Alklysis v3

Onboard Hydrogen at power—cutting costs, boosting efficiency, & enabling CO_2 capture

Alklysis - "Hydrogen Simplified, Efficiency Amplified"

May 21, 2025

https://alklysis.decenterai.com

The Hydrogen Challenge

Prohibitive Costs

At $34.55/kg, hydrogen costs triple that of gasoline. Prices have surged 119% since 2021.

Storage Complexities

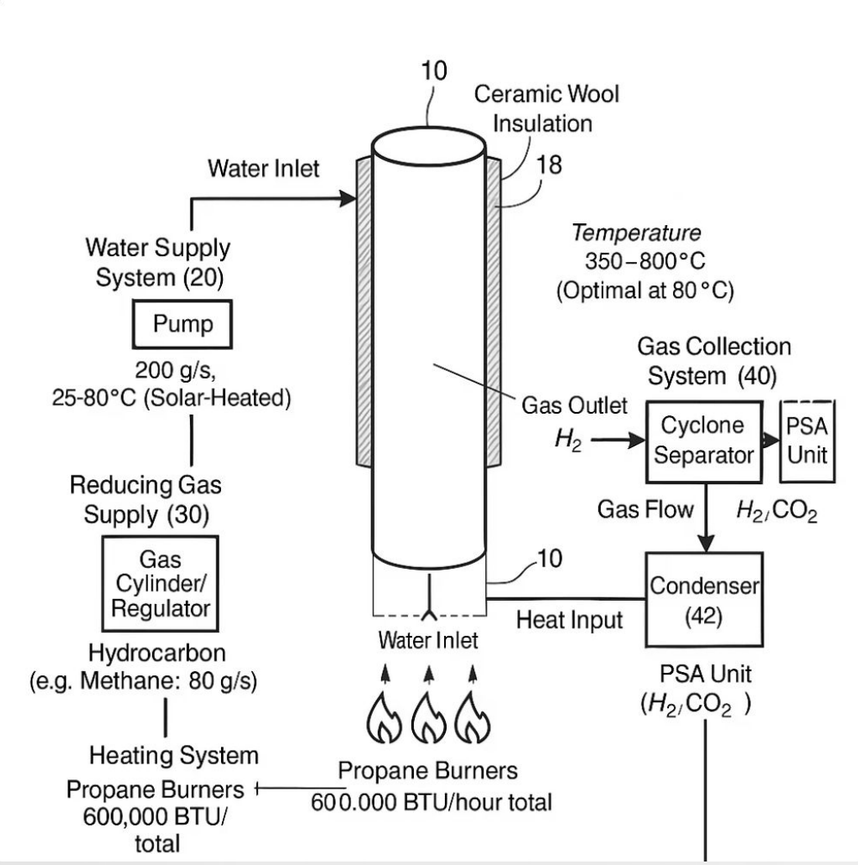
700 bar pressure tanks raise safety concerns. Hydrogen embrittlement deteriorates transport materials.

Infrastructure Gaps

Unreliable fueling networks hamper adoption. Stations require massive capital investment.

Market Hesitation

FCEV sales plummeted 90% year-over-year in California. Battery EVs now dominate the market.



Our Solution: Alklysis

Onboard Hydrogen Production

Compact CLC system produces hydrogen

Infrastructure-Free

Integrates at fuel stations now, vehicles next. No hydrogen distribution needed.

Sustainable & Efficient

200 bar storage, CO_2 capture, and scalable for mobile or stationary use.

Innovative Technology Framework

CH_4 Reduction

Methane reduces iron oxide to iron

Steam Regeneration

Steam regenerates iron oxide while releasing hydrogen

Water Gas Shift

Final conversion optimizes purity to 99%

Alklysis vs Industry Standards

Our technology delivers superior performance across key metrics compared to traditional methods.

Parameter	Alklysis	Steam Methane Reforming	Catalytic Partial Oxidation
H_2 Yield (mol/mol CH_4)	3.7-4	3.01 (pre-purification)	2.5–2.8
Efficiency (LHV)	~97%	70–85%	60–75%
Operating Temp.	650°C	700–1000°C	800–900°C
CO_2 Emissions	Captured	High	Moderate
Infrastructure	Onboard production	Centralized + distribution	Centralized + O_2 supply

Alklysis eliminates distribution needs and operates at lower pressures while capturing carbon emissions.

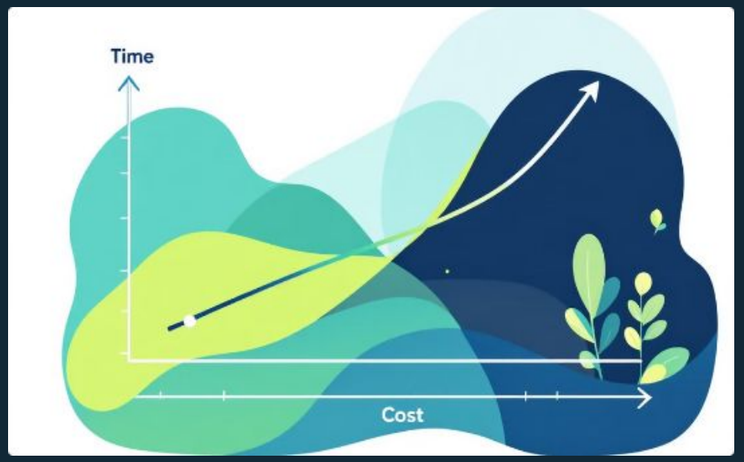
Scalability and Adoption

Easy Integration

Fits easily to existing CNG platforms.

Modular Design

Scalable configurations adapt to various vehicle and industrial needs.



Cost-Effective

Lower entry barriers accelerate market adoption across sectors.

Business Model

1

System Sales

To fuel stations and OEMs

2

Licensing

For industrial and power uses

3

Hydrogen Service

At fuel stations

Production cost: $50,000 per system. H_2 cost: $2–4/kg.

Competing SMR: $600–800K. Target payback: under 3 years.

Market Opportunity

Global Market

$556B hydrogen market by 2034

UAE & GCC

$50B+ clean energy investments

India

Rapid hydrogen adoption in auto and power

Unique Position

No direct CLC competitors for vehicles

Traction & Milestones

Litepaper Publication

Our peer-reviewed litepaper validated 90% LHV ideal efficiency for our CLC technology

Strategic Partnerships

Advanced discussions with UAE automotive manufacturers and Dubai Electricity & Water Authority for pilot implementations.

Team Expansion

Strengthened expertise with Dr. Safique Anwar (metallurgy) and Stefan (automotive integration).

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v3 Early Publication

Peer-reviewed whitepaper improved upon v2 with 97% ideal efficiency

Joint Research with FRC

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Alklysis and Fujairah Research Centre have joined forces to validate, develop the v3 prototype

Our technology has moved from theoretical validation to pre-deployment partnerships in our target markets.

Vision & Roadmap

Our strategic roadmap positions Alklysis to revolutionize the hydrogen market with achievable milestones and exponential growth.

Pre-seed Funding

Secure $5M investment to build, scale prototype and establish IP protection by Q4 2025.

Scale

Leverage $25M VC loan to scale production systems by Q2 2026.

Revenue Milestone

Achieve $200M+ ARR by Q4 2026 through strategic market penetration.

Global Expansion

Enter GCC and Indian markets via Series A funding at $2.5B+ valuation.

Financial Ask

Pre-seed Round

Raising $5M SAFE at a $50M cap or 40% discount

Fund Allocation

40% prototype development, 30% operations, 20% market entry, 10% IP protection.

Growth Catalyst

Additional $25M VC loan becomes available upon securing Provisional Patent.

Investment Timeline

Initial funding closes Q3 2025, enabling commercial prototype by Q1 2026.

Projections

$1B revenue by 2029 via OEM and station deals

Our Leadership Team

Hiro

LinkedIn

Entrepreneurial engineer with 6+ years leading the development of scalable, high-performance systems in energy and industrial technology. Proven track record in building cross-functional teams and launching innovative products from concept to market. Passionate about accelerating the clean energy transition, Committed to driving Alklysis's vision of sustainable, distributed energy solutions for the next generation of vehicles and power generation.

Dr. Safique Anwar

LinkedIn

Dr. Safique Anwar is a specialist in catalyst development and chemical looping combustion, with deep expertise in molecular modeling, thermodynamics, and CO_2 capture. He leads the integration of carbon capture technology at Alklysis.

Tijn van Rooij

LinkedIn

Scientific Advisor (Iron-Based Hydrogen Storage, SOLID Project)

MSc Mechanical Engineering, Technische Universiteit Eindhoven.

Former Case Coordinator, Technical Team, SOLID (TU/e)

Led the technical team exploring iron-based hydrogen storage and steam-iron hydrogen release.

His research at SOLID provided foundational insights for Alklysis's technical approach.

Call to Action

"Empowering Future with Sustainable, Onboard Hydrogen Solutions"

Transform the Hydrogen Landscape

Join us in making clean hydrogen accessible worldwide.

Partnership Opportunities

Strategic collaborations available across manufacturing and distribution.

Investment Potential

Early investors projected to make 100-1000X

Contact Us Today

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