



India's First Private Test Facility for Heavy Water

Source: IE

TEMA India, a firm based in Mumbai, has opened India's first private facility for testing **heavy water upgrade equipment**, marking a new phase of public-private collaboration in the [nuclear sector](#).

- The facility will **manufacture and test distillation columns** used to upgrade **depleted heavy water (D₂O)** essential for [Pressurised Heavy Water Reactors \(PHWRs\)](#).
 - Usually, [Bhabha Atomic Research Centre \(BARC\)](#) handles the testing, but this move to the private sector aims to **cut project timelines by 1-2 years**.
- **Heavy Water (D₂O):** Also known as **deuterium oxide**, it consists of two deuterium atoms and one oxygen atom and it is **not radioactive**.
 - Deuterium, a **heavier stable isotope of hydrogen**, present in hydrogen and hydrogen bearing compounds like water, hydrocarbons, etc.
 - Nuclear reactors use heavy water during **construction and refueling**. It acts as both a **coolant and a moderator in nuclear fission** and must be 99.9% pure.
 - During operation, the heavy water gets **depleted and is upgraded through distillation** to restore its purity and maintain efficient reactor performance.
 - **India is the largest global producer of heavy water.**
- **India's Nuclear Power:** The nuclear power contributes about 3% to the total electricity generated in the country. India currently has **24 operational reactors** (with an installed capacity of 8,780 MW), with plans to reach **22.4 GW by 2032** and **100 GW by 2047**.

Read more: [India's Nuclear Energy Roadmap](#)

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