



***EMPOWERING
KITCHENS,
SUSTAINABLY***

FLUIDLINE-EXACTA INTERNATIONAL





Fluidline-Exacta International

BACKGROUND

Exacta H2 is an Indian clean energy company pioneering hydrogen-based solutions for a sustainable future.

As a division of Fluidline Exacta International, a trusted name in flow control and valve manufacturing for over two decades.

Exacta H2 specializes in hydrogen stoves, hydrogen refueling stations, storage vessels, and valves and fitting for hydrogen. In 2020, we commissioned India's first private hydrogen refueling station in Vadodara, marking a key step in the country's green energy transition.

Today, Exacta H2 works on developing affordable and scalable technologies to make hydrogen accessible, safe, and practical for all.

EXACTA H2 2025



CRISIS IN BIOMASS COOKING

The Urgent Need for Change

01

Widespread Reliance

Over 150 million rural households in India still use biomass fuels such as firewood, cow dung, or crop waste (NSSO, 2020).

02

Health Risks

Biomass combustion causes ~500-700 thousand premature deaths annually in India (WHO, 2023). Half of rural women suffer from respiratory ailments (Lancet, 2023).

03

Environmental Impact

Cooking with biomass contributes ~10% of India's black carbon emissions and leads to 2% annual forest degradation (TERI, 2022).

04

Economical Loss

Families spend ₹500-₹1,000 per month on firewood or kerosene. The opportunity cost in time and productivity is substantial. (CEEW, 2018)

The Rural Cooking Challenge in India

Despite significant government efforts, over 150 million people in India, primarily in rural areas, still rely on traditional biomass (wood, dung, crop residue) for cooking.

The core challenge has shifted from access to sustained usage. (NSSO, 2020)



Severe Health and Environmental Costs:

Smoke from the traditional open-fire stove ('Chulha') causes Indoor Air Pollution (IAP), which is the third leading risk factor for disease burden in India. This pollution is linked to an estimated 600,000 premature deaths annually from diseases like COPD, pneumonia, and heart ailments. Burning biomass also contributes to deforestation and emits 340 million tonnes of CO2 annually. (Global Burden of Disease (GBD) Studies (2019 data) and Center for Science and Environment (CSE) analysis (2024).)

Time Poverty and Gender Equity:

Women and children bear the primary burden, spending up to 800 hours annually collecting firewood. This physically taxing chore limits girls' ability to attend school and prevents women from engaging in more productive, income-generating activities, severely reinforcing gender inequality. Various time-use and energy poverty studies (e.g., NCF research, 2015-2023).

The 'Stacking' Challenge and Policy Need:

Despite wide LPG access from PMUY, high refill costs force many poor families to "stack" it with free biomass. Policy focus is now on finding affordable, scalable, and decentralized clean cooking solutions to ensure sustained daily use, often through CSR and targeted funding. Ministry of Petroleum and Natural Gas (MoPNG) and CEEW consumption analysis (2023-2024).

LIMITATIONS OF LPG AND KEROSENE

Why India's Existing Cooking Fuels Are Failing Rural Homes

LPG CHALLENGES	KEROSENE CHALLENGES	HYDROGEN ADVANTAGE
High Refill Cost: ₹800–₹1,000 per cylinder; unaffordable for 60% of rural households (MNRE, 2023).	Still used by ~5% of rural homes.	Zero-emission at source
Poor Distribution: Delivery gaps in remote/hilly areas and tribal zones.	Responsible for 20% of rural respiratory disease burden (AIIMS, 2023).	Decentralized and autonomous fuel generation
Carbon Footprint: 2.7 kg of CO ₂ per kg of LPG burned (TERI, 2022).	Being phased out under Ujjwala reforms.	No recurring cost after installation



POWER OF CLEAN COOKING

Health

01

- Reduction in acute lower respiratory infections (ALRI) caused by the use of solid fuels for cooking: Over 100,000 children die every year due to ALRI. (Alliance (CCA) / WHO (Global Burden of Disease))
- Reduction in Major Adult Disease Burden: use of solid fuels doubles the risk of developing Chronic Bronchitis and Tuberculosis (TB). (PMC/AIIMS)

Environmental

02

- Each clean stove avoids 1.2 tonnes of CO₂ per year. (Gold Standard, UNFCCC, SEI)
- 1,000 stoves can save ~2,500 tonnes of firewood annually.
- If scaled nationally (10% penetration): preserve 1% of India's forest cover (FAO, 2022)

Social

03

- Saves 2–4 hours/day of manual labor for rural women includes cooking and fuel collection (Industry IEA / Academic Reports (Aggregated Time Savings))
- Boosts girl-child school attendance and women's employment. (Development/Socio-Economic Impact Studies (UNICEF, World Bank).)

Economic

04

- 7–10 jobs created per 100 units (assembly, sales, service) (Clean Cooking Sector Employment Studies (MECS))



Exacta H2 Two Burner Stove

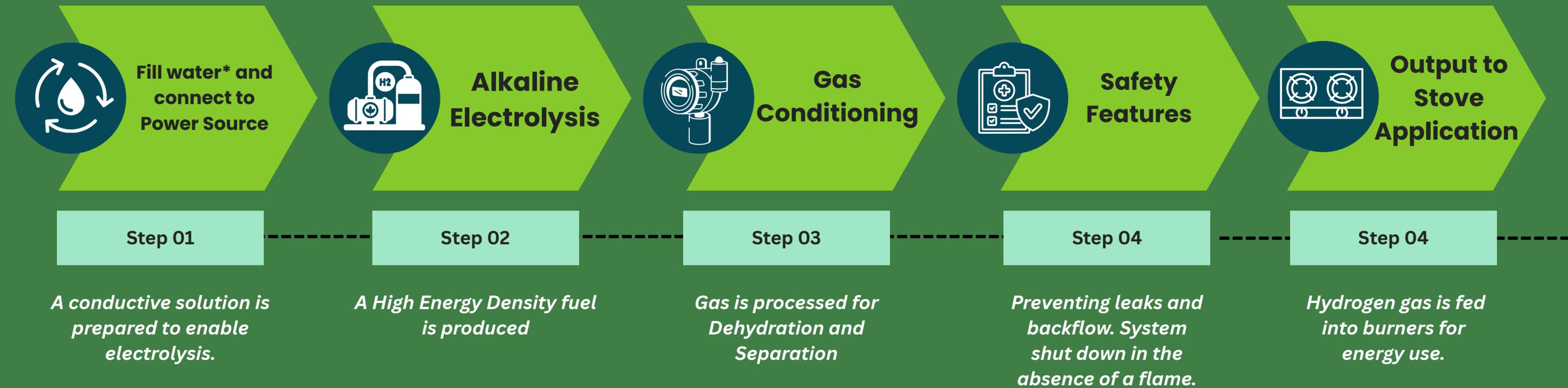


EXACTA STOVE MODELS OVERVIEW SPECSHEET

Model	EXR-10	EXU-20	EXI-60
<i>Market Segment</i>	<i>Rural</i>	<i>Urban</i>	<i>Institutional</i>
<i>Number of Burners</i>	<i>1</i>	<i>2</i>	<i>Up to 6</i>
<i>Consumption Of H2 Gas (LPM)</i>	<i>15</i>	<i>30</i>	<i>60</i>
<i>Material of Construction(MOC)</i>	<i>Carbon Steel</i>	<i>Stainless Steel</i>	<i>Stainless Steel</i>
<i>Average Stove Operation Time (hrs)</i>	<i>4</i>	<i>As Per Requirement</i>	<i>As Per Requirement</i>
<i>Refiling of Electrolyte (Days)</i>	<i>Every 5-10 days</i>	<i>Every 20 days</i>	<i>Every Month</i>
<i>Power Source</i>	<i>Solar/Grid</i>	<i>Solar/Grid</i>	<i>Solar/Grid</i>
<i>Adjustable Flame Control</i>	<i>Manual/Basic</i>	<i>Electronic</i>	<i>Electronic</i>
<i>Ignition System</i>	<i>Piezo</i>	<i>Electric</i>	<i>Electric</i>
<i>Portability</i>	<i>Yes</i>	<i>No</i>	<i>No</i>

Exacta H2 Hydrogen Stove Technology

At a Glance



*Electrolyte**



OUR SOLUTION: HYDROGEN BASED COOKING STOVE

01

Produces on-demand hydrogen-oxygen gas via electrolysis of water, creating a clean and efficient cooking fuel.

02

Zero-emission cooking—only water vapor produced, eliminating indoor air pollution and health hazards.

03

Adaptable for rural settings, with options for solar-powered operation—making it truly sustainable.

04

Designed specifically for rural applications with enhanced safety features, affordability, and durability





KEY ENGINEERING FEATURES AND HIGHLIGHTS

01 Special stainless steel/brass/ceramic burners designed for high flame temperature (2300-2500), with flame diffusers for even heat distribution.

02 Critical safety features: flashback arrestors, non-return valves, pressure relief valves, and water bubblers.

03 User-centric design: Adjustable flame control, piezo/electric ignition, portable design, compatible with traditional rural cookware.

04 Optional solar panel integration for off-grid operation, making the stove fully sustainable and independent from the electrical grid.



Exacta H2 vs. LPG: Safety & Technical Comparison

A comprehensive look at safety advantages and technical differences

Safety Aspect	● EXACTA H2 (Hydrogen)	● LPG (Cylinder Gas)
Fuel Storage	No storage required	High pressure cylinders required
Emission Risks	ZERO CO₂, no soot, only water vapor	CO ₂ , CO, NO _x → indoor air pollution risk
Fire/Explosion Risk	Low-pressure (0.1–0.3 bar), safer flame	High-pressure, risk of cylinder blasts
Safety Devices	Flashback arrestor, NRV, bubblers, leak sensors, auto cut-off	Regulator & hose only
Leak Detection	Built-in hydrogen sensors (urban & commercial models)	Manual smell test (odorized LPG)
Health Impact	NO smoke, NO carbon monoxide	Carbon monoxide poisoning risk
Refilling Hazards	NO refills needed, powered by water + solar	Cylinder transport & handling risk

HYDROGEN EFFICIENCY COMPARISION

A Brief Comparison With Different Fuel Types

FUEL TYPES	CALORIFIC VALUE	STOVE EFFICIENCY	CO2 EMISSIONS	FUEL COST(Monthly)	SAFTEY RISK
 Hydrogen	120,000 MJ/kg	70%	Zero	₹ 650(using water + solar)	Very Low (No storage)
 LPG/PNG	46-51 MJ/kg	60%	High	₹ 800-1200	Medium
 FIREWOOD	17,500 to 21,100 kJ/kg	10-15%	Very High	₹ 700 -1100(labor cost)	High (Open flame)
 BIOGAS	20 MJ/m ³	50-55%	Low	₹ 100-300 (Maintenance only)	Low (low pressure)



Contact Us: Empowering Communities Through Sustainable Solutions

Reach out to us for
more information
today!

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