



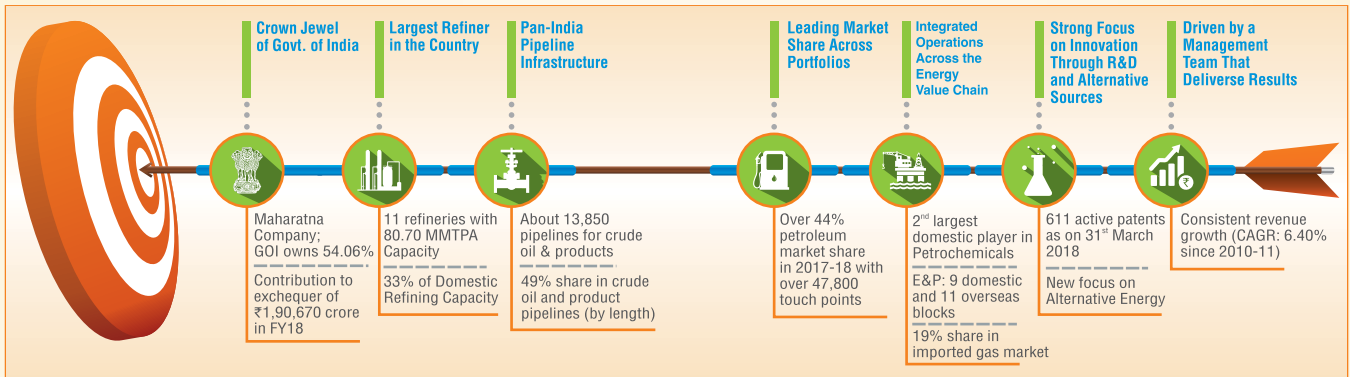
IndianOil

Inventing the Future with World-Class R&D

 **Future-Ready** *with*
Passion for Excellence



IndianOil- The Energy of India



IndianOil R&D

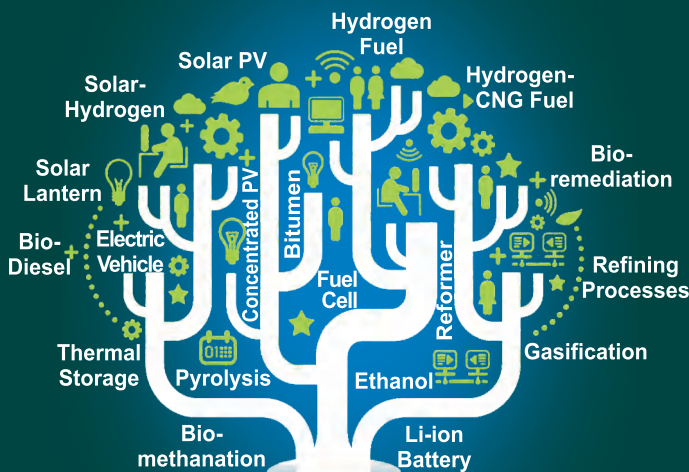
611 Active Patents

IndianOil has a sprawling world-class R&D Centre at Faridabad (in the National Capital Territory) that is Asia's finest. This Centre is India's foremost commercial centre of research excellence in the areas of lubricants, refinery processes, pipeline transportation, alternative fuels fuel additives, engine testing, materials sciences and environmental sciences.

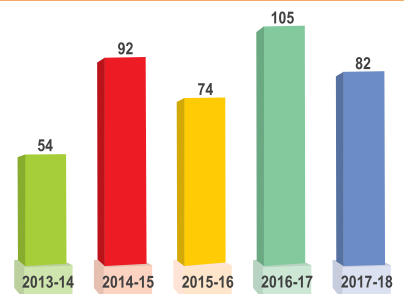
IndianOil holds 611 active patents, including 388 overseas patents. IndianOil has a basket of technologies in the areas of lubricants and grease formulations, fuels, refining processes, biotechnology, additives, pipeline transportation, engine evaluation, tribological & emission studies, and applied metallurgy.



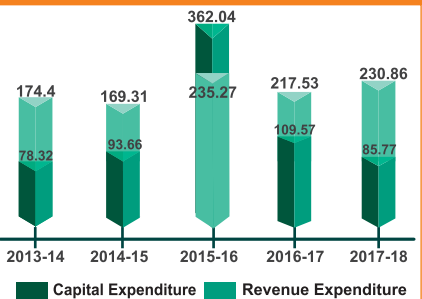
Research Landscape



Number of Patents Filed (year on year)



R & D Expenditure (₹ Crore)



Cutting-Edge Technologies developed by IndianOil R&D

INDMAX – The Refining Wonder

INDMAX is IndianOil's flagship technology, licensed worldwide by Lummus. Used to produce high yield of light olefins / LPG for integration with Petrochemicals and high octane gasoline from various petroleum feedstocks. Two INDMAX units are running in Paradip and Guwahati. Three grassroots and one revamp project are in various stages of design and construction.

Octamax – The Rising Star

Octamax technology produces high-octane gasoline blending components using C4 stream obtained from catalytic cracking or ethylene cracker. Utilised in meeting stringent gasoline specifications besides increasing the production of BS-VI compliant gasoline by blending low-octane Naphtha. Successfully commissioned at Mathura Refinery (55 KTA in 2018).

Nanocut – For Metal-cutting Revolution

Indane NANOCUT is nano-additised LPG for high-performance metal-cutting and related high-temperature applications. Yields excellent results on MS steel blocks with thickness as high as 400 mm with reduced gas consumption, improved surface finish and reduced slag formation. Technology is much in demand countrywide for metal-cutting applications vis-a-vis oxy-acetylene.

SERVO Lubricants – 100% Performance. Everytime

IndianOil R&D is the trailblazer in development of world-class high-performance *SERVO* lubricants for every conceivable application. The two most notable developments have been the development of Railroad Oils and Marine Lubricants.

● **Railroad Oils**

SERVO multigrade Railroad oils boost the fuel economy of railroad engines and drain interval of lubricants. This component-based cutting edge technology meets Generation 6 Railroad Oil specifications and is compatible with advanced after-treatment devices to meet the latest emission norms.

● **Marine Oils**

IndianOil is the first and only Company in the Asia-Pacific with an entire range of indigenous marine oil technologies for both shipboard and power generation segments. *SERVO* marine oils are commercially available and supplied to various Indian & international customers across the globe.

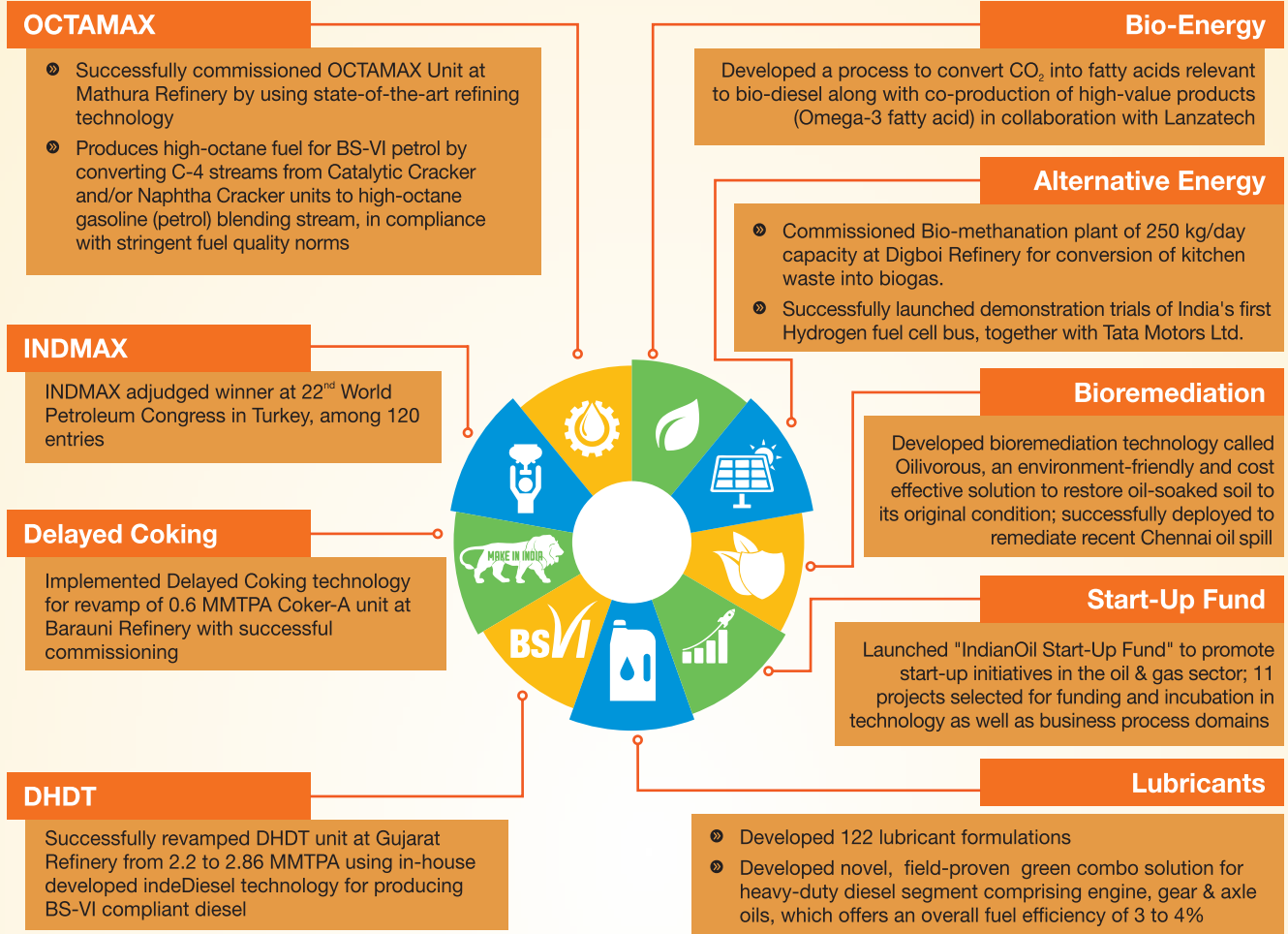
iPIG – Pipeline's Health Doctor

IndianOil R&D has indigenously developed Instrumented Pipeline Inspection Gauges (iPIGs) based on magnetic flux leakage principle to inspect and monitor pipelines and assess their health & reliability. Developed in collaboration with BARC, iPIGs are available in sizes ranging from 10" to 28". iPIGs are continuously deployed across IndianOil's wide cross-country pipeline network to locate potential failures & pilferages, evaluate residual strength of pipelines and measure the efficacy of corrosion-resistant coatings.

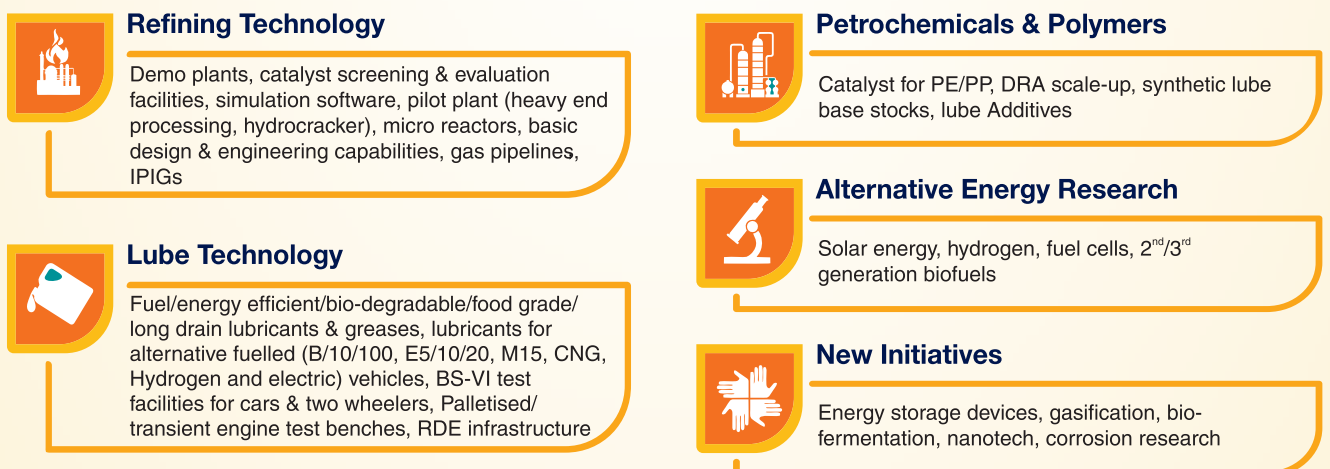
Biomethanation – Green Energy on the Anvil

Biomethanation process converts organic waste to biogas. Based on IndianOil R&D's patented bioinoculants, alongwith a two-stage anaerobic process, this technology provides over 80% methane content in the biogas, leading to better heating value, higher burning efficiency and better control on seasonal variations in gas generation rate. This technology also reduces the residence time for generation of bio-gas significantly. Demonstrated successfully across IndianOil, plants of various capacities have been planned under the SATAT Compressed BioGas programme.

Some Major Accomplishments of IndianOil R&D



Innovations for the Future



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