

Geo-B H₂ Station

Self-Sustaining Hydrogen from
Geothermal Heat and Biogas

Attila R. Imre
Réka Kustán
imreattila@energia.bme.hu

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BME

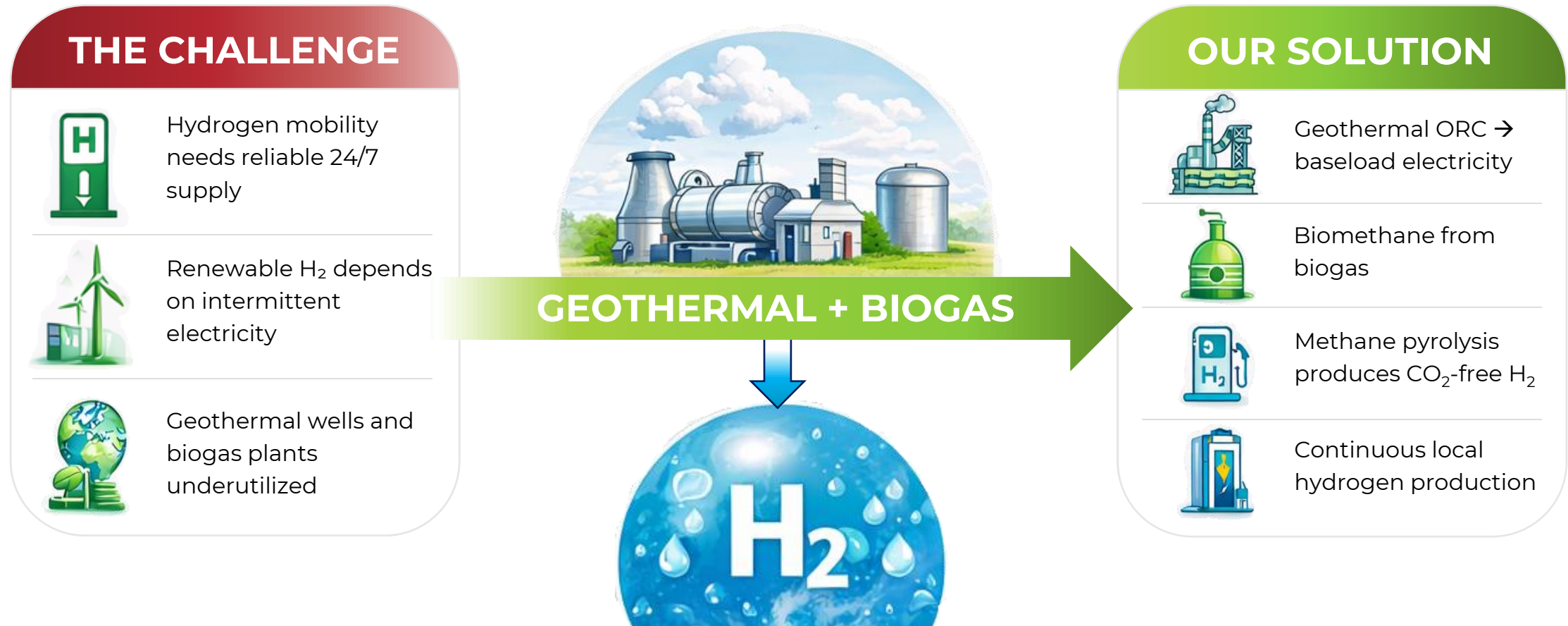


SMART-INNO
TECHNOLOGY R&D
Engineering, Consulting & Solutions



Geo-B H₂ Station

Self-Sustaining Hydrogen from Geothermal Heat and Biogas



Turning geothermal heat and biogas into a continuous hydrogen supply.

Our solution - system Concept

Geothermal-Powered Hydrogen Micro-Hub

Geothermal → ORC

baseload electricity from 70–130 °C
geothermal heat

Geothermal Well

1 MW ORC
≈ 50 kg H₂/hour
≈ 1.2 t H₂/day

Fully modular, replicable at
many geothermal–biogas sites

On site Hydrogen Refueling Station

24/7 Hydrogen production
No large hydrogen storage
Minimal grid dependence

Biomethane From Biogas

Biogas → Plasma methane splitting

Continuous biomethane feedstock →
CO₂ free H₂ + solid carbon

H₂ Refueling Station

Local heat + Local gas → Local hydrogen

Value Proposition & Regional Impact



Technical Advantages

- ✓ Continuous baseload H₂ production
- ✓ CO₂-free hydrogen + solid carbon by-product
- ✓ No intermittency → no large batteries or oversized H₂ buffers
- ✓ Utilises existing geothermal & biogas assets



Regional Impact (AT-SK-HU)

- ✓ Cross-border hydrogen value chain
- ✓ Decarbonisation of transport fleets
- ✓ Replicable across Central Europe
- ✓ Investment-ready projects
- ✓ Strong alignment with ELEVATEcee objective

Baseload geothermal energy enables reliable local renewable hydrogen production



Deployment Model & Scale Up Plan

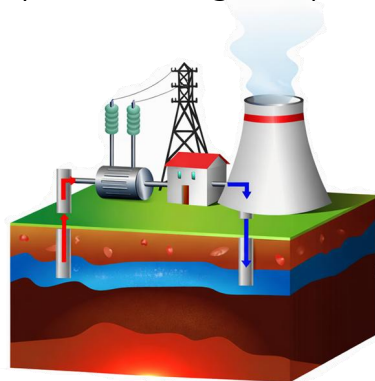
Pilot ready within ~2 years

Phase 1

6-9 months

Feasibility

- ✓ Site assessment: geothermal well + nearby biogas plant
- ✓ ORC + plasma integration modelling
- ✓ Local H₂ demand analysis (municipal fleets, logistics)



Phase 2

12-18 months

Pilot demonstrator

- ✓ Build a 50–200 kW ORC + 20–80 kg/day H₂ pilot unit
- ✓ Install compact hydrogen dispenser
- ✓ Validate continuous, off-grid H₂ production



Phase 3

Year 2-4

Regional Replication (AT-SK-HU)

- ✓ Series deployment at geothermal-biogas co-locations
- ✓ Integration into regional hydrogen corridors
- ✓ Expand with additional heat sources or higher capacity ORC modules



What We Need (Partners & Funding)

Building a geothermal-powered hydrogen ecosystem in Central Europe

Technology Partners

 ORC manufacturer / engineering partner

 Methane pyrolysis technology provider

 Hydrogen station integrator

Site Partners

 Geothermal well operators (70–130°C)

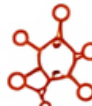
 Biogas / biomethane plants

 Municipal fleet operators

Industrial & R&D

 EPC / prototype builder

 Universities & research partners

 System integration expertise

Funding & Investment

 Investors & development agencies

 National hydrogen programmes

 Innovation & climate funds

Funding Needed



Feasibility

€150–250k



Pilot

€1.5–2.5M

Looking for technology partners (and further sites) in Central Europe

Thank you for your attention

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