



IndianOil

R&D

The Power of Possibilities

**WORLD CLASS
TECHNOLOGIES
THROUGH CUTTING
EDGE R&D**



KEY R&D ACTIVITIES

Lubricants Technology | Fuel Additives
Refining Technology | Pipelines Technology
Nano Technology | Renewable Energy
Petrochemicals | Alternative Energy
Catalysts | Technical Services

IndianOil has a sprawling world-class R&D Centre that is Asia's finest. It plays a key role in supporting the business interests of the Corporation by developing economical, environmentally and socially responsible technology solutions. With over 5000 lubricant formulations, the **SERVO**[®] product line is the hallmark of the vibrant and ongoing research at the Centre. The Centre has developed world class expertise in refining technology and catalysis over past 30 years of intense RD&D. The Centre is also focused on cutting-edge research in the areas of Nanotechnology, Petrochemicals and Polymers, Solar / Bioenergy / Hydrogen / Fuel Cell / Gasification / Battery.

SUPPORTING THE BUSINESS VERTICALS

IOC R&D

MARKETING

Fuels / Bitumen / Lubricants / Fuel Additives / Testing

REFINERIES

Refinery technology / Petrochemicals & Polymers / Catalysts

PIPELINES

Pipeline Inspection Tools, Transportation of Heavy Crudes / Corrosion

FUTURE READINESS

Solar / Bioenergy / Hydrogen / Fuel Cell / Gasification / Battery / Carbon Capture & Utilization

LUBRICANT PORTFOLIO - TECHNOLOGY BASKET



Automobile Industry



Steel



Textiles



Defence & Marine



Railways



Power and Chemical Plants



Cement



Aviation



Agriculture

5000 Product Formulations | 800 Commercial Grades | 650 OEM Approvals



Only Lube Superbrand & Masterbrand of India
Market leader among 40 major players

OEM APPROVALS

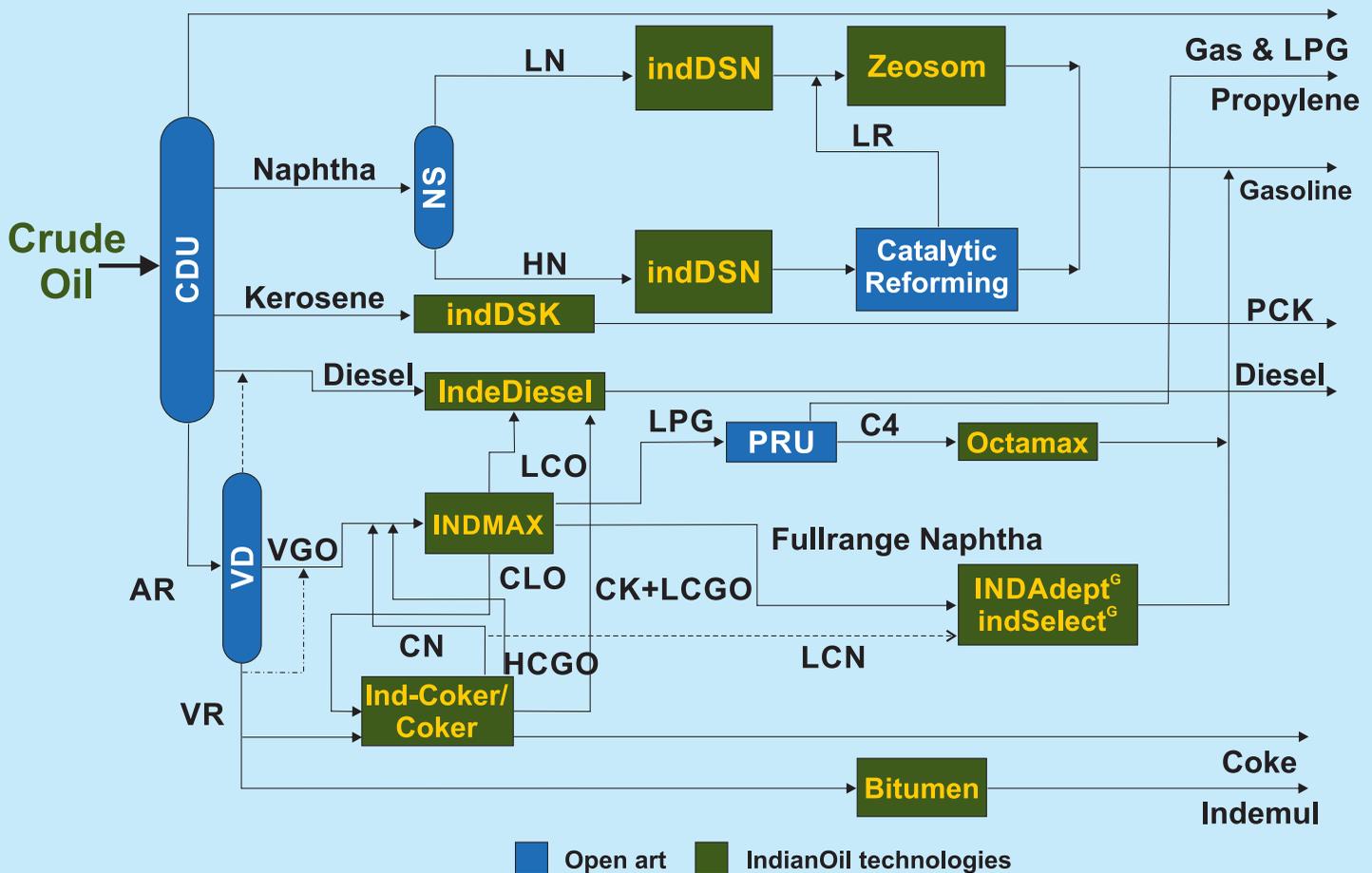
International OEMs



Indian OEMs / Major Customers



REFINING TECHNOLOGY



LN – Light Naphtha, HN – Heavy Naphtha, LR – Light Reformate, PCK – Pipeline Compatible Kerosene, LPG – Liquefied Petroleum Gas, LCO – Light Cycle Oil, VGO – Vacuum Gas Oil, CLO – Clarified Oil, CK – Coker Kerosene, LCGO – Light Coker Gas Oil, HCGO – Heavy Coker Gas Oil, LCN – Light Cracked Naphtha, CN – Coker Naphtha, AR – Atmospheric Residue, VR – Vacuum Residue

INDIANOIL'S REFINING TECHNOLOGIES FOR BS-VI COMPLIANCE

INDAdapt^G at GR

Adsorptive Gasoline Desulphurisation

Octamax at MR

High-Octane (>110) Gasoline Stock

Zeosom at BGR

Light Naphtha Isomerization

indSelect^G at GR

Selective Desulphurisation for Cracked Gasoline Component

indeDiesel at BGR, JR

Deep Diesel Desulphurisation

indJet (BR), indDSN (BGR),
indDSK (PDR & JR)-
Under Implementation

GR – Guwahati Refinery, BR – Barauni Refinery, BGR – Bongaigaon Refinery, PDR – Paradip Refinery, JR – Gujarat Refinery, MR – Mathura Refinery

PIPELINES RESEARCH

- Design & Development of Intelligent Pigs (IPIG) for pipeline inspection : IPIGs with dia of 12", 14", 18" & 24" developed (based on Magnetic Flux Leakage principle)
- Monitoring health of pipeline network and corrective measures : → 6,000 km of pipelines inspected

TECHNOLOGY IMPLEMENTATION CELL

- Reducing lead time for technology demonstration / commercialisation
- Enhanced deployment / licencing of in-house developed technologies

Petrochemicals & Polymers

- ZN Catalysts • Specialty Products • Additives
- New Grade Development thru Post-Reactor Modification
- Benchmarking, QSPR, Technical Services
- Petrochemical Processes & Catalysis

Nano Technology

- Nanocut: High therm Metal Cutting LPG
- Multi-Metal Nano-dispersions for Boiler Fuels
 - Differentiated LPG
- New Generation Catalyst

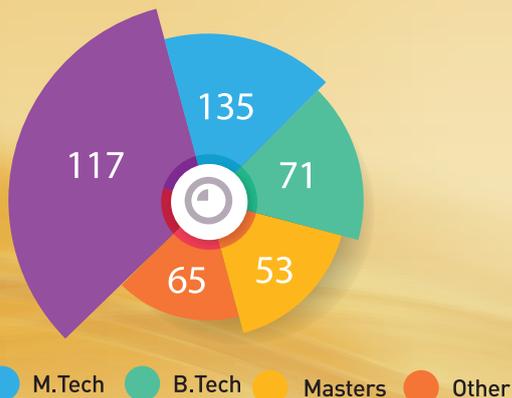
ALTERNATIVE & RENEWABLE ENERGY



COLLABORATIONS



IndianOil R&D Human Resource



IP Wealth Strengthening Commercialisation

