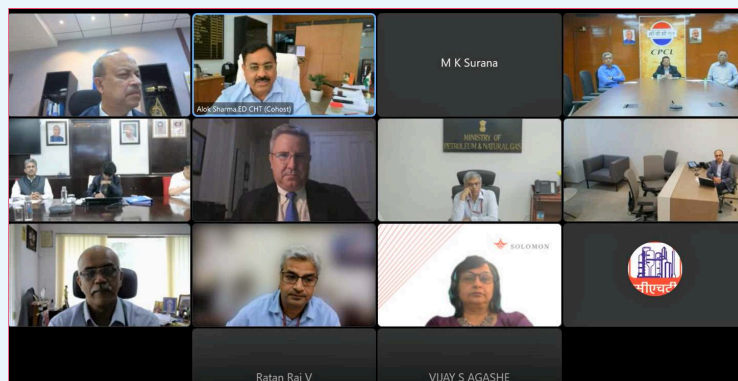
Petrochemical benchmarking

In line with refinery benchmarking studies, CHT is in the process of carrying out benchmarking of major petrochemical units of PSU's. A Committee comprising PSU representatives was formed to finalize the Terms of Reference (TOR) of EOI to identify potential consultants have been formed and draft EOI has been prepared. EOI shall be floated in April 2022 and the percentage reimbursement on the base fees for the participating companies in line with Refinery Benchmarking Study shall be deliberated in EC.

Executive Summary presentation to MoP&NG on Refinery Benchmarking Study Results by M/s Solomon Associates

M/s Solomon Associates presented the findings/ results of the Benchmarking study (CY2020) to the MoP&NG on 17th March 2022. The meeting was chaired by Shri Pankaj Jain, Secretary, PNG and attended by the top management of Oil companies. Shri Pankaj Jain enquired if the GC members were satisfied with the benchmarking process and whether it was helping the companies in evaluating their competitiveness and aiding improvements. All PSU's expressed satisfaction with the

benchmarking study and informed that they would continue the study to regularly assess the improvements in various KPI's.



New Energy and Industrial Technology Development Organization (NEDO) India hosted "India – Japan Hydrogen Seminar"

To commemorate the 70th Anniversary of the establishment of diplomatic relations between Japan and India, NEDO India under the Ministry of Economy Trade and Industry Japan hosted the India – Japan Hydrogen Seminar on 24th March 2022 in New Delhi.

In collaboration with TERI, the session addressed the enormous potential of hydrogen in India which will attract Japanese industries with advanced hydrogen technologies. The focus was on understanding the supply side. (e.g., competitive cost of hydrogen) and the demand side. (e.g., how much hydrogen will be used in Oil Refinery, Chemical, Steel, Power, Mobility industries).



The seminar was one of a series of events during “India-Japan Hydrogen Month”. During the Seminar, Shri Alok Sharma, ED, CHT presented a paper and remarked that the “The paradigm shift in the energy landscape is becoming clearer day by day with falling prices of Renewables. Hydrogen is emerging at the heart of decarbonization and is full of Opportunities.”

Eiji Ohira, DG, NEDO, said “Hydrogen is a key technology for carbon-neutral and Japan has been strongly promoting hydrogen and has just started market penetration, therefore, there is a need to enhance the application, improve technology. The goal is to develop a low-carbon energy system and scaling-up/integration with another energy system.

Yoshiro Kaku, Chief Representative, NEDO India said Japan's public and private sectors have long been engaged in hydrogen. NEDO also has been developing hydrogen energy technology almost since its establishment, with a history of around 40 years.

As a result of such efforts, Japan has developed various advanced hydrogen technologies, such as stationary fuel cells, FCVs, electrolyzers, hydrogen transport systems, hydrogen utilization in power plants and steel plants. Japan has world-leading hydrogen and ammonia technologies, and India has the world's highest-level hydrogen potential.

Activity Committee Meetings

Environment and Water Management

ACM on Environment and Water management was held on 25th January 2022 in association with MRPL. Shri M. Elango, ED, MRPL (Refinery) was the Chief guest for the meet. A total of 110 delegates participated in the ACM and sixteen presentations on various aspects of water and environment management were made by IOCL, BPCL, HPCL, CPCL, MRPL, NRL, Nayara Energy. The presentations were also there from HPCL R&D and BPCL R&D SBU too along with vendors i.e. EKI Energy Services Ltd., UOP, VA Tech Wabag Ltd. & EIL.

Refineries presented on key initiatives undertaken and case studies on ETP management, ZLD, SRU outages, handling public complaints, development of green hydrogen, case of high conductivity in treated effluents, sludge handling, on illuminating flare, trouble shooting of excessive foaming in amine absorbers, road map for net Zero emissions and trouble-shooting of high-pressure drop-in RO. HPCL and BPCL R&D presented on improving effluent quality on addition of bio additive, HP Gelators and HP SOS - a potential solution for oil spillage and recovery, vapour recovery system for petrol station (From concept to Commercialization).

Hydroprocessing & Hydrogen Generation

ACM on Hydroprocessing & Hydrogen Generation was conducted virtually on 25th Feb'2022 in co-ordination with IOCL - Mathura Refinery. Shri Alok Sharma, ED-CHT presented the theme address and Shri A.K. Maiti – Executive Director & Refinery Head, IOCL-MR delivered the inaugural address. Shri Rahul Srivastava, DGM (TS), IOCL-MR welcomed all the dignitaries and participants. Approx. 125 delegates from refineries of IOCL, BPCL, HPCL, MRPL, CPCL, BORL, NRL, Nayara Energy; R&D centres of IOCL, BPCL & HPCL; CSIR-IIP; EIL and private companies viz. Axens, Haldor Topsoe, &

Honeywell-UOP participated in the ACM.



Hydroprocessing has assumed lot of importance in view of the stringent quality specifications under BS-VI. For Hydrocrackers and Hydroprocessing units to run uninterruptedly, it is imperative that HGUs run smoothly. So HGU along with Hydroprocessing has been included from 2019 onwards. Govt. of India has announced “Green Hydrogen Policy” recently on 17th February 2022, focusing on India as Green Hydrogen Hub and exporter of Green hydrogen. Aptly, for this ACM, Green Hydrogen technology implementation plan in the refineries was also included.

A total of 17 presentations (3 from PSU R&D Centres, 3 from Technology Licensors, 1 from EIL & 10 from PSU Refineries) were made during the ACM. All the presenters / speakers shared their case studies, learnings, initiatives & new developed technology in the area of Hydroprocessing & Hydrogen Generation and best practices adopted. Post completion of all the presentations, the key takeaways were summarized by ACM Convener followed by vote of thanks.

CHT WEBINAR SERIES

As a part of new initiatives, CHT has commenced Webinar series on the new focus areas which are very pertinent to the Hydrocarbon Industry. The Webinars organized in this quarter were on the following topics:

1. Crude to Chemicals
2. Electrolyser
3. Bio-fuels

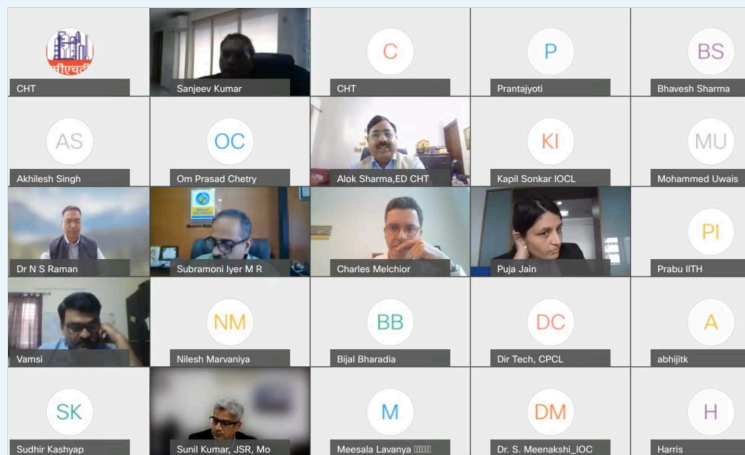
The duration of each Webinar was kept as 2/3 hours. The Webinar series was conducted by various experts of the Industry & Academia. These webinars shall result in bring good opportunities for sharing & networking and discussing new insights.

A) Crude to Chemicals

Online Webinar on Crude to Chemicals was organized on 18th January 2022. Shri Sunil Kumar, JS (R), MoP&NG, delivered the inaugural address and Shri Alok Sharma, ED, CHT presented the welcome address. Speakers from five organisations viz. M/s KBR Technologies, M/s Honeywell UOP, M/s CLG (Chevron Lummus Global) & M/s Axens, gave presentations on their various technologies developed. The technology selection mainly depends on the key factors such as business strategy, increased petrochemicals demand, infrastructure, economics, reduction in carbon footprint, process fuel on demand etc.

B) Electrolysers

Online Webinar on Electrolysers was organized on 8th February 2022. Dr. N.S Raman, Director, CHT welcomed all the dignitaries and participants. Shri Sunil Kumar, JS (R), MoP&NG, delivered the inaugural address and Shri Alok Sharma, ED, CHT presented the welcome address. Speakers from five organisations viz. M/s McKinsey, M/s Thyssenkrupp, M/s Ohmium, M/s FEST, & M/s Halder Topsoe gave presentations on the latest developments in the area of Electrolysers.

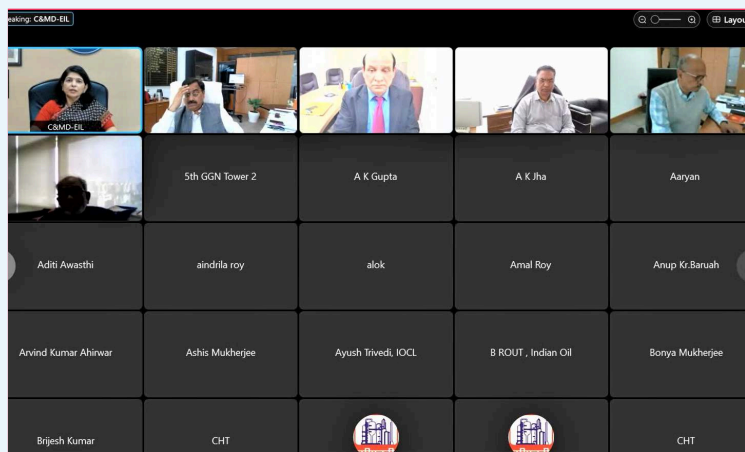


C) Webinar by M/s KBR on Gasoline maximisation (MAX - ISOM™) and Solid Acid Alkylation Technology (K-SAAT™)

A webinar was arranged by CHT on 9th February 2022 on KBR's futuristic solutions for Gasoline blend components and their suitability for the Indian Gasoline blending scenario. Recent developments with Ethanol blending in Gasoline open further opportunities for refineries in widening their blending baskets.

D) Biofuels

Webinar on Biofuels was organized on 4th March 2022. Dr. N.S Raman, Director, CHT welcomed all the dignitaries and participants. Shri Alok Sharma, ED, CHT delivered the welcome address and Smt. Vartika Shukla, CMD, EIL, presented the inaugural address. Speakers from M/s LanzaTech, M/s Praj Matrix- R&D center, M/s Axens, M/s Fortum India, & M/s Clariant gave presentations on the latest developments in the area of Biofuels.



Smt. Vartika Shukla, CMD, EIL presenting the Inaugural address during online CHT webinar on Bio-fuels on 4th March 2022.

CHT Meeting with M/s Honeywell UOP

CHT interacted with M/s Honeywell UOP on 23rd March 2022 for discussions on how Honeywell can work with the MoP&NG goals regarding the country's sustainability commitments and work towards technologies solution provider for achieving Net Zero. The key areas where UOP has successfully developed innovative technologies is based on Industry needs which include Green Hydrogen, Blue Hydrogen, CCUS (Carbon Capture Utilisation and Sequestration, Refining, Petrochemicals, Gas Processing, Energy Storage, Plastics recycling, Catalysts, Adsorbents etc.

CHT Meeting with M/s Fortum Oyj, Finland

Ms. Heli Antila, Vice President, Bio-based solution Fortum Oyj, Finland visited CHT office on 21st March 2022. She interacted with Shri Alok Sharma, ED, CHT; Dr. N.S. Raman, Director, CHT and other senior CHT officials. During the meeting, she apprised CHT about the Fortum's goal towards securing a fast and reliable transition to a carbon-neutral economy by providing customers and societies with clean energy and sustainable



Shri Alok Sharma, ED, CHT (standing 3rd from left) interacted with Ms. Heli Antila, Vice President, Bio-based solution Fortum Oyj, Finland & her team at CHT office on 21st March 2022. Also seen in the pic are Dr. N.S. Raman, Director, CHT (second from left) & Shri S.K. Varshney, Joint Director, CHT.

solutions. She also apprised CHT on the latest developments in the Bio-fuel manufacturing including value addition to many of the by-products produced in the 2G ethanol plants.

CHT Meeting with M/s Praj Industries

Dr. Pramod Chaudhari, Chairman, Praj Industries visited CHT office on 21st February 2022 to apprise regarding the new developments in M/s Praj Industries with respect to Bio-ethanol production including lignin valorization. On this occasion, Shri



Shri Alok Sharma, ED, CHT interacted with Dr. Pramod Chaudhari, Chairman, Praj Industries at CHT office on 21st February 2022.

Alok Sharma, ED, CHT honoured Dr. Pramod Chaudhari, for being the recipient of the Lifetime Achievement Award from the prestigious Holmberg Award at Washington D.C., U.S.A.

Saksham-2022

CHT organizes Furnace efficiency survey and STEAM leak survey (Saksham) across all refineries in alternate years. As part of Saksham 2022, steam leak survey has been carried out at all the Indian Refineries (except RIL) in two phases during 14-16th March and 21st-24th March 2022. The steam audit survey was conducted by teams which will have three to five members including the team leader cum coordinator from the same Refinery and two to four external members from the Refinery/CHT. The Saksham Awards-2022 shall be presented in the upcoming RPTM.

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

A total of 414 / 419 proposals were processed by CHT, received from various OPSUs i.e. M/s IOCL, BPCL, MRPL, CPCL, HPCL, NRL, GAIL, BCPL for seeking relaxation for GTE for tender below 200 Cr., till the month of March 2022. 5 nos. proposals are pending for clarification from PSUs.

73rd Republic Day Celebrations in CHT

The 73rd Republic Day celebrations were organized on 26th January 2022 in CHT office. Shri Alok Sharma, Executive Director, unfurled the Indian Tricolor in the presence of CHT officials and security guards. On this occasion, Shri Alok Sharma, spoke about the history of Republic Day and the importance of the Constitution of India in today's times.

He reiterated CHT's commitment in the Energy Sector of our country and pledge to dedicate our services for the progress of



Glimpses of 73rd Republic Day Celebrations in CHT

the Nation. Shri Alok Sharma, Executive Director, CHT greeted all the officials present on the occasion of the 73rd Republic Day.

International Women's Day Celebrations at CHT office

Centre for High Technology celebrated International Women's Day-2022 on 8th March 2022. International Women's Day is a global day celebrating the social, economic, cultural and political achievements of women. The day also marks a call for action in accelerating women's equality. On this occasion, Centre for High Technology organised a Workshop on "Growing Significance of Women's Role in Corporate Leadership". All officials at CHT whole-heartedly participated in the Workshop and the discussion spanned across several areas, including education and skill development, the need to strengthen the ecosystem for bringing in diversity, creating a culture of learning, psychological well-being and the scope of nurturing more women in becoming financially independent. This celebration of International Women's Day reiterated the growing significance of a woman in building a strong foundation in our society.



Glimpses of International Women's Day Celebrations at CHT



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