



Green Hydrogen Plant Inaugurated in Madhya Pradesh

Why in News?

[GAIL \(India\) Ltd](#) has **successfully launched** its **first green hydrogen plant at Vijaipur** in Guna district of Madhya Pradesh.

Key Points

- The **10-megawatt proton exchange membrane electrolyser** for the **green-hydrogen producing unit** at the Vijaipur complex has been **imported from Canada**.
- The plant will produce about **4.3 tonnes of green hydrogen per day**, with a **purity of about 99.999% by volume**.
 - It uses electricity produced from **renewable sources** such as the sun's [solar energy](#) to split water to produce green hydrogen.
 - The plant is in line with the [National Green Hydrogen mission](#) that has set out a goal of 5 million tons of annual green hydrogen production capacity for the country by 2030.
 - India is putting increased focus on hydrogen as an alternative fuel source to lower its carbon emissions, while also meeting its growing energy needs.
- Initially the hydrogen produced from this unit shall be used as a fuel along with natural gas for captive purpose in the various processes and equipment running in the existing plant at Vijaipur.
 - Further, this hydrogen is planned to be dispensed to retail customers in the nearby geographies, transported through high pressure cascades.
- **GAIL is also setting up** around 20 MW **Solar power plants at Vijaipur** (both ground mounted and floating) to meet the requirement of green power for the 10 MW PEM Electrolyzer.
- GAIL is currently experimenting in Indore by **mixing hydrogen with natural gas** in its **CGD (city gas distribution) network to evaluate its effectiveness**.
 - If successful, the plan is to increase the blending ratios with the required approvals as per the test outcomes.
 - **Present rules permit blending up to 5% hydrogen with natural gas**. Collaborative research is being conducted by GAIL along with **Engineers India Limited** and **IIT Kanpur** to explore higher blending levels of hydrogen with natural gas.

NATIONAL GREEN HYDROGEN MISSION

NODAL MINISTRY

- Ministry of New and Renewable Energy

OBJECTIVE

- Decarbonise energy/industrial/mobility sector
- Develop indigenous manufacturing capacities
- Create export opportunities for GH_2 and its derivative

COMPONENTS OF NGHM

- Strategic Interventions for Green Hydrogen Transition Programme (SIGHT)
- Strategic Hydrogen Innovation Partnership (SHIP) (PPP for R&D)

GH_2 is not commercially viable at present; current cost in India is around ₹350-400/kg.
The National Hydrogen Energy Mission aims to bring it down under ₹100/kg.

Expected Outcomes by 2030

- ◆ Atleast 5MMT GH_2 annual production
- ◆ Rs 1 lakh crore fossil fuel import savings
- ◆ 6 lakh jobs
- ◆ 50MMT CO_2 annual emissions averted
- ◆ ₹ 8 lakh crore investment

HYDROGEN AND GREEN HYDROGEN

Hydrogen is the most common element in nature but exists only in combination with other elements. It has to be extracted from naturally occurring compounds (like water).

Green Hydrogen (GH_2) is made by splitting water through an electrical process called electrolysis, using an electrolyser powered by renewable energy (RE).

