

Green Hydrogen Fuel Cell Electric Vehicle (FCEV), Toyota Mirai

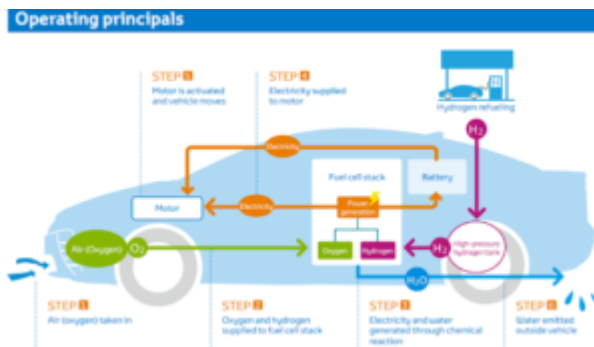
March 17, 2022

In news– Recently, the Union Minister for Road, Transport and Highways has launched the world's most advanced technology – developed green hydrogen Fuel Cell Electric Vehicle (FCEV), Toyota Mirai.

About FCEV Toyota's Mirai-

- This is a **first of its kind project in India which aims to create a Green Hydrogen based ecosystem in the country** by creating awareness about the unique **utility of Green Hydrogen and FCEV technology**.
- **Toyota Kirloskar Motor Pvt Ltd and International Center for Automotive Technology (ICAT) are conducting a Pilot Project** to study and evaluate the world's most advanced Fuel Cell Electric Vehicle (FCEV) Toyota Mirai which runs on hydrogen, on Indian roads and climatic conditions.
- **The Toyota Fuel Cell System (TFCS) combines proprietary fuel cell technology** that includes the Toyota FC Stack and high-pressure hydrogen tanks with the hybrid technology.
- **The TFCS has high energy efficiency compared with conventional internal combustion engines**, along with superior environmental performance highlighted by zero emissions of CO₂ and other pollutants during vehicle operation.
- **The hydrogen tanks can be refueled in approximately three minutes**, and with an ample cruising range, the system promises convenience on par with gasoline engine vehicles.

- FCEV, powered by Hydrogen, is **one of the best Zero Emission solutions** as it **is completely environmentally friendly with no tailpipe emissions other than water.**
- It is an important initiative which will promote clean energy and environmental protection by reducing dependence on fossil fuels and thereby make **India 'Energy Self-reliant' by 2047.**



What is Green Hydrogen / Green Ammonia?

- Green hydrogen, also referred to as **'clean hydrogen'** is **produced by using electricity from renewable energy sources, such as solar or wind power,** abundantly available biomass, to split water into two hydrogen atoms and one oxygen atom through a process called electrolysis.
- The hydrogen thus produced is used in the manufacturing process and oxygen is released into the atmosphere or bottled and sold to hospitals and industries that need it.
- A similar process also helps produce green ammonia.
- Ammonia is a pungent gas that is widely used to make agricultural fertilisers.
- Green ammonia production is where the process of making ammonia is 100% renewable and carbon-free.
- One way of making green ammonia is by using hydrogen from water electrolysis and nitrogen separated from the air.
- Introduction and adoption of technology to tap into the green hydrogen's potential will play a key role in

securing a clean and affordable energy future for India.