



Delivering
Happiness



MUMBAI REFINERY

CI NATIONAL AWARD FOR

EXCELLENCE IN ENERGY MANAGEMENT

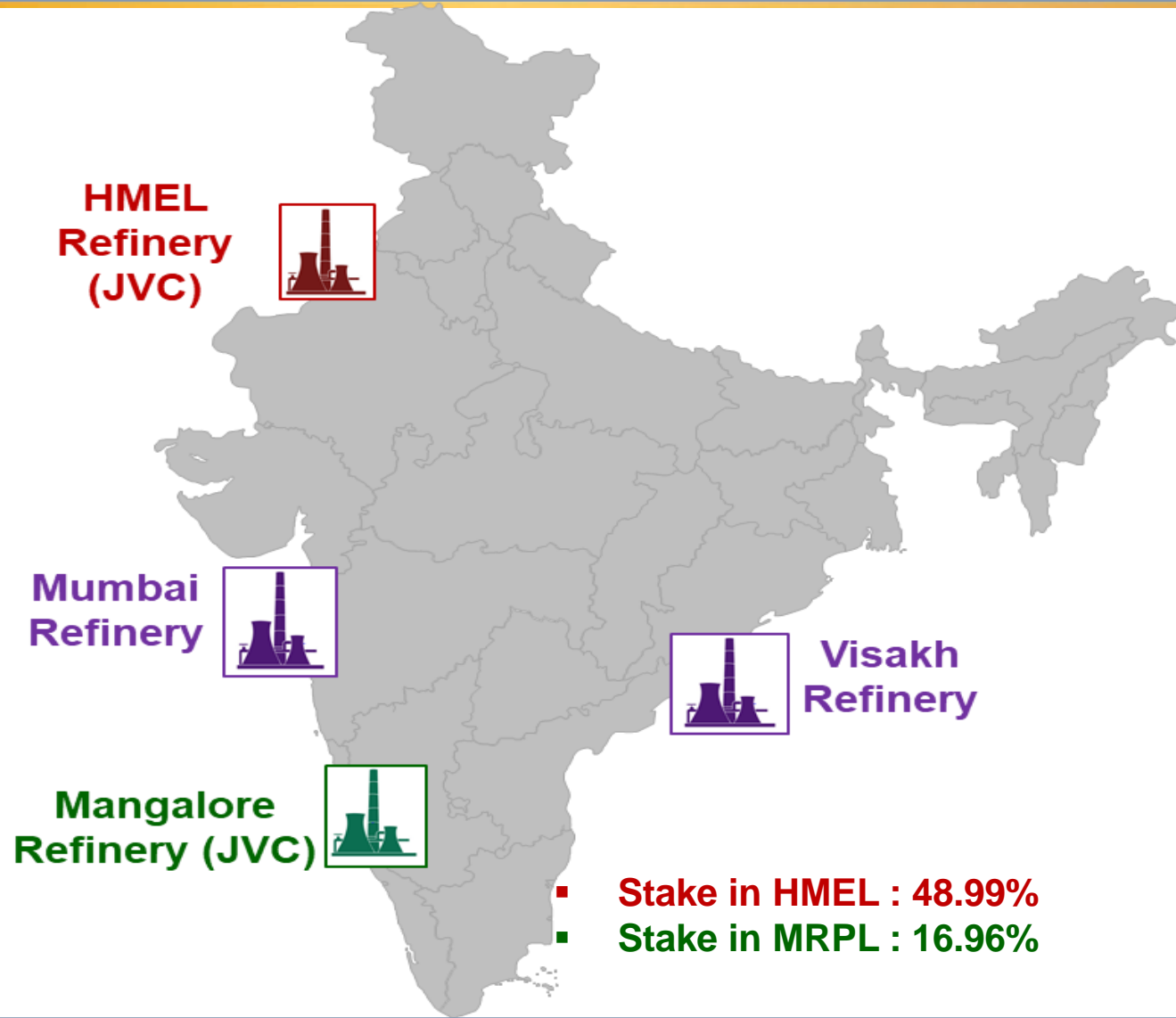
Presented BY

Aditi Sharma (Assistant manager – Technical)

Sharad Gupta (Chief Manager – Technical)

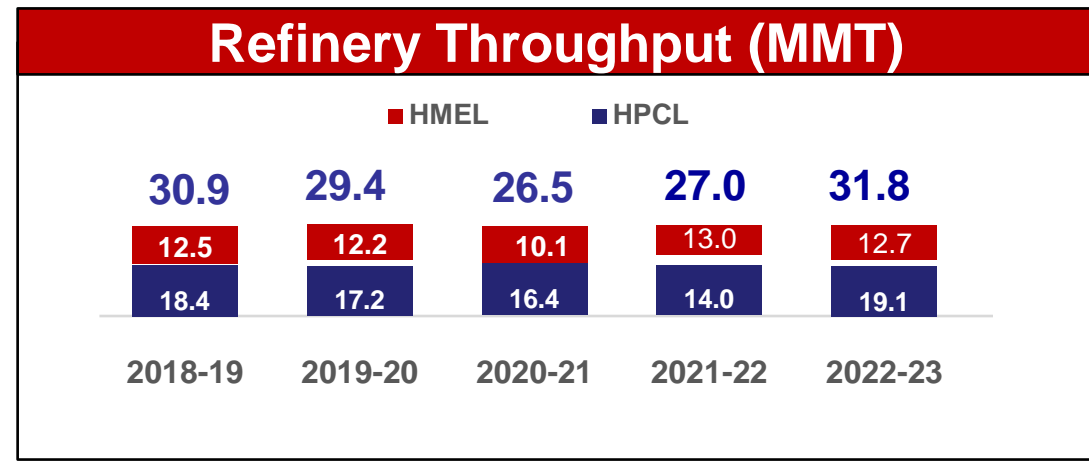


HPCL- Refining Capacity



Refining Capacity in MMTPA	
Mumbai	9.5
Visakhapatnam	13.7
Total HPCL	23.2
HMEL (JVC)	11.3
Total (Marketing Rights)	34.5
MRPL (JVC)	15.0

Lube Refinery : 428 TMTPA

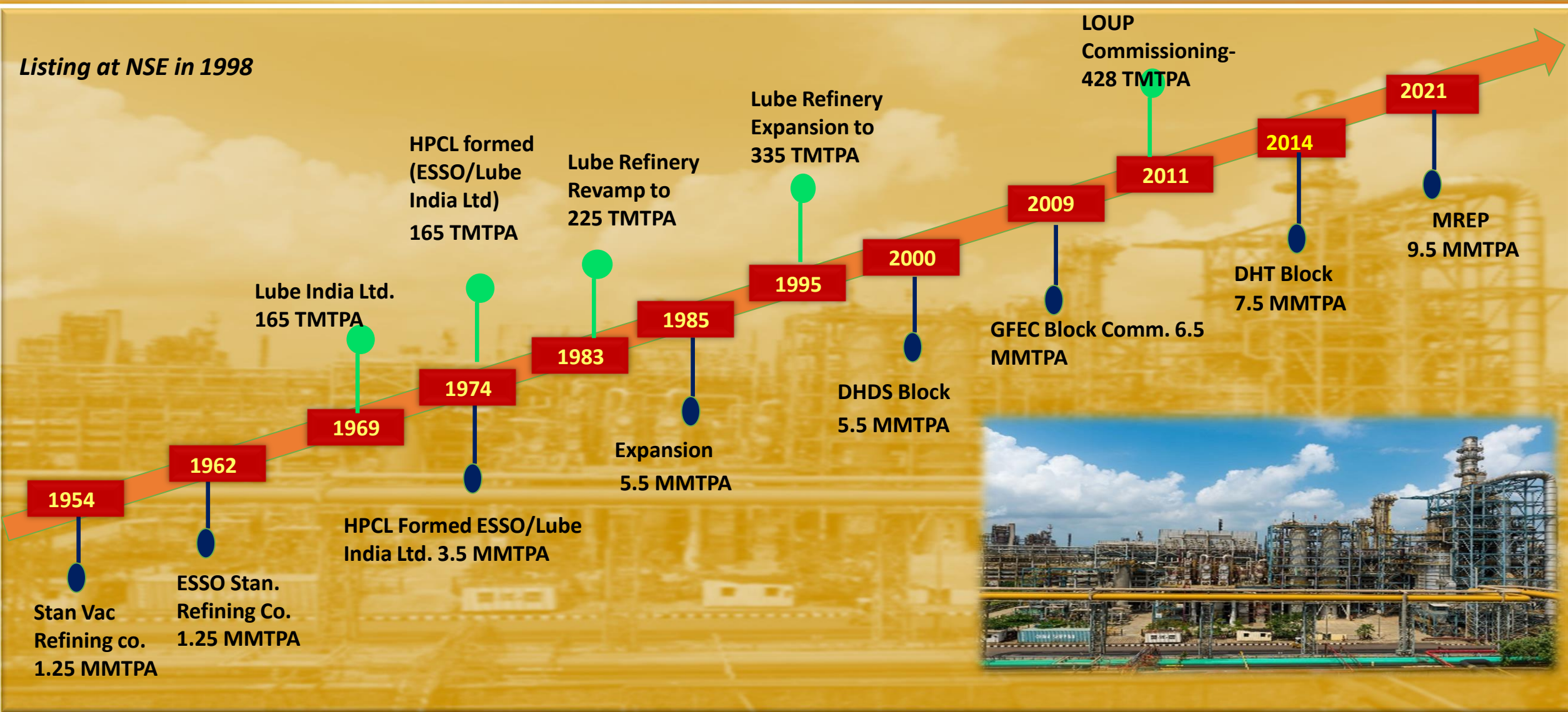




Mumbai Refinery Growth

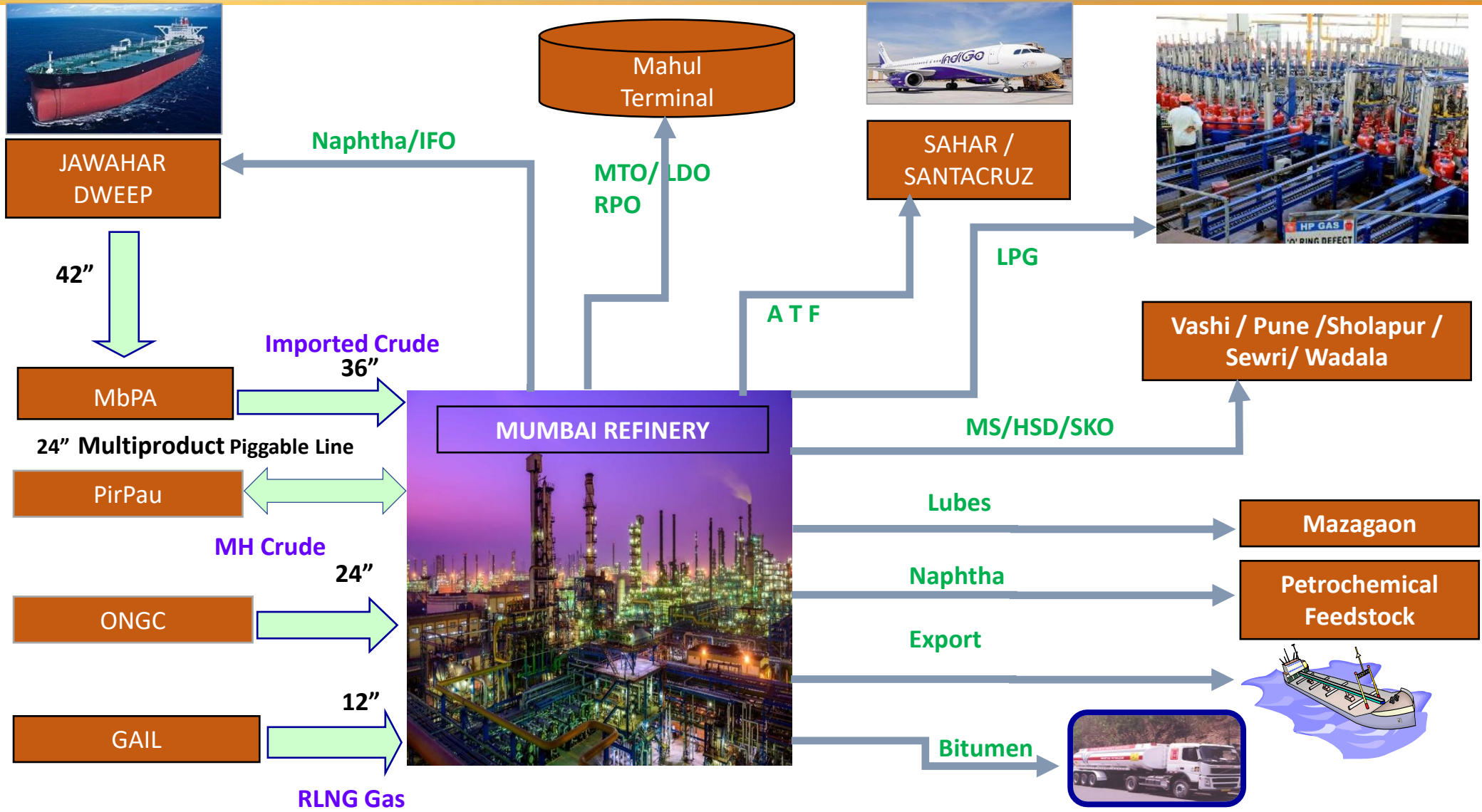


Listing at NSE in 1998





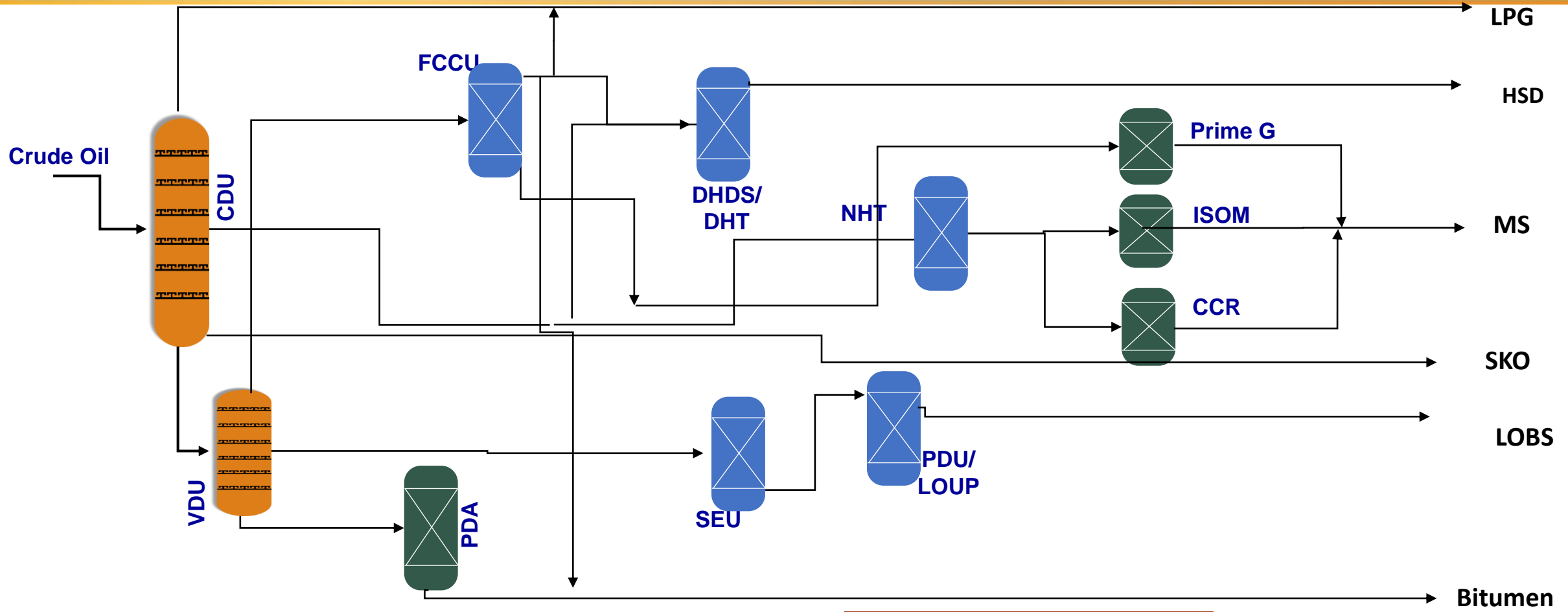
Crude Receipt & Product Shipment



> 95% products shipment thru pipelines



Mumbai Refinery Process Flow



Fractionation

- Atmospheric distillation
- Vacuum Distillation

Conversion

- Cracking (FCCU)
- Catalytic Reforming
- Isomerization

Treating

- Hydro treating (DHDS, NHT)
- Solvent extraction
- Solvent dewaxing



Energy Performance Metrics



F&L

- Derived number from material balance of Feed vs Products & change in ISD
- Crude Intake = Production \pm ISD (Inventory) + Fuel & Loss
- Expressed in wt% Crude

MBN

- $MBN = MBTU / BBL / NRGF$
- Specific Energy Consumption
- Accounts for variation in the refinery complexity

EII

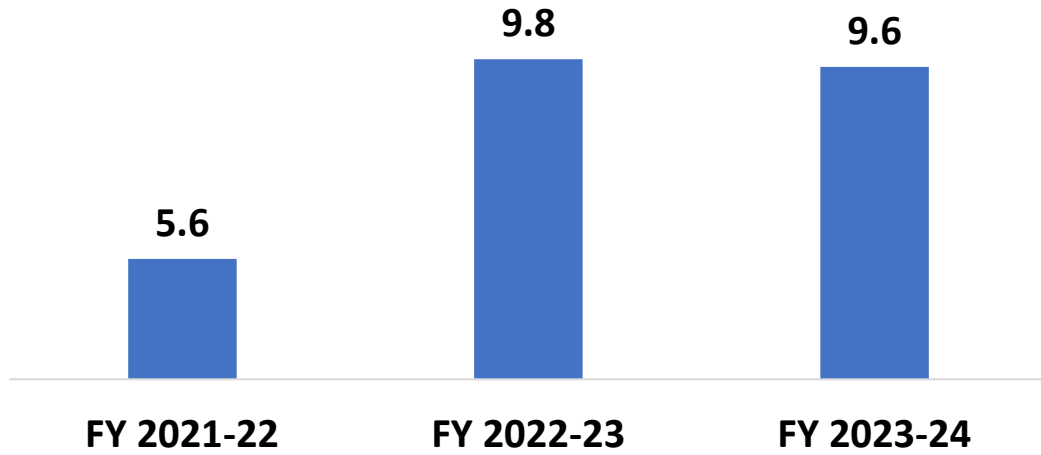
- Developed by Solomon Associates
- Benchmarking Actual to that of Standard Energy
- $EII = (\text{Actual Energy} / \text{Standard Energy}) \times 100$



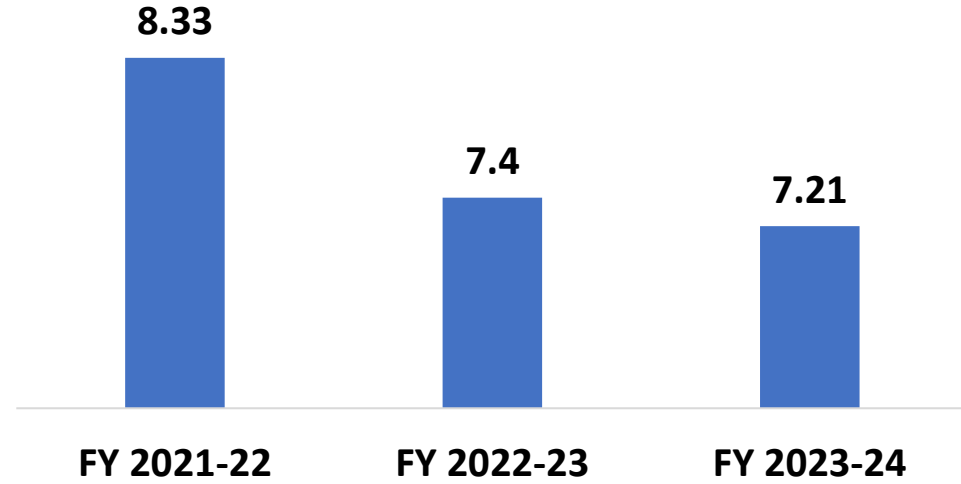
Historical Performance



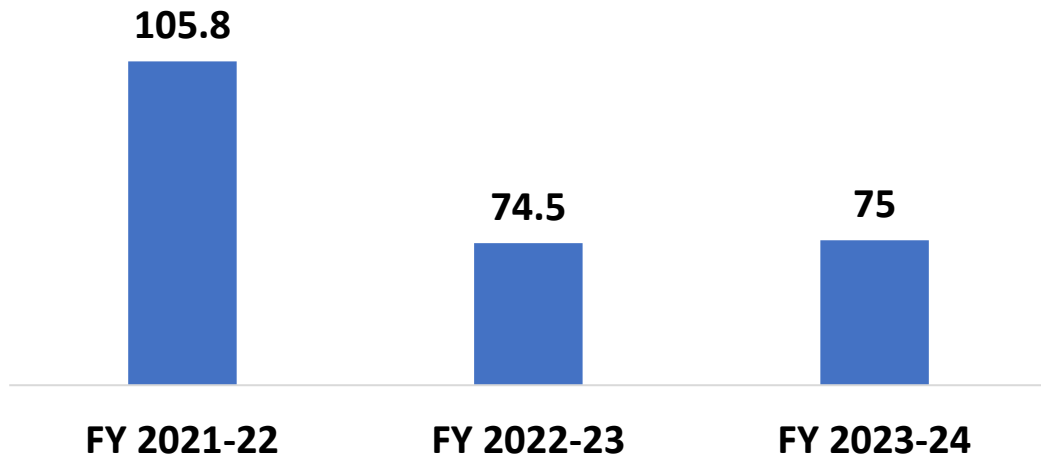
Crude Processing, TMT



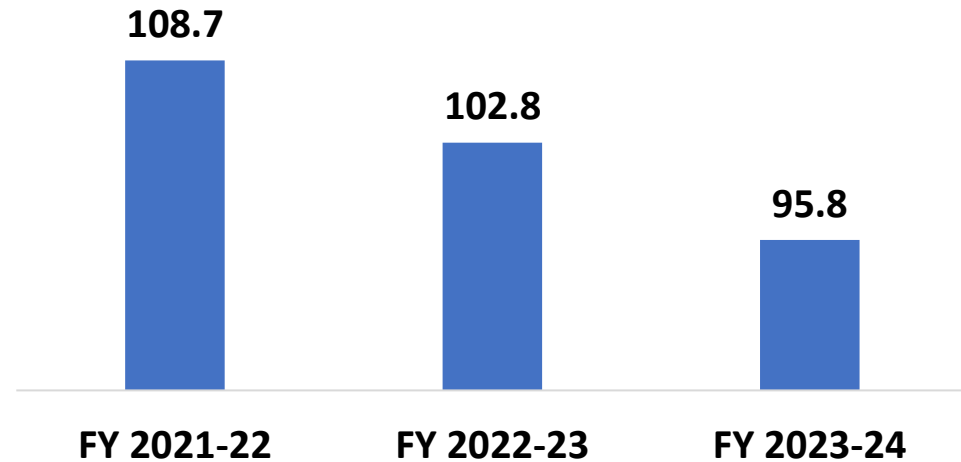
Fuel & Loss, Wt.%



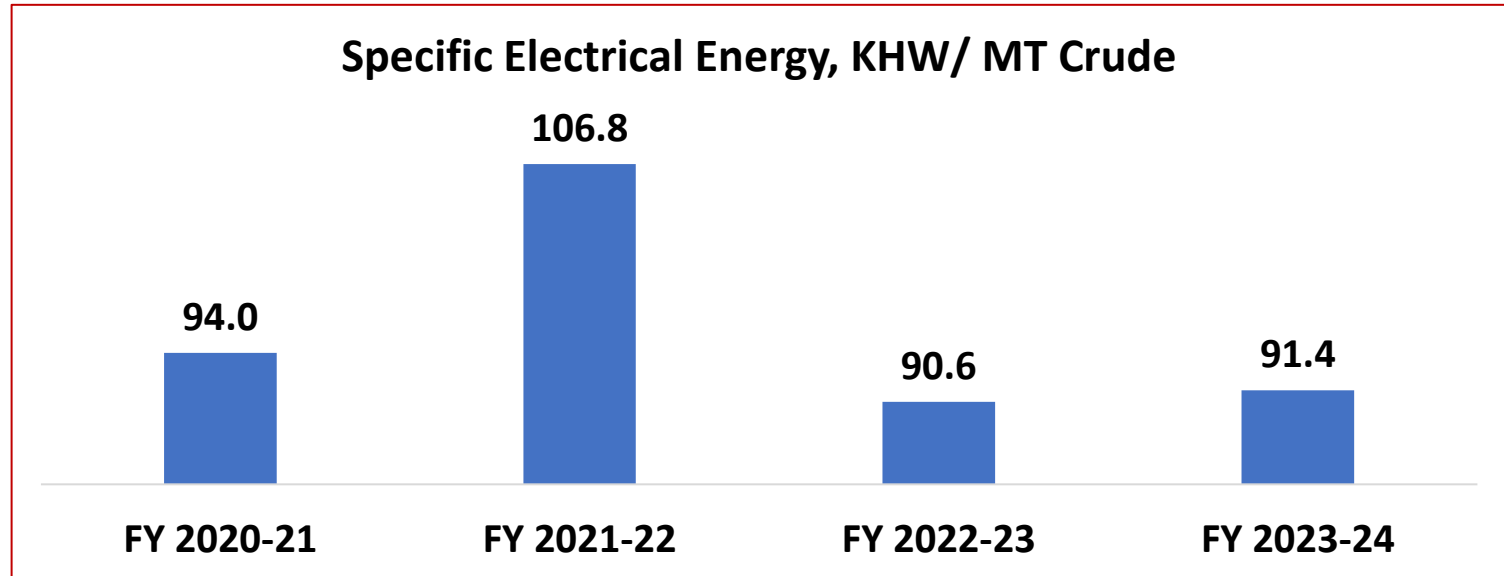
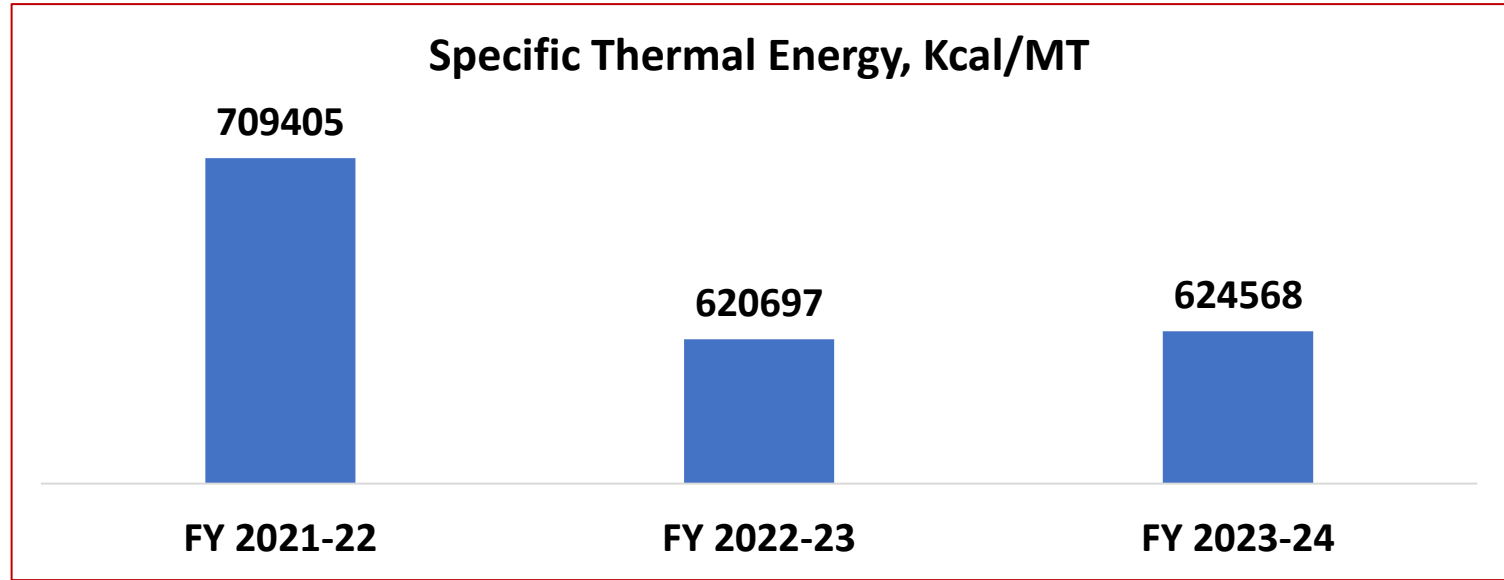
MBN



EII

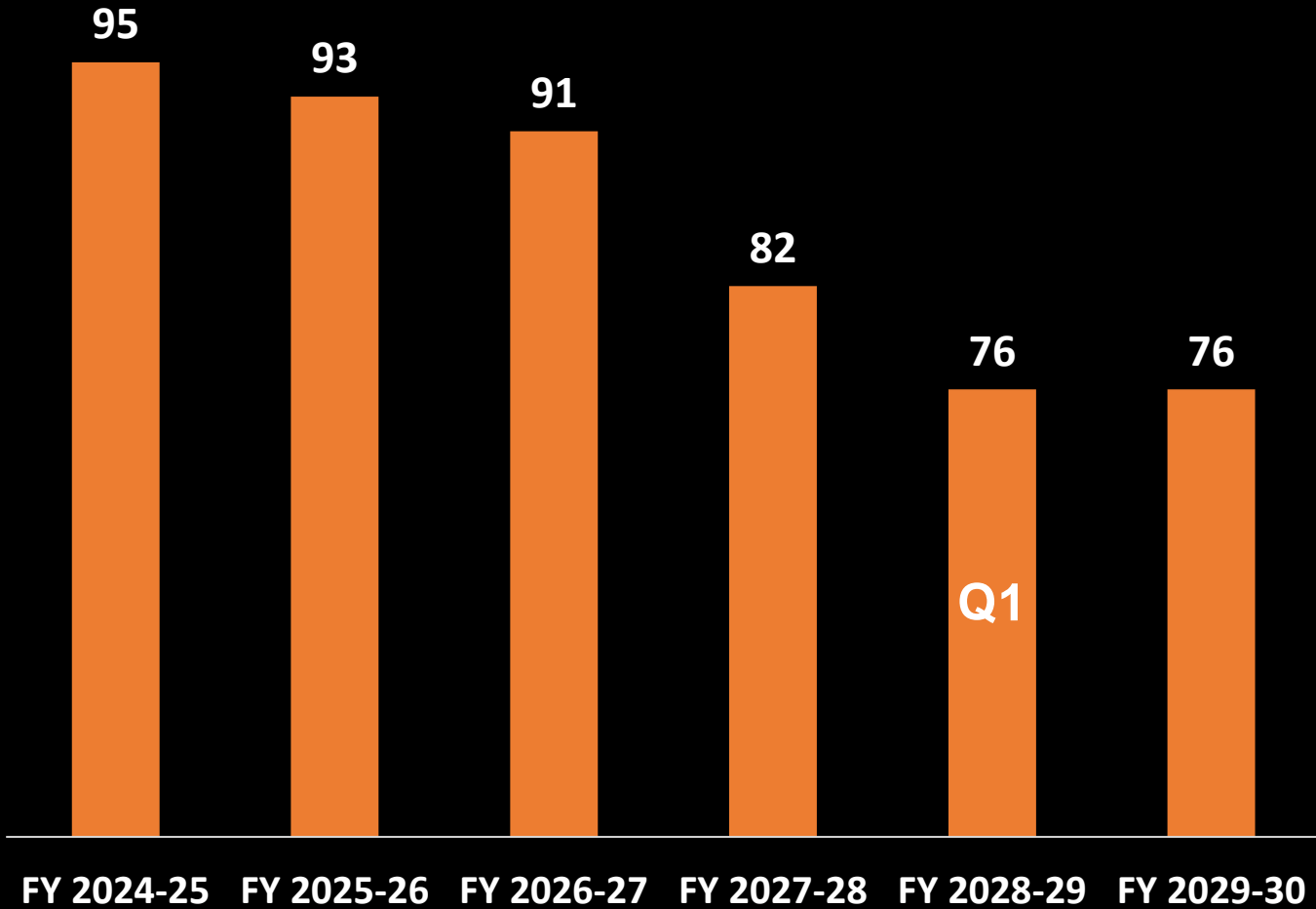


- **Mumbai Refinery Expansion Project implemented in FY 2021-22**
- **HPCL MR has met PAT Cycle – VI Target**
- **Reduced Specific Thermal Energy by avg. of ~ 86000 Kcal/MT from FY 2021-22**
- **Reduced Specific Electrical Energy by avg. of ~ 16 MW/TMT from FY 2021-22**



Target to reach Q1 by FY 2030

Energy Intensity Index



PAT Cycle - VI
Target MBN – 78.9 (FY 2022-23)



HPCL MR Achieved
MBN – 74.5
(FY 2022-23)



Roadmap to reach Q1 by FY 2030



Installation of New Boiler with BPSTG

- Stopping of GTG's
- Power Generation of 25 MW
- Energy Saving 49713 SRFT/ Year
- Monetary Saving 208 Crs./Year

Refinery Off gas PSA

- Hydrogen generation 16 TPD
- Energy Saving 17180 SRFT/ Year
- Monetary Saving 72 Crs./ Year

Hexane Production using Divided Wall Column Technology

- Stopping of Hexane unit
- Steam Saving 17 TPH.
- Energy Saving 11263 SRFT/ Year
- Monetary Saving 47 Crs./ Year

Total Envisaged Energy Saving is ~ 1.1 Lakhs SRFT/Year. Monetary Benefit - 443 Crs



Major Encon Project - FY 2024-25



Rs. 58 Million/ Yr

FRE CIT and Throughput enhancement scheme

Investment – Rs. 38.5 Million

Energy Saving 1400 SRFT/ Yr

Rs. 14 Million/ Yr

FRE VPS Internal replacement which reduced steam consumption

Investment – Rs. 22.5 Million

Energy Saving 350 SRFT/Yr

Rs. 21 Million/ Yr

Installation of cermaic fibre module in FRE APA/VPS heaters

Investment – Rs. 12.8 Million

Energy Saving 504 SRFT/Yr



Major Encon Project - FY 2024-25



**Rs. 91
Million/ Yr**

**FCCU feed and bottom temperature
maximization
Investment – Rs. 6.3 Million**

**Energy
Saving
2207 SRFT/ Yr**

**Rs. 169
Million/ Yr**

LP steam generator in DIU

**Energy
Saving
4100 SRFT/Yr**

**Rs. 62
Million/ Yr**

**Wild naphtha routing to VGO Stripper
and Naphtha Stabilizer in DHT unit**

**Energy
Saving
1500 SRFT/Yr**



Major Energy Saving Project



Year	No of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2021-22	2	580	0	101945	372	19
FY 2022-23	6	191	0	288613	1258	2
FY 2023-24	5	14	0	51120	211	1
Total	13	784	0	441678	1841	



Energy Saving Project FY 21-22



Year	Name of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2021-22	Packinox exchanger in CCR combined feed exchanger	315.3	0	16733	61	62
FY 2021-22	Crude preheat temperature Improvement by Pinch Analysis and modification in preheat train	264.2	0	85212	311	10



Energy Saving Project FY 22-23



Year	Name of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2022-23	Installation of Hot Separator in DHT and heat integration across DHT unit	173.8	0	219449	954.9	2.2
FY 2022-23	Installation of Hot Separator in PrimeG	3.9	0	28349	123.4	0.4
FY 2022-23	FR NVPS Ejector steam reduction	0	0	23117	101.8	0



Energy Saving Project FY 22-23



Year	Name of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2022-23	Routing of GFEC offgas to Hydrocarbon Flare & recovering in FGRC	2.5	0	14388	63.4	0.47
FY 2022-23	Stopping product fractionator stripping steam in DHT	0	0	1962	8.6	0
FY 2022-23	Plate type Heat Exchanger in SWSU	10.5	0	1348	5.9	21.4



Energy Saving Project FY 23-24



Year	Name of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2023-24	NFCC Furnace Optimization	0	0	28000	115.5	0
FY 2023-24	Steam Optimization in DIP & NHT hydrotreater & Condensate Recovery from LR Tanks	13.5	0	15350	63.3	2.6
FY 2023-24	DHT Product Fractionator Heater Convective Heating Using Main Charge Heater Flue Gas Heat	0	0	5080	21	0



Energy Saving Project FY 23-24



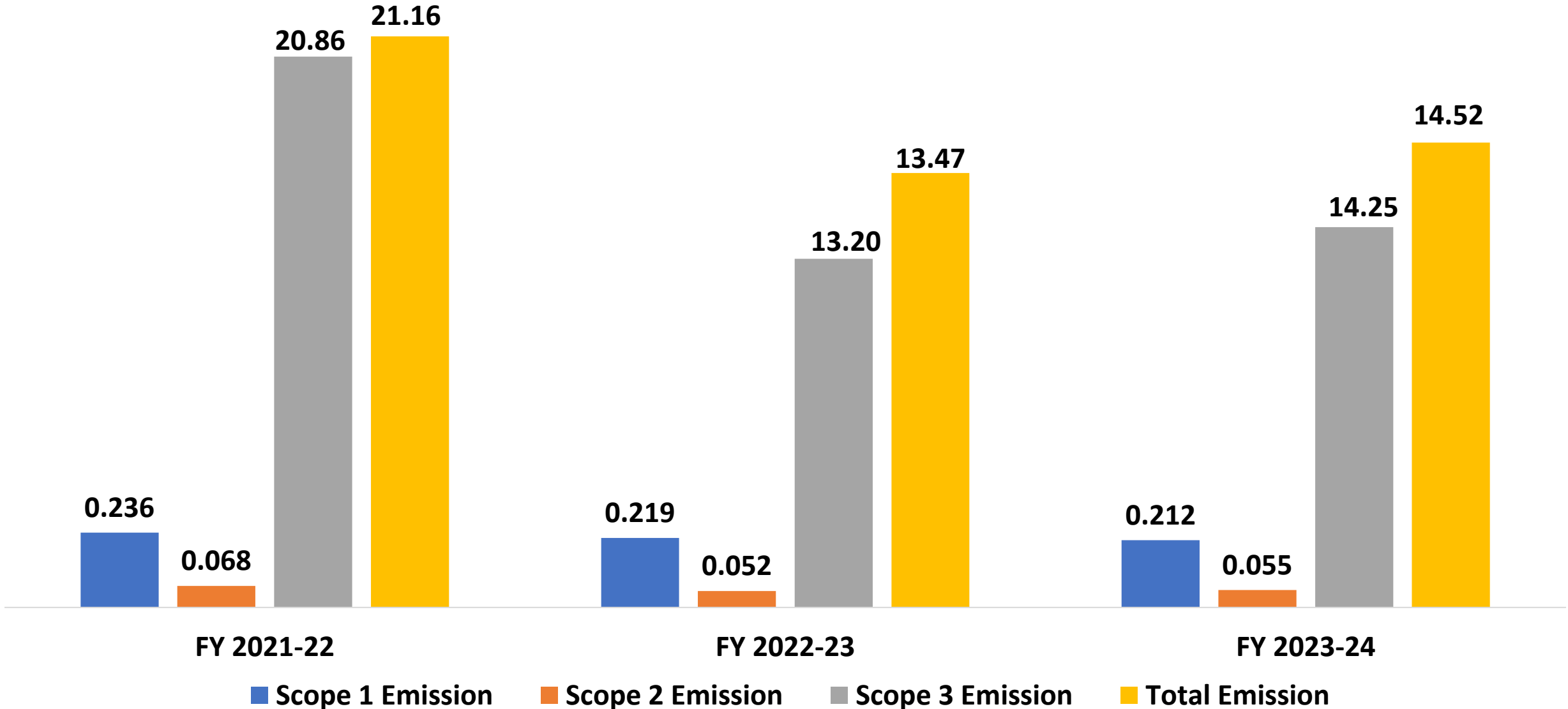
Year	Name of Energy saving projects	Investment (INR Million)	Electrical savings (Million kWh)	Thermal savings (Million Kcal)	Total Savings (INR Million)	Payback Period (Months)
FY 2023-24	Stopping Product Fractionator Stripping Steam in DHT Unit	0	0	2440	10.1	0
FY 2023-24	Direct Processing of LCGO in DIU Resulting in Reduced Furnace Duty	0	0	250	1.03	0



Renewable Energy Source



Onsite					
Year	Source (Solar, wind, etc.,)	Installed capacity (in MW)	Capacity addition (MW) after FY 2021	Total Generation (million kWh)	Share % w.r.t to overall energy consumption
FY 2022-23	Rooftop Solar	1.0	0.305	0.352	0.04





Green Supply Chain Management



- **HPCL MR has its own Environment & Energy Policy.**
- **Integrated Procurement System - ensures cost effectiveness, prompt delivery, reliability, responsible sourcing of raw material & inventory management**
- **HPCL encourage various local and small vendors to participate in the green initiatives being undertaken by the organization.**
- **Optimization tools to plan and optimize the sourcing & transportation linkages. Reduction in carbon footprint and cost by maximizing product movement through energy efficient modes like Pipeline, Coastal and Rail over road transportation.**

Energy Policy

Environment Policy



हिन्दुस्तान पेट्रोलियम

हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड, मुंबई रिफाइनरी
HINDUSTAN PETROLEUM CORPORATION LTD., MUMBAI REFINERY



हिन्दुस्तान पेट्रोलियम

ऊर्जा नीति

ENERGY POLICY

एचपीसीएल मुंबई रिफाइनरी में हम ऊर्जा निष्पादन में निरंतर सुधार तथा रिफाइनरी क्षेत्र में मानदंड कायम करने के प्रयासों की दिशा में इस प्रकार से प्रतिबद्ध हैं:

- अपने हितधारकों के साथ मिलकर पेट्रोलियम उत्पादों के रिफाइनिंग, भंडारण एवं प्रेषण संबंधी अपनी गतिविधियों को ऊर्जा प्रबंधन के पहलुओं का अभिन्न हिस्सा समझना।
- ऊर्जा संसाधनों का कुशल प्रबंधन एवं संरक्षण, अंतर के विश्लेषण तथा वस्तुनिष्ठ लक्ष्य निर्धारण और कार्ययोजना द्वारा ऊर्जा निष्पादन में सुधार लाना।
- आंतरिक दक्षता के निरंतर उन्नयन एवं ऊर्जा प्रबंधन की आधुनिकतम प्रौद्योगिकी को अपनाकर तथा ऊर्जा सक्षम उत्पादों एवं सेवाओं की खरीद को बढ़ावा देकर प्रौद्योगिकी में अपना वर्चस्व कायम करना।
- शाश्वत ऊर्जा / पुनः प्राप्त ऊर्जा के प्रयोग को बढ़ावा देना।
- ऊर्जा के प्रयोग संबंधी सभी लागू विधिक और अन्य आवश्यकताओं का अनुपालन करना।
- ऊर्जा के सक्षम उपयोग के प्रति जागरूकता उत्पन्न करने के लिए नियमित प्रशिक्षण एवं संप्रेषण के माध्यम से अपने सभी कर्मचारियों तथा हितधारकों के बीच ऊर्जा संरक्षण प्रयासों में उनकी प्रतिभागिता के उत्साह को बढ़ाना।

We in HPCL- Mumbai Refinery commit ourselves to continual improvement in energy performance and strive to become the benchmark in Refinery sector by:

- Considering energy management aspects as an integral part of our activities related to refining, storage, and dispatch of petroleum products by close engagement with our stakeholders.
- Improving energy performance by efficient management of energy resources and its conservation, analyzing the gaps and setting objective targets and action plan.
- Remaining at the technological forefront through continuous up-gradation of in- house expertise and absorption of latest technologies in energy management, supporting the purchase of energy efficient products and services.
- Encouraging the use of renewable energy/recovered energy.
- Complying with all applicable legal and other requirements related to use of energy.
- Fostering the spirit of participation by all employees and its stakeholders in energy conservation efforts through regular training and communication to create awareness on efficient use of energy.

दिनांक 01.04.2023
स्थान : मुंबई


लिबु वर्गीस मॅथ्यू
कार्यकारी निदेशक-मुंबई रिफाइनरी

Date : 01.04.2023
Place: Mumbai


LIBU VERGHESE MATHEW
Executive Director-Mumbai Refinery



हिन्दुस्तान पेट्रोलियम

हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड
HINDUSTAN PETROLEUM CORP. LTD.



हिन्दुस्तान पेट्रोलियम

पर्यावरण नीति

ENVIRONMENTL POLICY

हिन्दुस्तान पेट्रोलियम कॉर्पोरेशन लिमिटेड, मुंबई रिफाइनरी विभिन्न पेट्रोलियम उत्पाद बनाने का कार्य करती है मुंबई रिफाइनरी अपना प्रचालन अनुकूल पद्धतियों, निरंतर पर्यावरण सुधार और प्रशिक्षण को सुनिश्चित करते हुए पर्यावरण सुरक्षा के अनुकूलन और समुदाय के सामाजिक एवं आर्थिक विकास के लिए प्रतिबद्ध है।

पर्यावरण प्रबंधन प्रणाली के कार्यान्वयन द्वारा हम एचपीसीएल - मुंबई रिफाइनरी में प्रतिबद्ध हैं:

- पर्यावरण और जैव विविधता के संरक्षण के साथ सबत विकास हासिल करना। जलवायु परिवर्तन पर ज्यादा प्रभाव डाले बिना प्रदूषण निवारण प्रयासों को बढ़ावा देना।
- पर्यावरण अनुकूल और पर्यावरण कुशल प्रक्रियाएं और अत्याधुनिक प्रौद्योगिकी का स्वीकार करते हुए संसाधनों को संरक्षित करें।
- उद्देश्यों, लक्ष्यों और कार्य-योजनाओं को निर्धारित कर पर्यावरण प्रदर्शन को निरंतर बेहतर बनाने के लिए प्रयास करें।
- सभी लागू कानूनी और अन्य आवश्यकताओं का अनुपालन करें।
- रिफाइनरी के लिए या रिफाइनरी की ओर से काम करने वाले व्यक्तियों के बीच हमारे प्रचलित प्रथाओं और प्रक्रियाओं के बारे में जागरूकता और संपर्क बनाएं।
- इच्छुक पार्टियों के लिए उपलब्ध कराएं।

Hindustan Petroleum Corporation Limited, Mumbai Refinery is engaged in the business of manufacturing various Petroleum Products. HPCL- MR is committed to conduct it's operation in such a manner as compatible with environmental protection and socio-economic development of the community by ensuring environment friendly operating practices, continual environmental improvement and training

By implementation of Environmental management system, we at HPCL-MR are committed to

- Achieve sustainable growth through protection of Environment and Bio diversity.
- Promote pollution prevention practices without much impact on climate change.
- Conserve resources with eco friendly & eco efficient processes and and adoption of state of the art technology.
- Strive to improve environmental performance continually by setting objectives targets and action plans.
- Comply with all applicable legal and other requirements.
- Create awareness and communicate about our practices and procedures among the persons working for or on behalf of the Refinery.
- Be made available to the interested parties.

दिनांक : 04/04/2023
स्थान : मुंबई


लिबु वर्गीस मॅथ्यू
कार्यकारी निदेशक-मुंबई रिफाइनरी

Date: 04/04/2023
Mumbai


Libu Verghese Mathew
Executive Director - Mumbai Refinery

Action Plan for Expanding Green Supply Chain:

- **Conduct regular Trainings & Awareness Sessions**
- **Feedback from stakeholders to continuously refine & revise policies.**
- **Incorporate new development & technologies**
- **Include a wider range of products in Green Supply chain to broaden the scope**



Energy Management in MR



➤ HPCL complies to BEE PAT

- Mandatory Energy Audit
- Monitoring & Verification Audit

➤ HPCL is ENMS ISO 50001 certified since 2018

- Internal Audit
- External Audit
- Management Review

➤ CHT OGCM Saksham Survey

- Steam Leak Survey
- Furnace Survey

IRCLASS
SYSTEMS AND SOLUTIONS PRIVATE LIMITED

CERTIFICATE OF APPROVAL
Issued by Indian Register Quality Systems
(A Division of IRCLASS Systems and Solutions Private Limited)

This is to certify that the Energy Management Systems of

Organisation: Hindustan Petroleum Corporation Limited
Mumbai Refinery

Address: B. D. Patil Marg,
Chembur,
Mumbai - 400 074

has been assessed and found conforming to the following requirement

Standard: ISO 50001:2018

Scope: Receipt and Refining of Crude Oil to Produce Petroleum Products (Light Distillate, Middle Distillate, Lube Oil Base Stock, Other Heavy Distillates and By-product Element Sulfur), OM&S Storage Facilities, Utilities, Captive Power Generation and Laboratory Facilities

Certificate No.: IRQS/241000417

Initial Certification Date: 05/03/2018

Current Date of Granting: 03/03/2024

Expiry Date: 03/03/2027

Indian Register Quality Systems

Shashi Nath Mishra
Head IRQS

This approval is subject to continued satisfactory maintenance of the Energy Management Systems of the organization to the above standard which will be monitored by IRQS. The use of the Accreditation Mark indicates accreditation with respect to activities covered by the certificate with accreditation no. EN 001. Condition Overleaf
COA/IRQS/NABCB/ENMS/Rev 01

Head Office: 52A, Adi Shankaracharya Marg, Opp.Powai Lake, Powai, Mumbai - 400 072, India.



Environment Management in MR

Delivering Happiness

➤ **HPCL is Environmental Management System ISO 14001 Certified since 2003.**

- **Internal Audit**
- **External Audit**
- **Management Review**

Certificate IN15/05254

The management system of

Hindustan Petroleum Corporation Limited, Mumbai Refinery

B D Patil Marg, Mahul, Chembur, Mumbai - 400074, Maharashtra, India
has been assessed and certified as meeting the requirements of
ISO 14001:2015

For the following activities

Crude oil refinery operations for production of Oil petroleum products namely light distillates, Middle distillates, Other heavy distillates, Lube Base stocks and by product elemental Sulphur, Oil movement and storage, Utilities, Captive Power Generation and Laboratory facilities

SGS

This certificate is valid from 02 June 2024 until 02 June 2027 and remains valid subject to satisfactory surveillance audits.

Issue 4. Certified since 03 June 2015

Jonathan M. Hall

Authorised by
Jonathan Hall
Global Head - Certification
Services

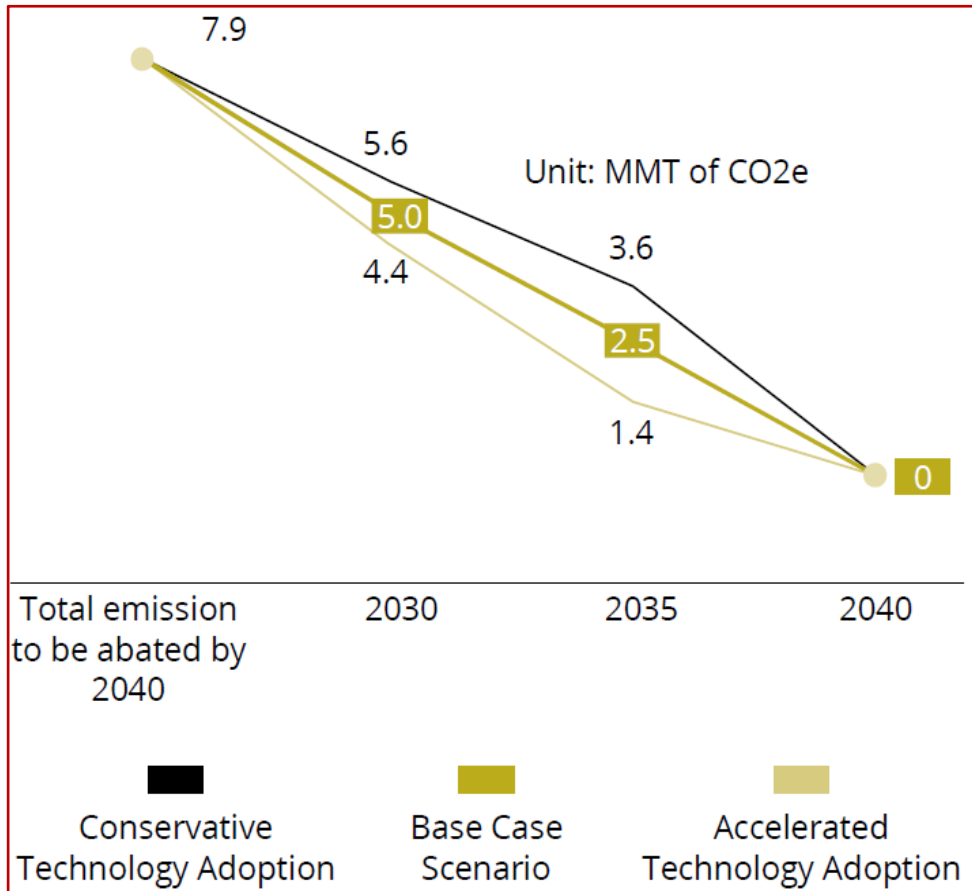
SGS United Kingdom Ltd
Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN, UK
t +44 (0)151 350-6666 - www.sgs.com



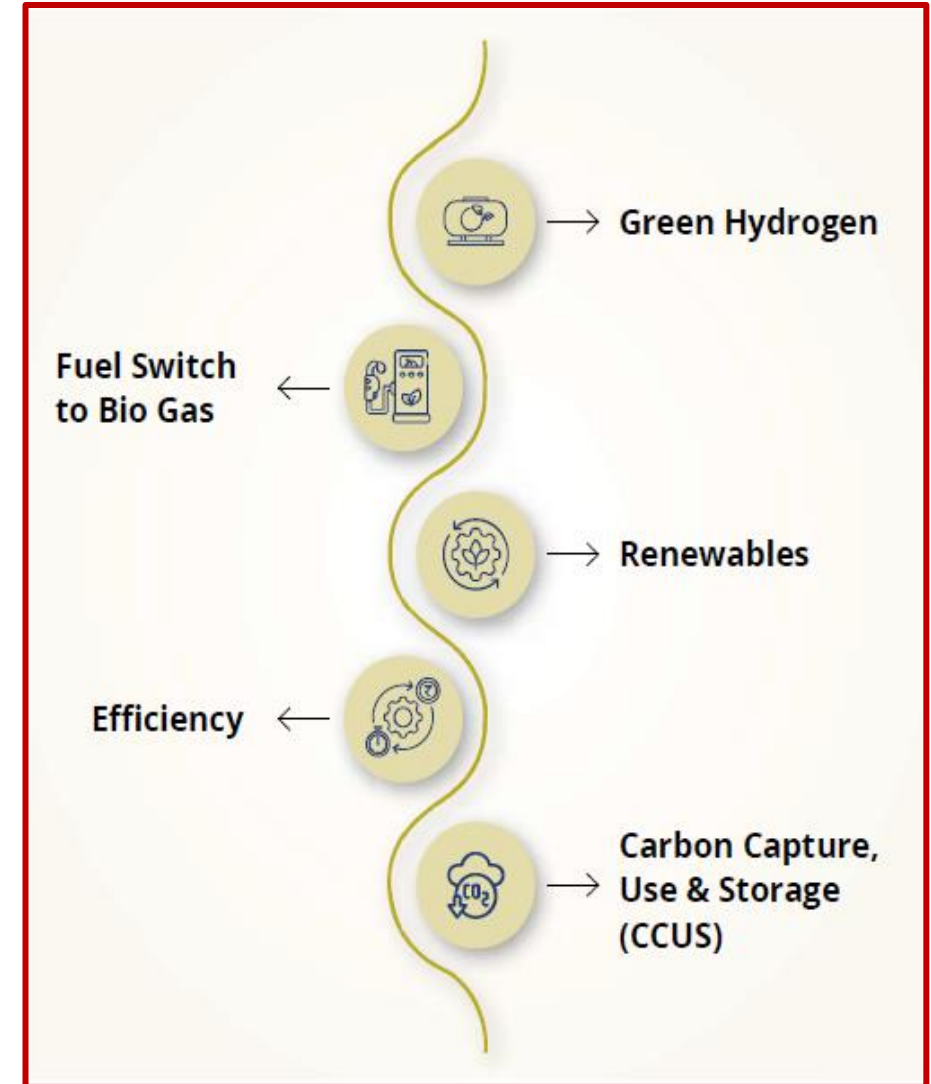
This document is an authentic electronic certificate for Client business purposes use only. Printed version of the electronic certificate are permitted and will be considered as a copy. This document is issued by the Company subject to SGS General Conditions of certification services available on [Terms and Conditions](#) | SGS. Attention is drawn to the limitation of liability, indemnification and jurisdictional clauses contained therein. This document is copyright protected and any unauthorized alteration, forgery or fabrication of the content or appearance of this document is unlawful.



- Net Zero Scope 1 and Scope 2 emissions by 2040.
- Net Zero Scope 3 emissions by 2070.



ROADMAP





Awards

Delivering Happiness

**HPCL MR is the winner
of Golden Peacock
Award for Energy
Efficiency-2024**



**GOLDEN
PEACOCK
AWARDS**

W I N N E R

**Energy Efficiency
2024**



Golden Peacock Awards®
A Strategic Tool to Lead the Competition

C E R T I F I C A T E

This is to certify that

**Hindustan Petroleum Corporation Limited
Mumbai Refinery**

Mumbai

Sector: Oil Refining

was adjudged the

WINNER

of

**GOLDEN PEACOCK AWARD
FOR ENERGY EFFICIENCY - 2024**

having met the overall requirements of the
Golden Peacock Excellence Model,

given under the seal of Institute of Directors, India.



June 27, 2024
Bengaluru (India)
No.: GPA/II/2024/EE/11

M. N. Venkatachaliah

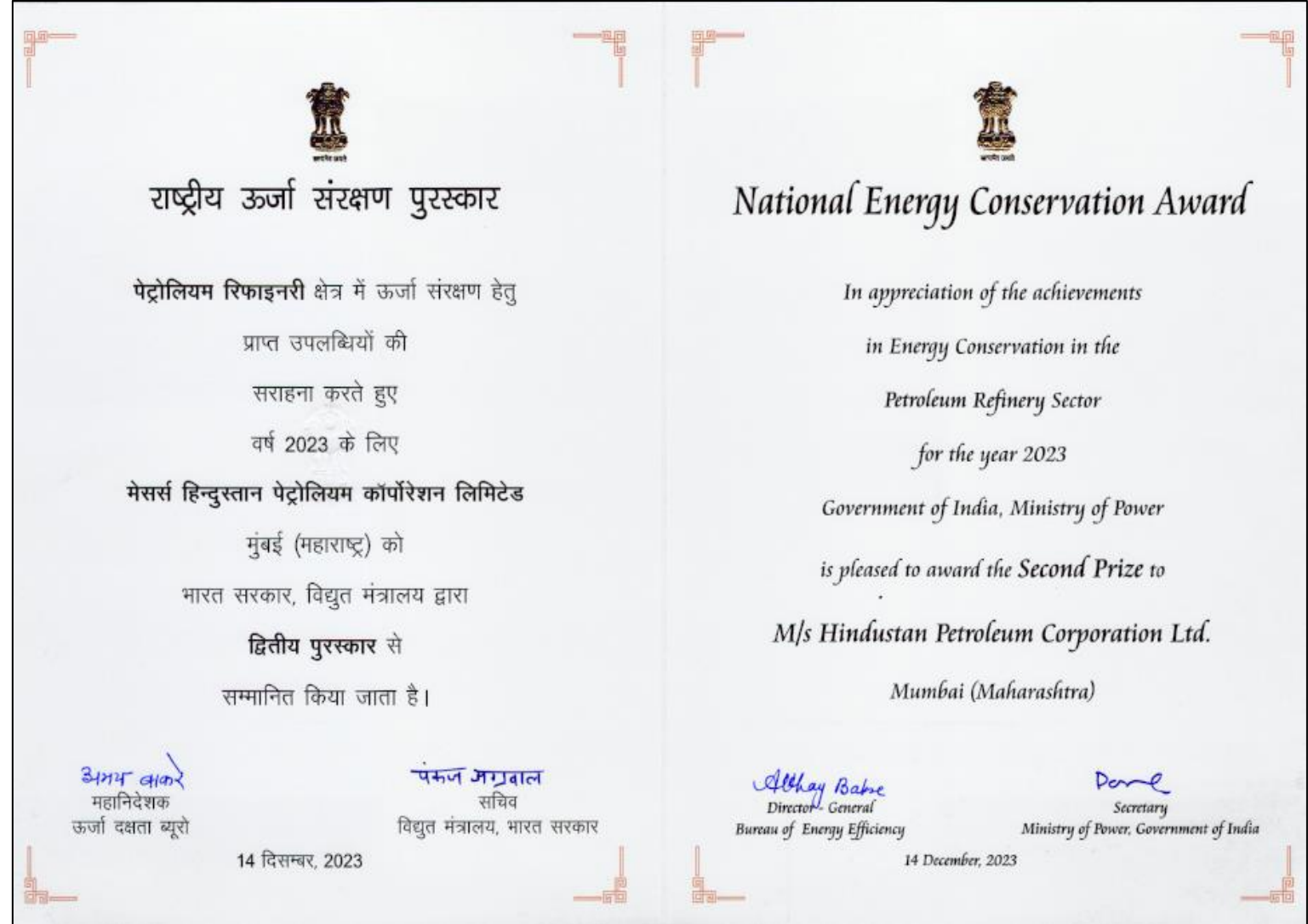
Justice M. N. Venkatachaliah
Chairman, Institute of Directors, India

*former Chief Justice of India
former Chairman, National Human Rights Commission of India
and National Commission for Constitution of India Reforms*

Golden Peacock Awards have been initiated by the INSTITUTE OF DIRECTORS, a Society (National Level), registered under the Societies Registration Act XXI of 1860, in India. Regd. No. 521193 / 1960. Golden Peacock Awards have been registered with Trademark No. 2864696.



National Energy Conservation Award (NECA) 2023 for Energy Conservation - 2nd Prize Winner





Delivering
Happiness



THANK YOU

**WE CONSERVE ENERGY TO
PRESERVE THE FUTURE**