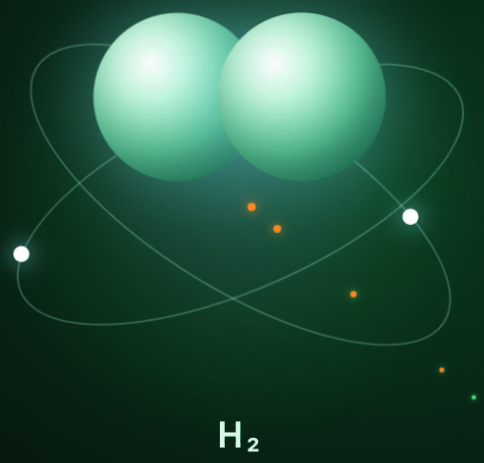
BIOGAS TO H_2

HIRA

Hydrogen from Integrated Reforming and Anaerobic Digestion

Hydrogen from waste.
Carbon captured.

High-purity biogas from our reactors, turned into hydrogen — with the CO_2 captured rather than released into the air.



> 90 %	SMR + PSA	CO_2	200 bar
Methane-rich gas from our reactors	Proven steps: reform the gas, then purify it	Captured, not released	Hydrogen in high-pressure cylinders

THE CHALLENGE

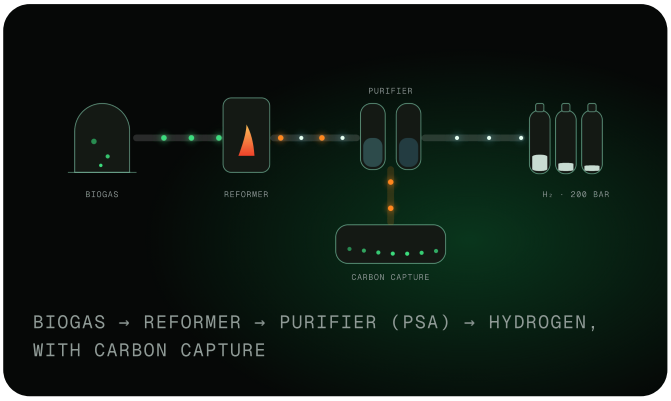
Conventional biogas carries only 50 – 65 % methane and needs extensive clean-up before it can be reformed, adding cost and complexity — while India's National Green Hydrogen Mission calls for large volumes of low-carbon hydrogen.

OUR APPROACH

HIRA starts from biogas that is already over 90 % methane, so less pre-treatment is needed before the reformer. Containerised reforming and purification modules turn it into hydrogen, and carbon capture keeps the CO_2 out of the atmosphere.

HOW IT WORKS

1. **Biogas**
   Sci-BGM reactors produce biogas at over 90 % methane.
2. **Reform**
   Steam methane reforming converts methane into hydrogen-rich gas.
3. **Purify**
   Pressure swing adsorption isolates high-purity hydrogen.
4. **Capture**
   Carbon capture takes up the CO_2 from the process.
5. **Deliver**
   Hydrogen is compressed to 200 bar in cylinders.



KEY FEATURES

- High-purity feed: less pre-treatment and lower energy input
- Pressurised biogas reduces compression ahead of the reformer
- Containerised reforming (SMR) and purification (PSA) modules
- Hydrogen module operates independently of the biogas train
- Carbon capture built into the process chain
- H_2 leak detection, venting and emergency shutdown logic
- Delivered in 200 bar cylinders

PROCESS STAGES

Stage	Purpose
Biogas reactors	Produce biogas at over 90 % methane
Steam methane reforming	Convert methane into hydrogen-rich gas
Pressure swing adsorption	Purify the hydrogen
Carbon capture	Capture CO_2 instead of releasing it
Compression	Store and deliver H_2 at 200 bar

BUILT FOR

Industrial hydrogen users · Fuel-cell mobility · Decentralised hydrogen hubs · Biogas plant owners

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