Octane 100 petroleum in India

December 2, 2020

In news

Ministry of Petroleum & Natural Gas launches India's first 100 Octane petrol(Branded as XP100, the premium grade petrol)

Who has developed it and where to be implemented?

- The technology for India's first100 Octane petrol has been indigenously created by Indian Oil R&D
- The fuel is manufactured at IOC's Mathura refinery in Uttar Pradesh and supplied at select petrol pumps
- Indian Oil plans to roll-out XP100 premium grade petrol in 15identified cities across the country in two phases.
- **In the first phase**, it has been made available at select ROs w.e.f December 1, 2020, in Delhi, Gurgaon, Noida, Agra, Jaipur, Chandigarh, Ludhiana, Mumbai, Pune and Ahmedabad.
- **In the second phase**, the availability of this 100 Octane petrol would be extended to Chennai, Bangalore, Hyderabad, Kochi, and Kolkata.
- These cities have been selected basis their aspirational demographics and availability of high-end cars and bikes dealerships in these cities

What is an octane number?

- It is a figure indicating the anti-knock properties of a fuel, based on a comparison with a mixture of isooctane and heptane.
- An octane rating, or octane number, is a standard measure of the performance of an engine or aviation gasoline.

- The higher the octane number, the more compression the fuel can withstand before detonating.

Why high octane number is good

- Fuels with a higher octane rating are used in high-performance gasoline engines that require higher compression ratios. The higher an octane number, the more stable/resistant the fuel.
- The fuels with lower octane numbers (but higher cetane numbers) are ideal for diesel engines, because diesel engines (also referred to as compression-ignition engines) do not compress the fuel, but rather compress only air and then inject fuel into the air which was heated by compression.
- Gasoline engines rely on ignition of air and fuel compressed together as a mixture, which is ignited near the end of the compression stroke using electrically activated spark plugs.
- Therefore, high compressibility of the fuel matters mainly for gasoline engines. Use of gasoline with lower octane numbers may lead to the problem of engine knocking
- Knock occurs when fuel is prematurely ignited in the engine’s cylinder, which degrades efficiency and can be damaging to the engine

Significance

- Worldwide, 100 Octane petrol has a niche market for luxury vehicles that demand high performance, and is available only in six countries like Germany, USA, etc
- The availability of XP100 puts India in an elite group of countries, having access to such high quality oil. It will provide high quality and power to the engine.