



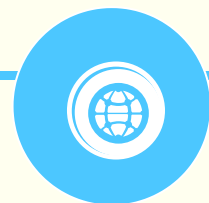
WELCOME TO INNOVATION

ONE STOP SOLUTION FOR GREEN HYDROGEN

Presented By: **VJ INDUSTRIES**



+91 814 901 0859



www.vj-industries.com



Introduction

VJ INDUSTRIES is revolutionizing the Industrial Gas sector with innovative, sustainable solutions. Since our inception in 2022, we have quickly established leadership through successful installations and supplies.

Our business spans the supply of industrial, calibration, and specialty gases, as well as the manufacture, supply, and installation of Hydrogen Quads/Cascade Gas storage systems. We also specialize in biogas generation and consultancy for Green hydrogen production.

Collaborations with HORIBA and XWM-Blue Planet drive our mission for a safe, economical, and sustainable future. Committed to quality, our solutions are rigorously tested to meet the highest standards, ensuring excellence for our customers.



Vission & Mission

VISION

To be the global leader in green hydrogen solutions, advancing the adoption of sustainable energy practices across industries.

MISSION

To innovate and deliver high-quality hydrogen storage and distribution systems that empower businesses to achieve their sustainability goals, while contributing to a cleaner planet.



Our Value

Innovation, Sustainability, Integrity and Quality define VJ Industries. We advance technology, create eco-friendly solutions, and build trust through transparency and high-quality products, driving a sustainable future for all.

01.
Innovation

02.
Sustainability

03.
Integrity

04.
Quality



Hydrogen Gas Storage System –
40 m³ to 4500 m³

HORIBA–
Make GAS ANALYSER

H₂ Gas Detector

Baumer India pvt ltd –
Make pressure transmitters
& Sensors

**One stop
solution for
Hydrogen
Gas**

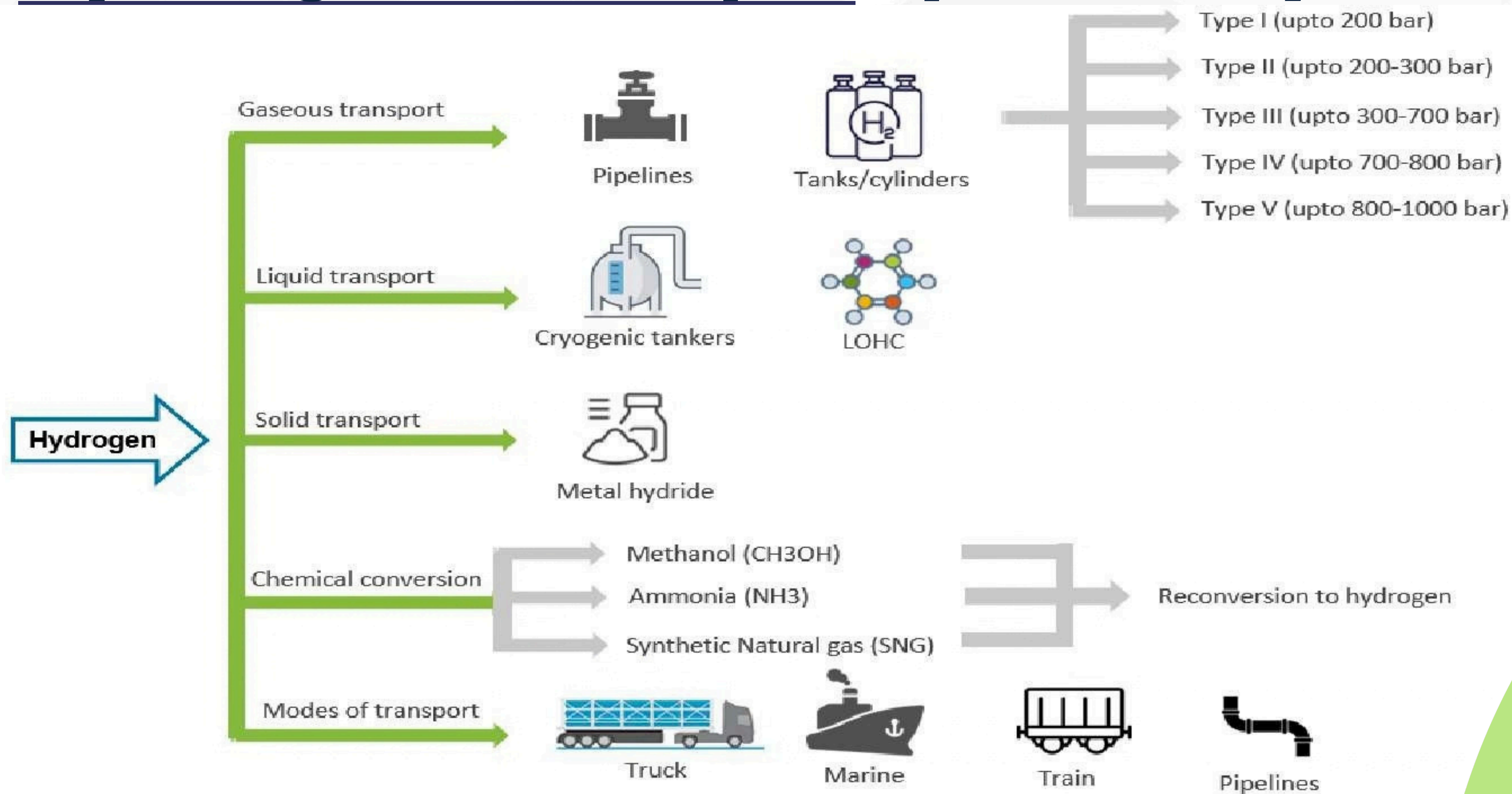
**Supply of UHP Hydrogen
Gas– 99.999%**

**Bio gas plant , Bio– CNG ,
Coming soon –Bio– H2**

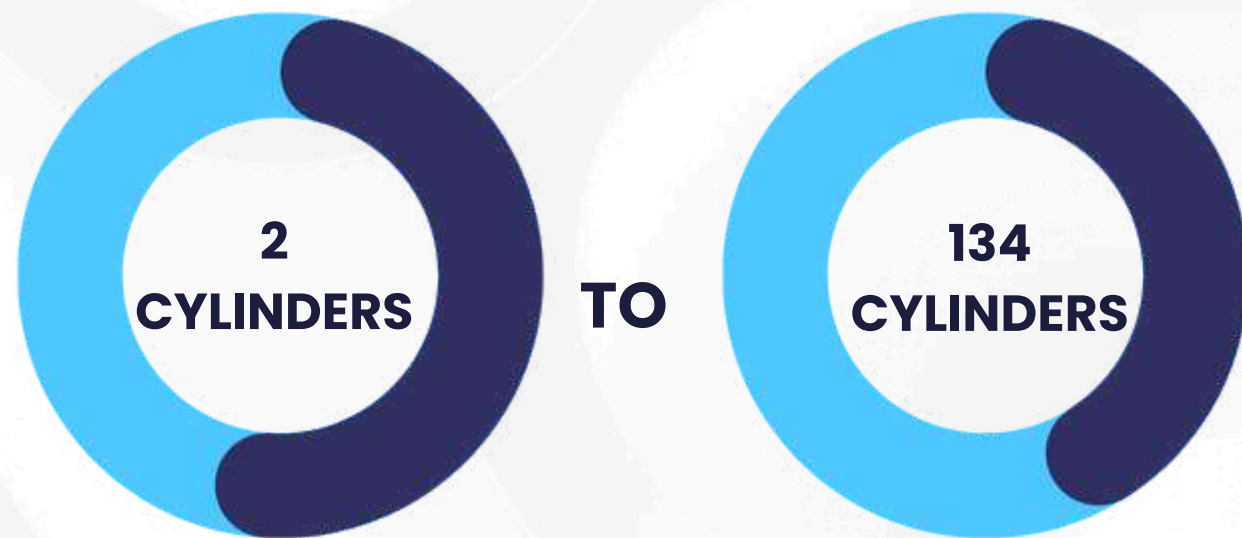
**H2 Storage License Consulting
PESO**

After sales Service –
Hydro testing, Half year Safety
Audit

Hydrogen Transport path ways



Hydrogen Cascades



HYDROGEN
STORAGE

HYDROGEN
STORAGE



VJ Industries provides customized hydrogen cascade storage solutions, ranging from 2-cylinder to 134-cylinder systems. These tailored setups ensure safe, efficient hydrogen storage for diverse industrial needs, supporting clean energy initiatives.

Size of Cylinders

For the domestic market all cylinders are manufactured as per IS 7285, BIS certified and approved by the Chief Controller of Explosives, Government of India, Nagpur.

Water Pressure 15° C	Test Pressure	Water Capacity (l)	Gas Capacity (Cu.m.)	Outside DIA 'D' (mm)	Length (L) Approx. (mm)
150 Kgf / cm ²	250 Kgf / cm ²	10	1.5	140	845
		24	3.6	232	735
		27	4	232	830
		34	5	232	1030
		40	6	232	1200
		40.5	6.07	232	1215
		45	6.7	232	1330
		46.7	7	232	1370

Water Pressure 15° C	Test Pressure	Water Capacity (ltr)	Gas Capacity (Cu.m.)	Outside DIA 'D' (mm)	Length (L) Approx. (mm)
204 Kgf / cm ²	340 Kgf / cm ²	50	10	232	1465
		80	16	267	1742
		160	32	356	1990

Green Hydrogen Cylinder Cascades



**4 CYL - 40 M3 @ 200
BAR - 3.57 kg**



**16 CYL - 112 M3 @ 140
BAR 10 KG H2 STORAGE**



**42 CYLINDER - 200 Bar-
1200 m2 750m3-67 kg**

Green Hydrogen Cylinder Cascades



**12 CYL @ 200 BAR 343
M3 30 KG H2 STORAGE**



**Hydrogen
Bank**



**SS 316 make skid for H2 –
type 1 Cylinder 12 cyl.@ 200
bar – 343 m3– 30 kg h2**

Green Hydrogen Cylinder Cascades



**160 Ltr 200 Bar Type 1
Hydrogen Bank**



**780Ltr 500 Bar Type 1
Hydrogen Cylinder Skid**

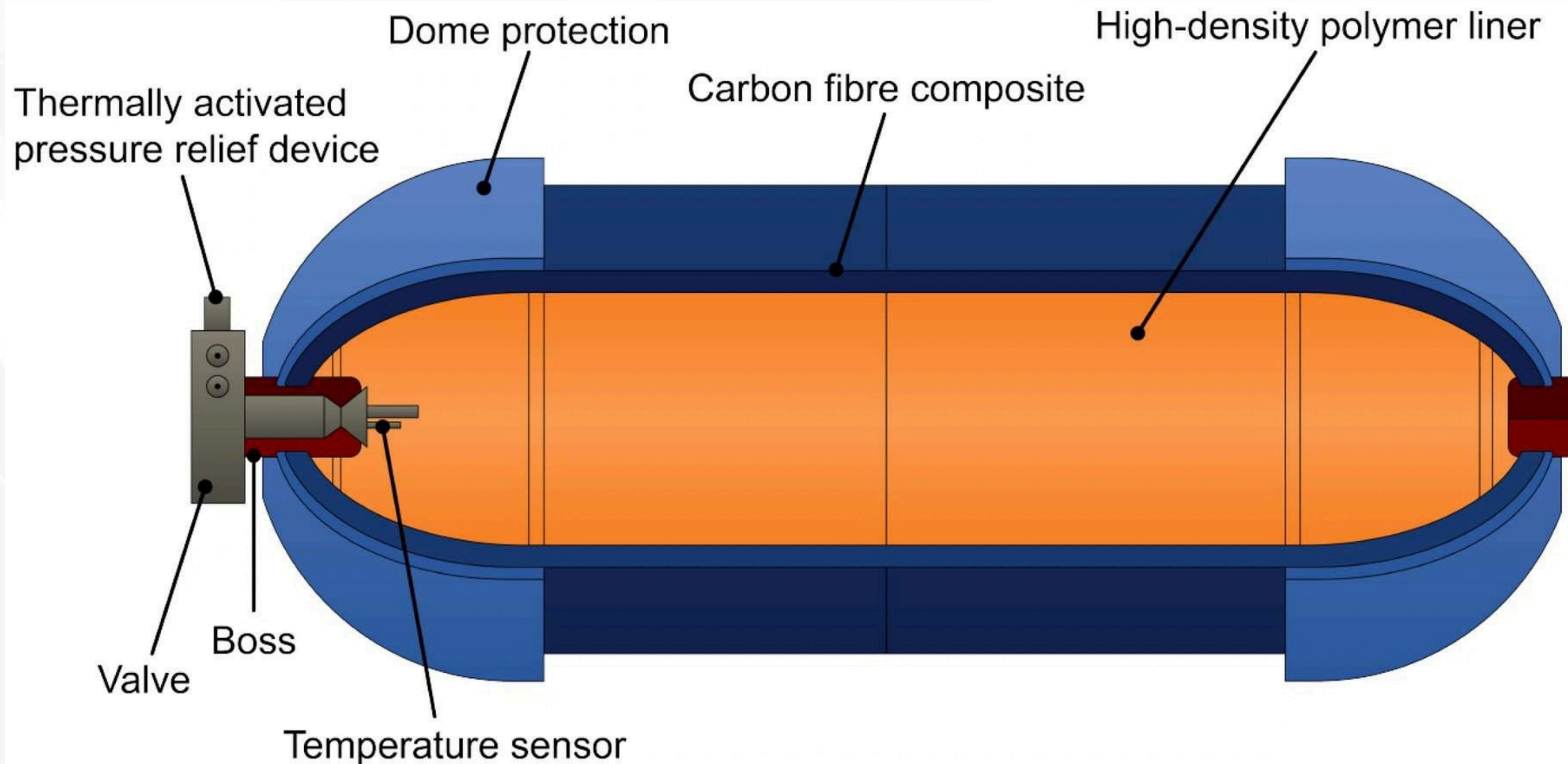
Truck-Mounted Hydrogen Cylinder Cascade



Truck-Mounted Hydrogen Cylinder Cascade



Composite Tanks



Composite Tanks Information

- Type 3 and Type 4 are the preferred choices for Hydrogen storage applications
- A Type 3 composite tank has an inner liner of Aluminium and an outer layer of carbon fibre
- A type 4 composite tank has an inner liner of plastic and an outer layer of carbon fibre
- Up to 350 bar operating pressure – whether a Type 3 or Type 4 – does NOT matter. Both are equally good and acceptable.
- Focus on price, delivery, service and whether the size/design
- of the tank suits a specific application
- Beyond 350 bar esp where Hydrogen 700 bar on-board application is concerned, globally, Type 4 is preferred
- Composites are the way forward given the huge reduction in weight, higher safety & reliability

Advanced Hydrogen Fueling Solutions for Clean Mobility



**H2 Filling Nozzle for Cars and
Buses**



**H2 Filter for Vehicle Filling
Station**



H2 Hoses

Advanced Hydrogen Fueling Solutions for Clean Mobility



H2 Breakaway Couplings



H2 Filling Dispenser

Safety

- Hydrogen lightest element & behaves differently from other gases
- Compared to other fuels, can escape easily into atmosphere
- Due to low density, explosive power – volume wise – lower than other fuels.
- H₂ can ignite at even low concentrations.
- H₂ flame cannot be seen by naked eye & if H₂ leak is suspected, it is assumed there is a fire/flame.
- Safety with H₂ is KEY due to the overall complexity.
- 80% of the safety is in the interconnecting piping/assembly which attracts lowest focus due to lowest cost.
- Safety is relative, System driven and largely our personal attitudes

GH2 Manufacturing Process

Key Steps:

1. Electrolysis: Water (H_2O) is split into hydrogen (H_2) and oxygen (O_2) using renewable energy.

- Renewable Power Source: Solar, wind, or hydroelectric power drives the process.
- Clean and Sustainable: No carbon emissions.

2. Electrolyzer Types:

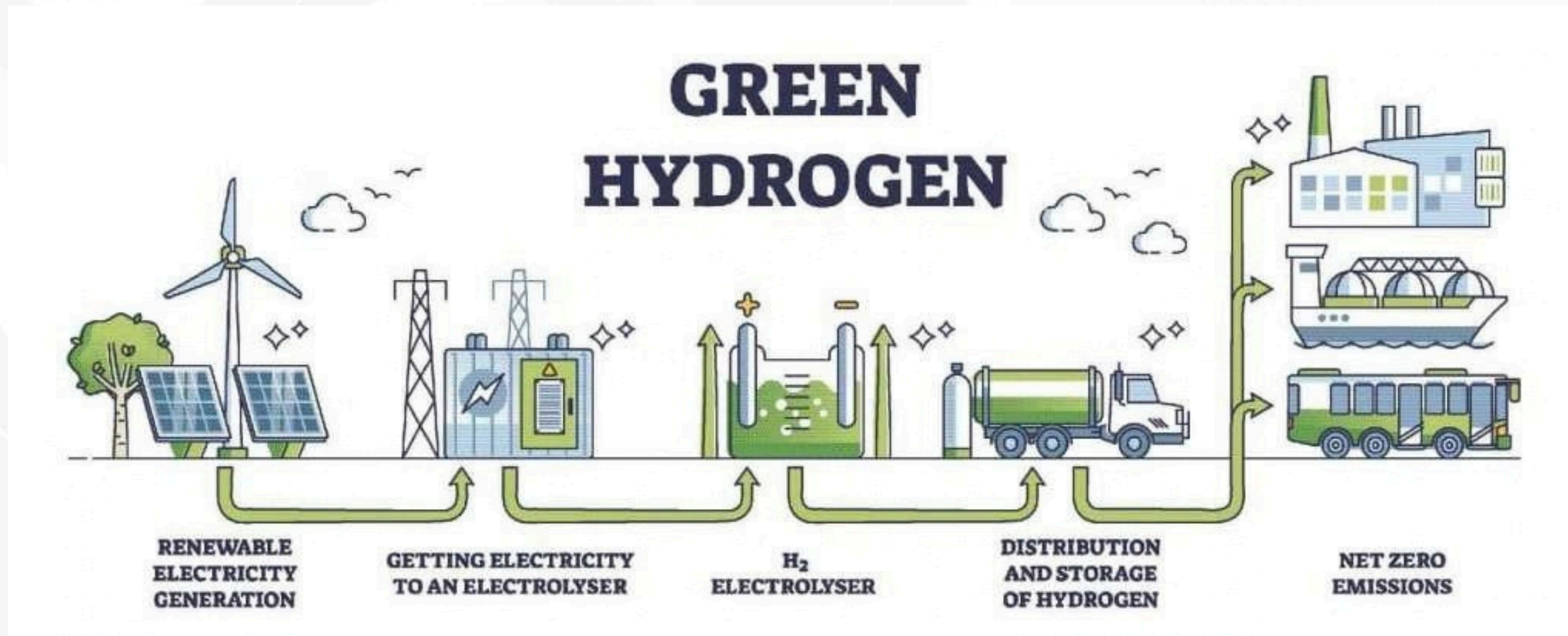
- **PEM Electrolyzer:** High efficiency, fast response to variable loads.
- **Alkaline Electrolyzer:** Cost-effective, established technology.
- **SOE Electrolyzer:** High temperature, more efficient.

3. Compression & Storage:

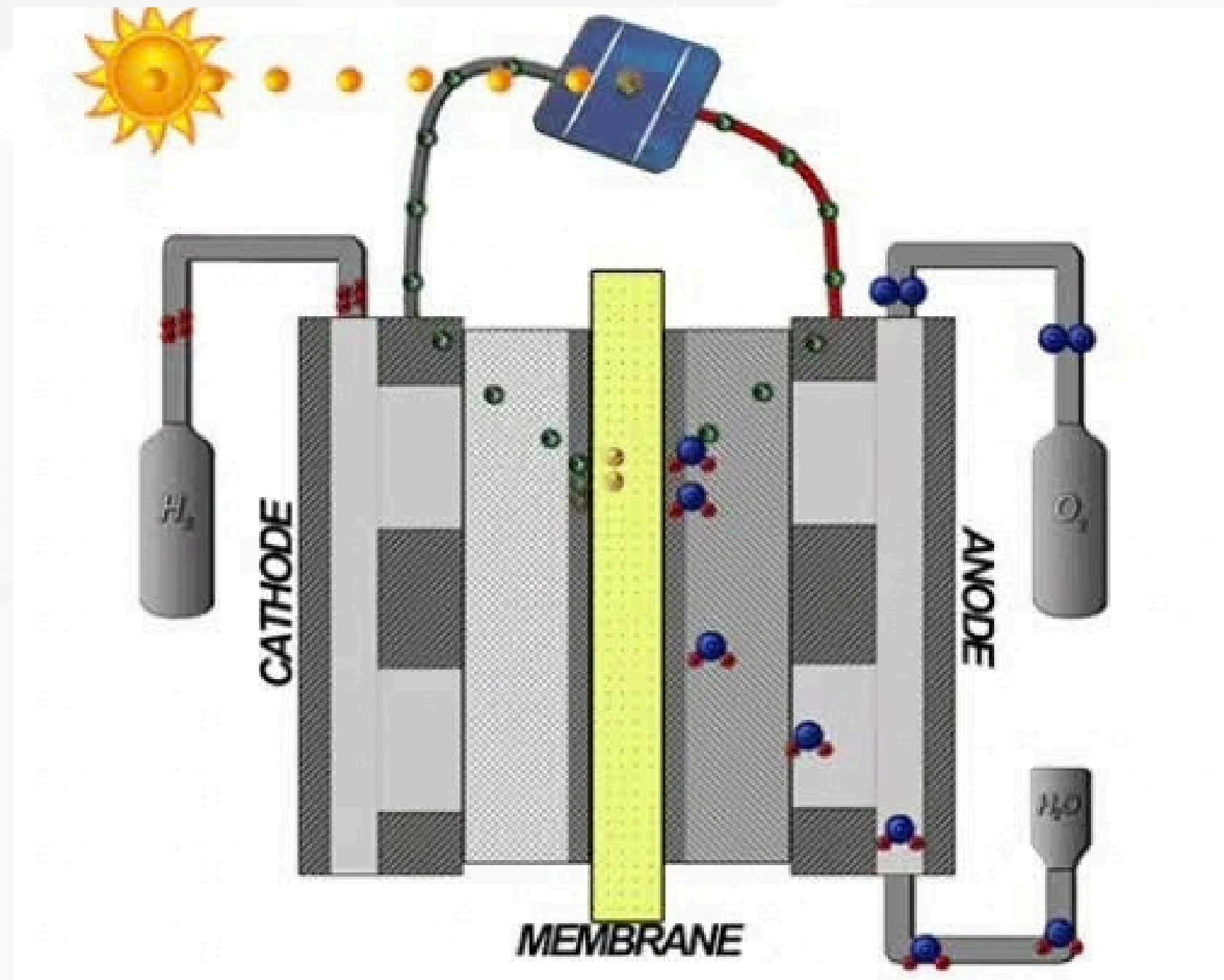
- Hydrogen is compressed to high pressure (~700 bar) for storage in cylinders or pipelines.

4. Applications:

- **Fuel cells** (for transportation)
- **Energy storage**
- **Industrial use** (e.g., steel production, ammonia synthesis)



Green Hydrogen: Powering the Future



HORIBA GAS ANALYSERS

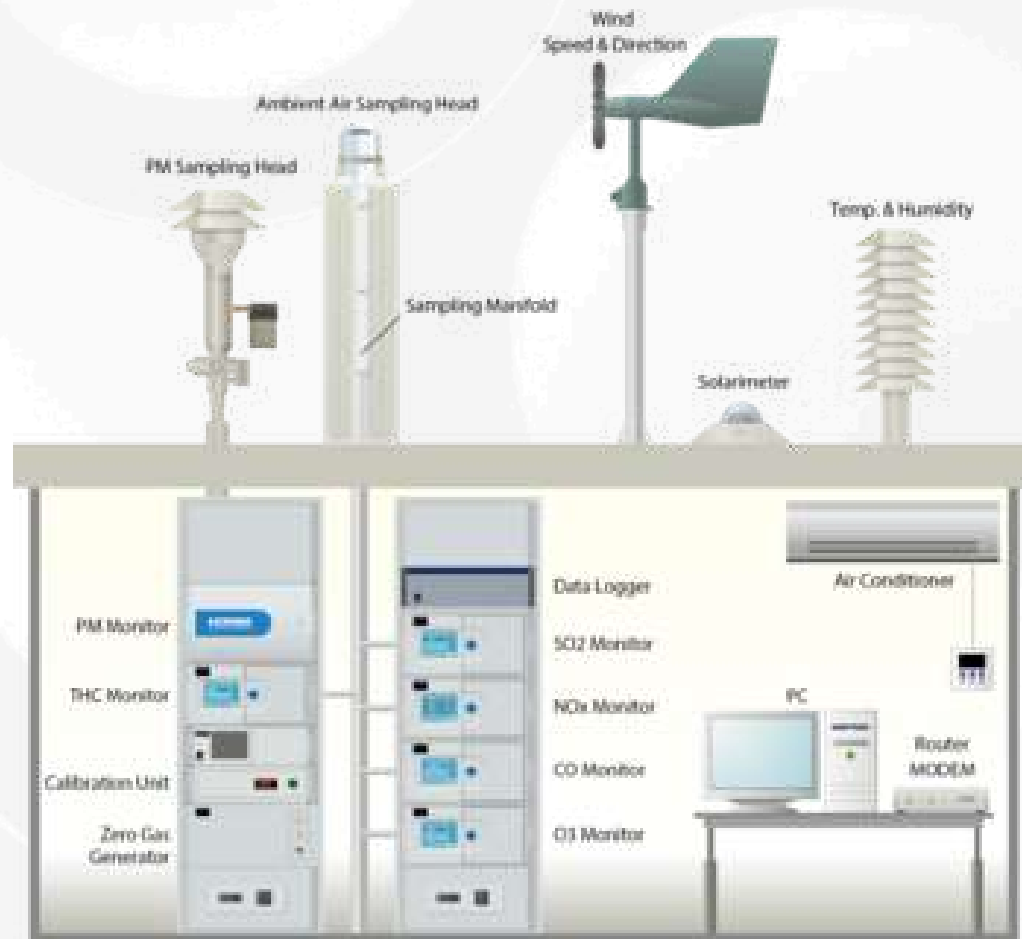
HORIBA Gas Analyzers offer precise, reliable measurements for emissions testing and industrial applications. Their advanced technology ensures compliance with environmental regulations, providing accurate data on pollutants like CO, NO_x, and hydrocarbons.

HORIBA

Process & Environmental



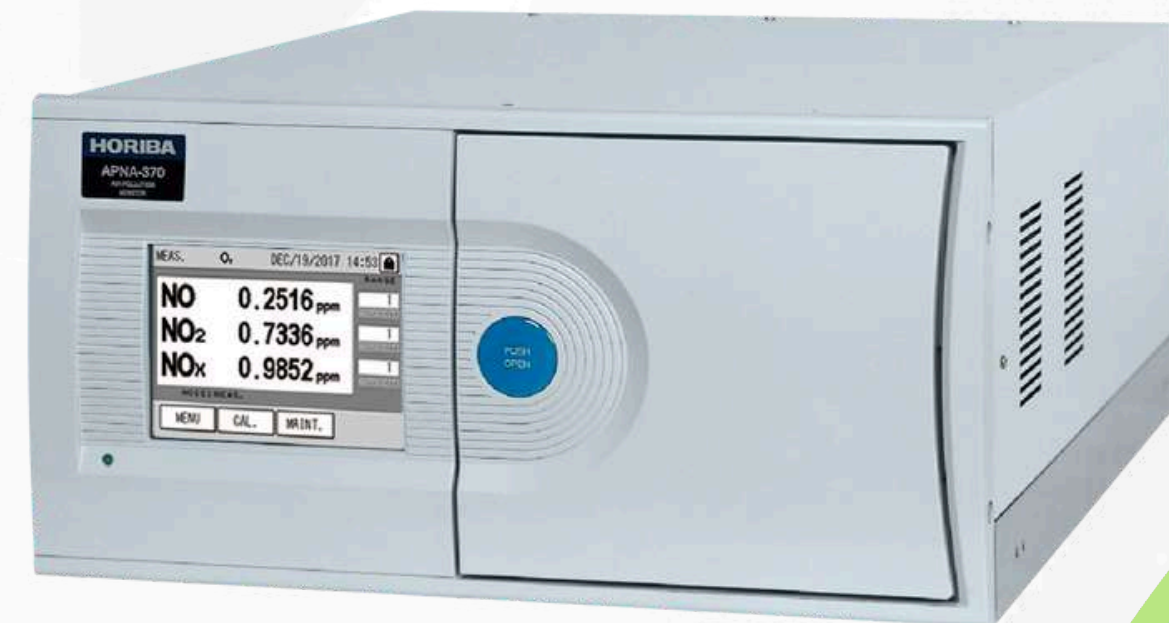
AQMS- Air Quality Monitoring Analyzer



Fixed Station



Mobile Station



**Air Pollution Monitor
AP-370**

AQMS– Air Quality Monitoring Analyzer



**Real-time particulate &
Elemental Monitoring
PX-375**



**On-line/Off-line TOC
analyzer for the low
measuring range**

WQMS- Water Quality Monitoring Analyser



**COND/TURB/PRESS TW
series**



**COD/BOD/TSS/PH OPSA-
150**



**Oil Content Analyzer
OCMA series**



**Nitrogen/
Phosphorus
TPNA-500**

WQMS- Water Quality Monitoring Analyzer



**pH/ORP/RHO/COND/RC/DO/F
TURB/COLOR/MLSS/NH4-N
H-1 series, 48/96 series**



**Gel-filled self cleaning
pH electrode
6122 series**



**pH/ORP/DO/COND/SAL/TD
S/SSG/TEMP/TURB/Depth U-50
Series**



**Total Organic
Carbon Analyzer
TI-TOCADERO
Series**

Process Gas Analyzer



**Process Laser Gas
Analyzer PLGA-1000**



**CO₂/CH₄/Siloxane VA-
5000 series**



CO/CO₂/CH₄ GA-370



**Explosion-proof Gas
Analyzer 51 series**

Emission Monitoring Analyzers



**NOX/SO2/CO2/CO/O2
ENDA-5000**



**CO/CO2/NOX/O2/SO2/CH
4/ PG-300 Series**



**Tunable Laser Gas
Analyzer TX-100**



**NOX/SO2/CO/CO2/O2/
NH3 GI-700**

Baumer India Pvt. Ltd

Innovative Sensors and Measuring Instruments:

Baumer India Private Limited is a subsidiary of Baumer Group and is responsible for India's subcontinent. The main purpose of setting up an Indian subsidiary is to be close to the customers in the region & also to support our distributors more effectively. Baumer India was established in 2007 and is headquartered in Pune. The office in Pune is well equipped and has a very modern and up-to-date training and demo center for Baumer Products.



Baumer Systems & Solutions



Pressure
Transmitter for
Industrial High
Pressure
Applications



Combi Flow
PF75H Flow
Sensor



Hygienic
Pressure Sensor



Pressure Sensor

Baumer Systems & Solutions



GAM900
Vibration /
Acceleration
Sensor



FlexTop 2202 /
2212 / 2222
(Temperature
Transmitters)



Ultrasonic
Sensors



Light Barrier /
Optical Sensor
(O330 family)

Stages in Green Hydrogen Productions & Applications for Process Sensors

Electrolyzes / BOP (PEM & Alkaline only)

1. Electrolyte level monitoring in main tank & buffer tank.
2. Water pressure monitoring.
3. Hydrogen pressure monitoring.
4. Level monitoring for water removal in dryer / separator (post electrolysis).
5. Pressure and temperature Measurement in Balance of plant.

Fuel Cell

1. Acid Temperature Monitoring.
2. Water temperature monitoring.
3. Level monitoring.
4. Pressure monitoring (SOFC) low pressure.

Storage tank / Liquid Organic Hydrogen Carrier

1. Hydrogen pressure monitoring (upto 350 bar).

Distribution Hydrogen Dispensing System

1. Hydrogen pressure monitoring at nozzle outlet, process inlet, vent line (upto 350 bar).
2. Coolant level monitoring
3. Temperature measurement at process inlet.

Baumer Level Switches for Hydrogen Dryer / Separator

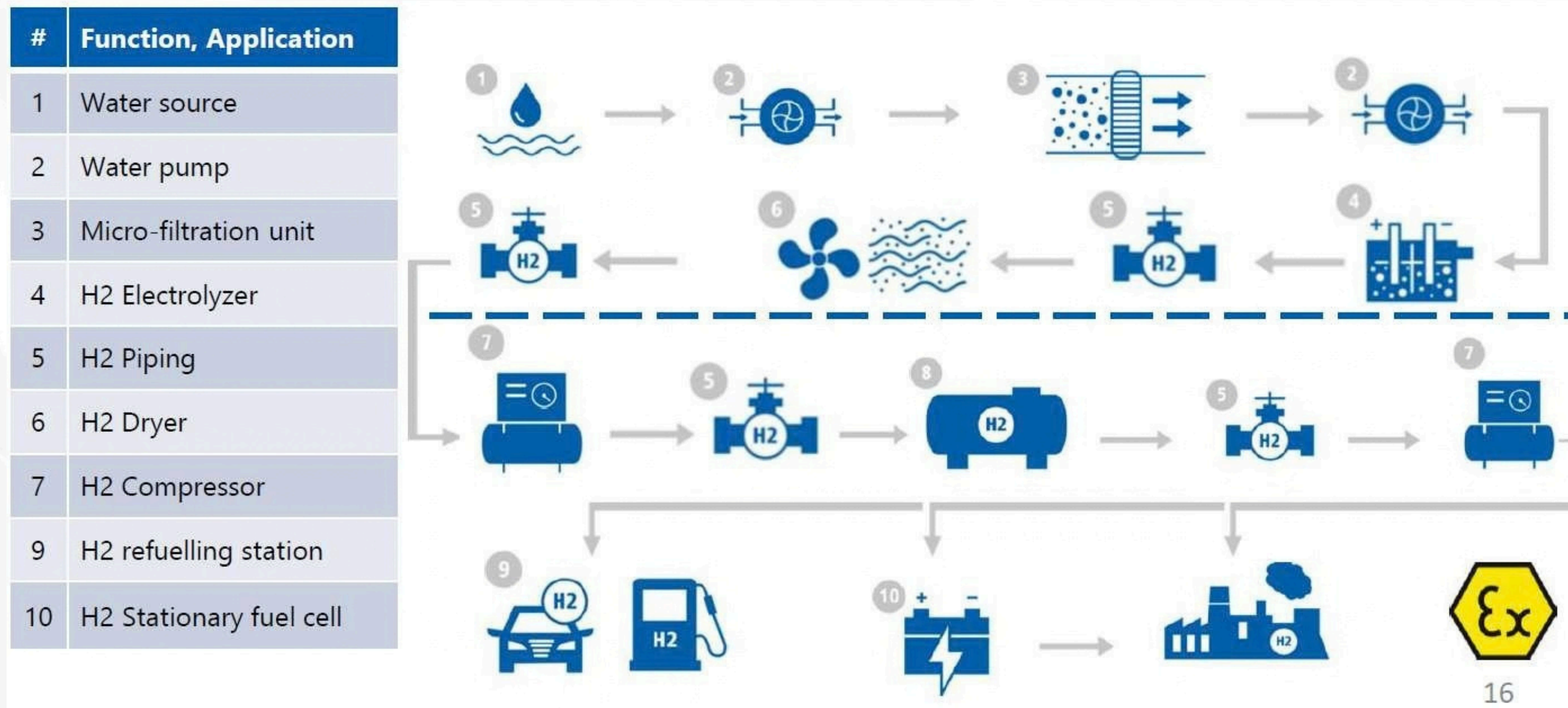


Two Level Switches mounted on the dryer tank
for sensing the water level

- Solution approach
- Identifying the correct product for the Application
- Technical support during trials



Hydrogen Applications – Pressure Value Chain



Hydrogen Applications – Pressure

Value Chain

Y923: Low Pressure ≤ 400 bar



PBMN: High Pressure ≥ 600 bar



Pressure Range	Part Number	SAP Art. Code
0...10 Bar	Y92-3.5G.B22.R/2164/7912	11253447
0...25 Bar	Y92-3.5G.B26.R/2164/7912	11253446
0...40 Bar	Y92-3.5G.B27.R/2164/7912	11264403
0...60 Bar	Y92-3.5G.B29.R/2164/7912	11253448
0...100 Bar	Y92-3.5G.B31.R/2164/7912	11251857
	Y92-3.5G.B35.R/2164/7912	11251858
0...400 Bar	Y92-3.5G.B38.R/2164/7912	11251860

Pressure Range	Part Number	SAP Art. Code
0...600 Bar	PBMN-29B39RA11499400010/7912	11256055
0...1000 Bar	PBMN-29B41RA11499400010/7912	11256134
0...1200 Bar	PBMN-29B99RA11499400010/7912	11256079

/7912: Option for Hydrogen Applications

- Pressure port Stainless steel 316L Goldcoated 15µm
- Extern Sealing EPDM
- Wetted parts free of oil and grease

Comprehensive Gas Solutions for Every Application:



Comprehensive Gas Solutions for Every Application:

Acetylene C_2H_2 Calibration Gases	Argon Ar Carbon Monoxide CO	Argonite $CaCO_3$	Butane C_4H_{10}
Kr He C_2H_6 Xe NO		Carbon Dioxide CO_2	Ethane C_2H_6
Ethylene C_2H_4	Gas Mixtures Kr He C_2H_6 Xe NO	Helium He	Hydrogen H_2

Inergen ArN_2CO_2	Krypton Kr	Methane CH_4	Nitric Oxide NO
Neon Ne	Nitrogen N_2	Nitrogen Dioxide NO_2	Nitrous Oxide N_2O
Propane C_3H_8	Oxygen O_2	Sulfur Dioxide SO_2	Sulfur Hexa Fluoride SF_6
	Zero Air $\text{O}_2 + \text{N}_2$	Xenon Xe	

Energy Bin

The EnergyBin 125 kg offers cost-efficient waste management, generating biogas and manure with minimal power requirements. It saves on LPG, electricity, and manure disposal, showing significant financial benefits over 5 and 10 years.





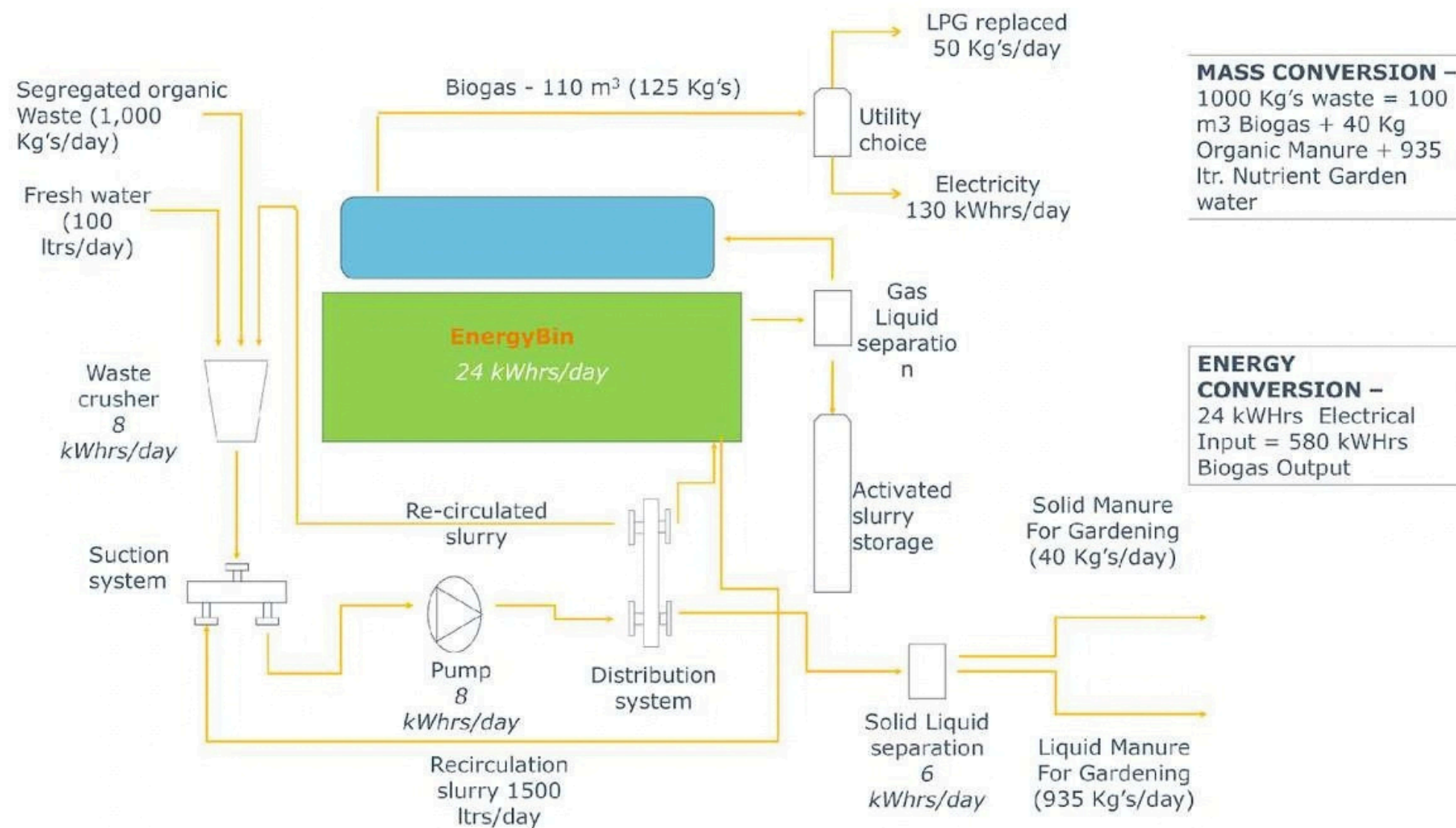
VJ INDUSTRIES[®]

Energy Bin Smart Choice

	OWC Machine (125 kg)	EnergyBin (125 kg)
Power Requirement	25 kWh/day	2.5 kWh/day
Power Cost (8 Rs/kWh)	200 Rs/day	20
Saw Dust (15% by Wt, @ 10 Rs/kg)	187.5 Rs/day	0
Enzymes (2 gm/kg, @ 120 Rs/kg)	30 Rs/day	0
De-odorize (1 gm/kg, @ 80 Rs/kg)	10 Rs/day	0
Output	Burnt Waste & Leachate	Biogas (9 m ³) & Manure (125 L)
Disposal Cost	High	Zero
Saving		
LPG equivalent Biogas (@ 40 Rs/kg)	0	360 Rs/day
Electricity @ 10 Rs/kWh	0	90 Rs/day
Manure @ 0.1 Rs/Liter	0	70 Rs/day
After 5 years	(7,80,187) Rs	7,48,250 1,82,500
After 10 years	(15,60,375) Rs	14,96,500 3,65,000

Energy Bin-Mass & Energy Balance

EnergyBin-Mass & Energy Balance



Energy Bin– Environmental Impact

EnergyBin – Environmental Impact

Data based on 1 tpd waste processing – as per GHG _ emissions _ calculator _ ver02.6

Emission of LPG			EnergyBin		
Direct emissions arising from owned or controlled stationary sources that use fossil fuels and/or emit fugitive emissions	Fuels	28.42	Waste generated in operations	Waste water	-
	Bioenergy	-		Waste	228.81
	Refrigerants	-			
Natural storage of CO ₂			EnergyBin		

- Approx. 12.5 kg of CO₂ is absorbed annually by a tree.
- 80 trees capture of 1 t of CO₂ per year.

Total Emissions savings - 257.23 tons CO_{2e}



Key Customers



இந்திய தொழில்நுட்ப கழகம் மெட்ராஸ்
भारतीय प्रौद्योगिकी संस्थान मद्रास
Indian Institute of Technology Madras



BELOP



FUJIFILM
Value from Innovation



ASHOK LEYLAND
Koi Manzil Door Nahin

Thank You

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GREEN HYDROGEN*



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Keep in

Touch