



AMMONIA ENERGY
ASSOCIATION

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SolydEra: Solid Oxide provider for Green Ammonia production

Massimo Bertoldi, CTO



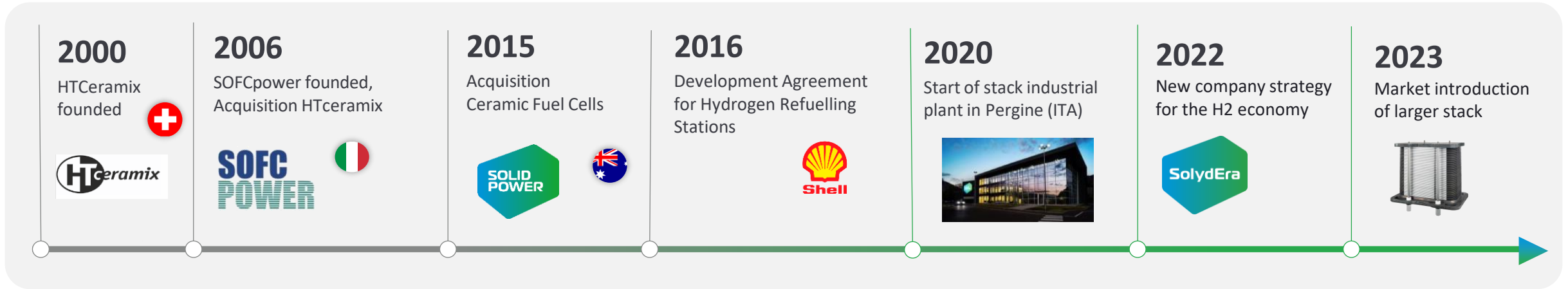
We stack it.



SolydEra: who we are



A 20+ years journey



Technology and products

- Proprietary Solid Oxide planar cell and stack technology
- Suitable for both fuel cell and electrolysis operations
- vertically integrated end-to-end technology provider
- Large experience along the whole value-chain, including application engineering and field deployment

Facts & figures



Our technology in brief



High conversion efficiency
Up to **90%** both in steam electrolysis or cogeneration from gas



Low cost based on **proprietary design** and use of materials & processes from well-developed industries



No noble metals, no PFAs or other rare materials, therefore no risk for shortage nor limitation in case of capacity ramp up



Reversible operation possible using the same stack



No polluting emissions (NO_x , SO_x , VOC)
 CO_2 reduction between 50%-100%



Fuel flexibility (H_2 , ammonia without cracker, natural gas, bio-fuels, blends)



Proven fuel cell operation with **75M+ hours in the field** and **very stable behavior**

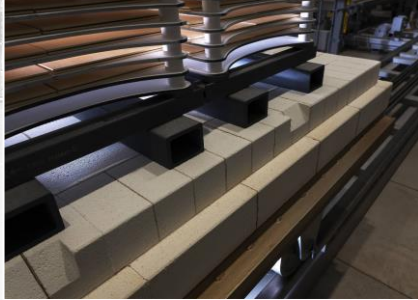


The largest SO stack commercially available
25 kW SOE in a single tower



Manufacturing readiness: ready for scale up

THE LARGEST INDUSTRIAL STACK PRODUCTION PLANT IN EUROPE



75 MW
SOE capacity



1mn
cells/year

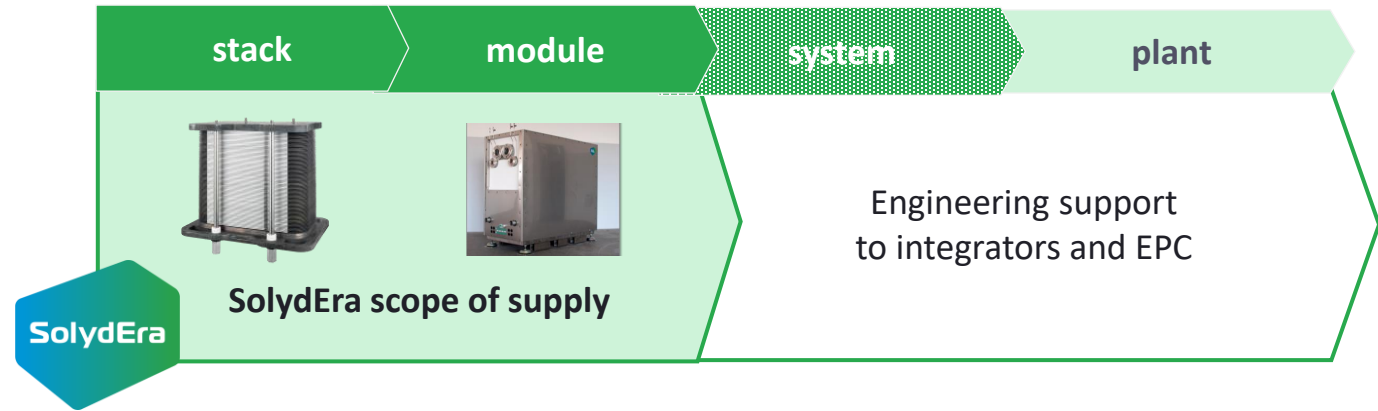


3+ years
operation since
Aug 2020

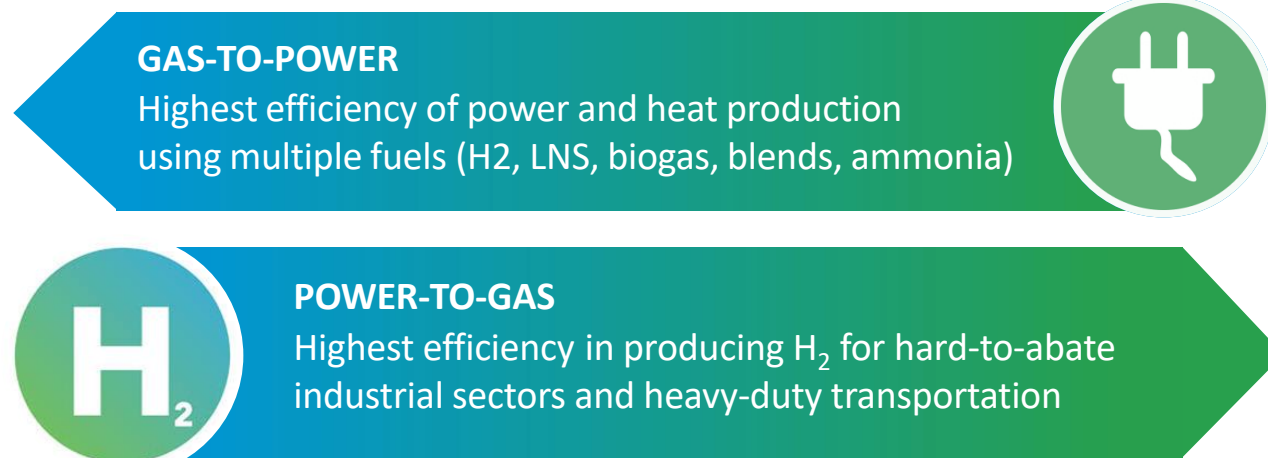
Strategic positioning in value chain



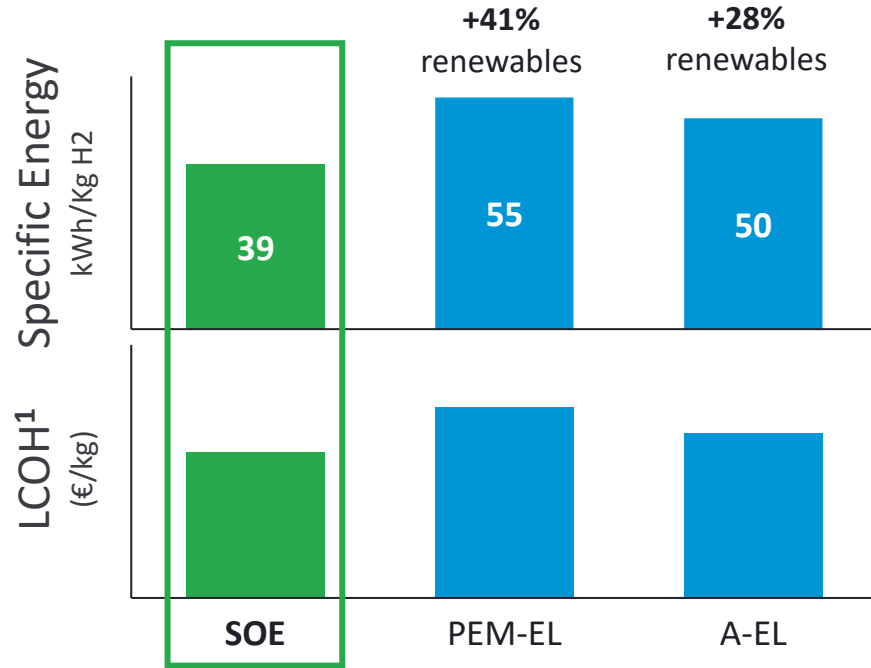
core technology provider of Solid Oxide stacks and modules



Same stack used for both G2P and P2G applications, enabling reversible operation



SOE for green Hydrogen and green ammonia



Reversible operation	✓	✗	✗
Co-electrolysis	✓	✗	✗

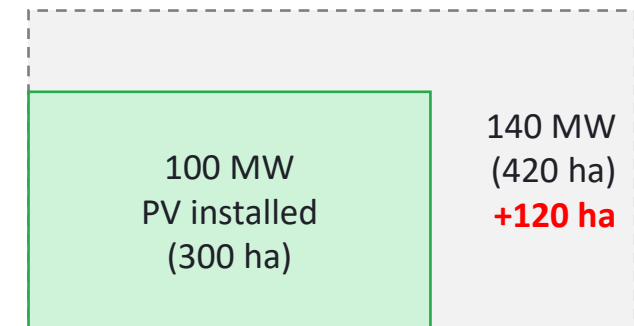
Not only Opex savings..

- 30-40% larger electrolyzer installed capacity required with ALK/PEM electrolyzer for the same H₂ production



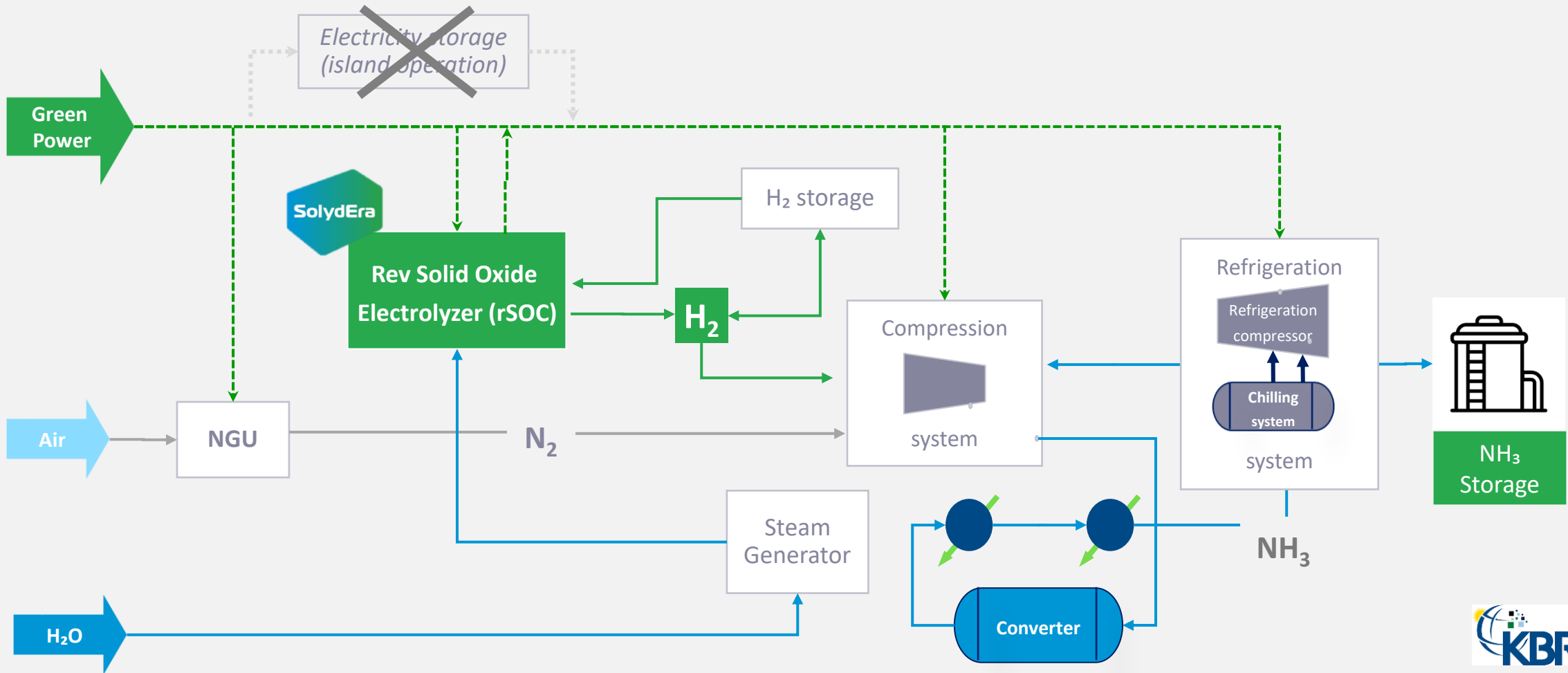
- 30-40% more Capex and land required for RES (eg PV)

Land use



SOE for green ammonia

Simplified block flow diagram of integrated SOE in Green Ammonia plant



SolydEra and KBR: a strategic alliance



Innovative, integrated solutions for Green Ammonia based on Solid Oxide Electrolysis

Key advantages:

- Unique combination of proprietary IP from SolydEra and KBR
- Smart integration concepts for minimum LCOA, footprint and maximum electrolyzer uptime in ammonia plants
- Ready for multi-MW-scale projects from 2025 to decarb both grassroot and green-revamped ammonia plants





Thank you!