



Demo4Grid

Demonstration of a 4 MW Large Scale Pressure Alkaline Electrolysis for Grid Balancing Services



GREEN HYDROGEN

GREENING OF INDUSTRY

Project Partners

Greece

- ❖ Diadikasia

Switzerland

- ❖ IHT Industrie Haute Technologie SA

Spain

- ❖ FHA Fundación Hidrógeno Aragón
- ❖ instrumentacion y componentes SA

Austria

- ❖ MPreis Warenvertriebs GmbH
- ❖ FEN Sustain Systems GmbH

Project Details

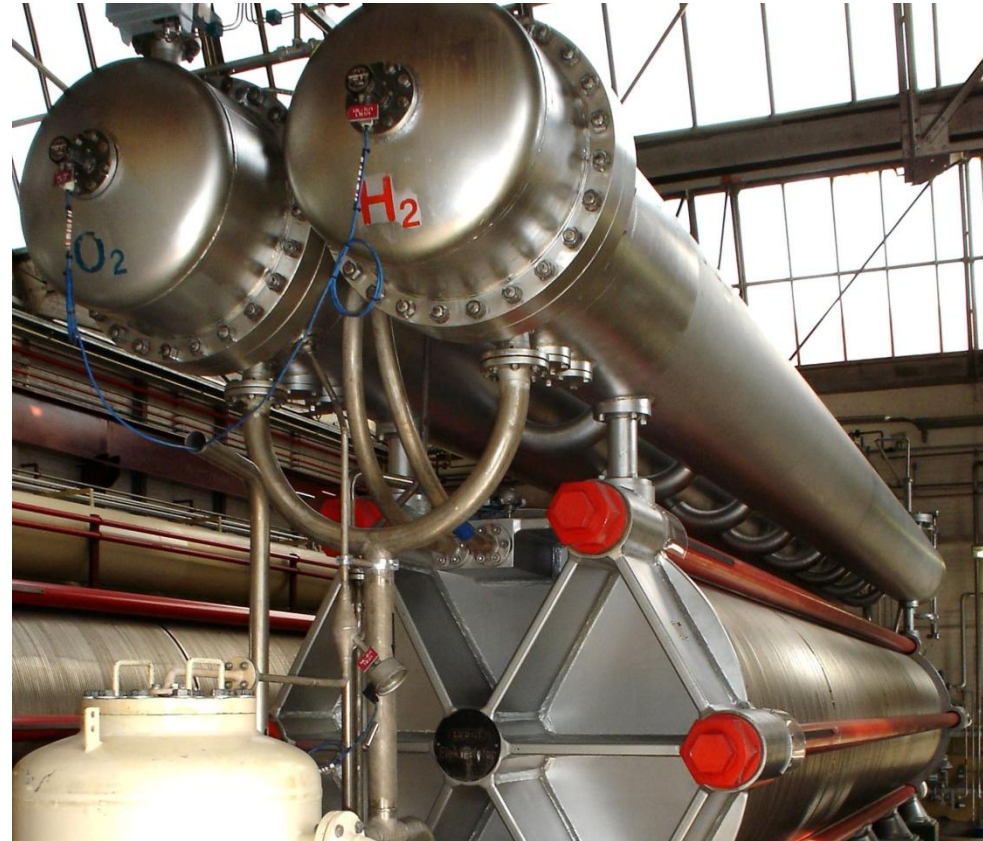
- ❖ **Project reference:**
736351
- ❖ **Topic:**
FCH-02-7-2016 Demonstration of large-scale rapid response electrolysis to provide grid balancing services and to supply hydrogen markets
- ❖ **Project type:**
Demonstration
- ❖ **Start date:**
Wednesday, March 1, 2017
- ❖ **End date:**
Monday, February 28, 2022
- ❖ **Duration:**
60 months
- ❖ **Project cost:**
7,736,682.50 €
- ❖ **Project funding:**
2,932,554.38 €
- ❖ **Coordinator:**
DIADIKASIA SYMVOULOI
EPICHEIRISEON AE

The Scope of Demo4Grid

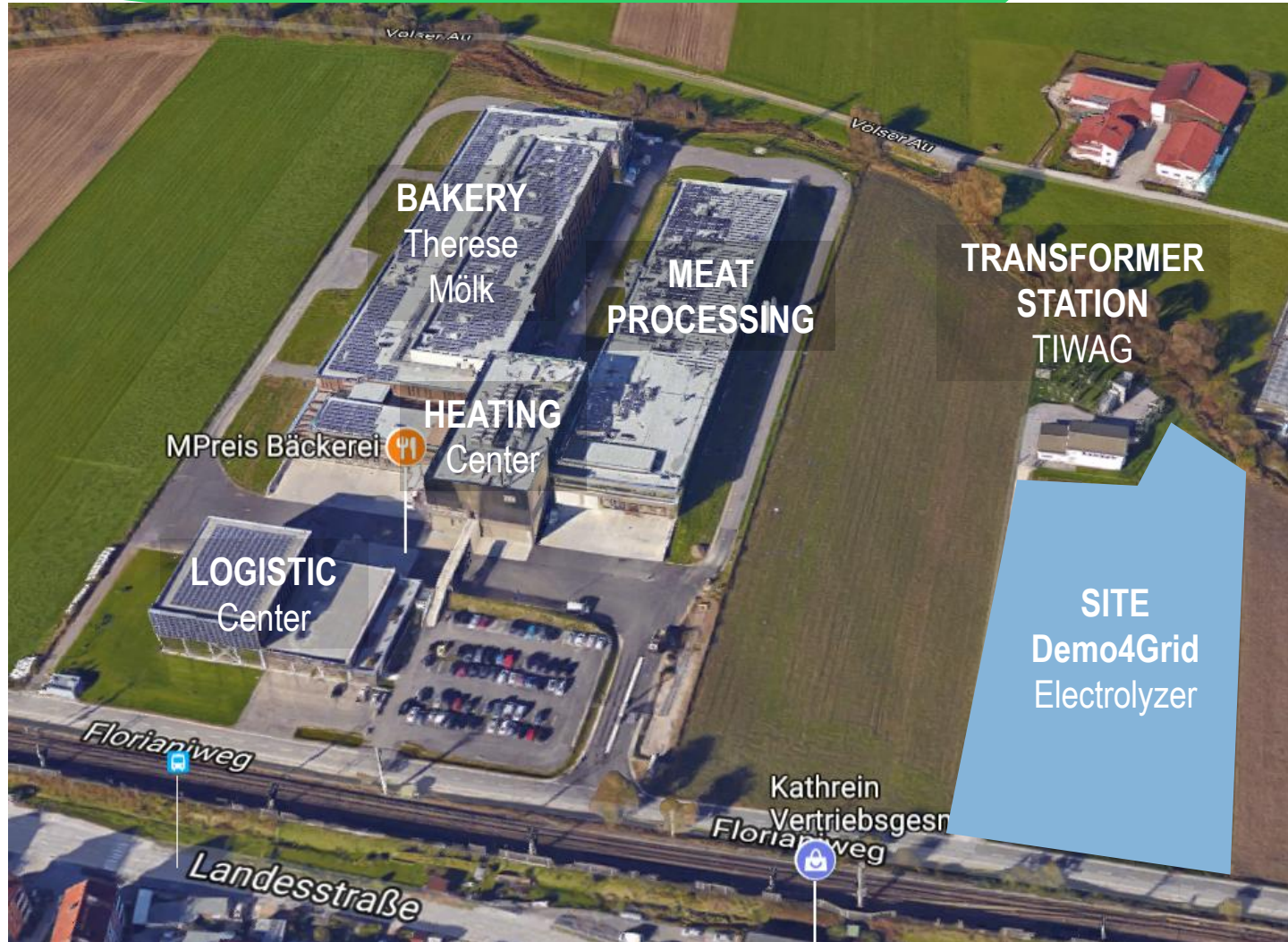
Demonstration of a large-scale electrolysis unit with 4 MW using pressurized alkaline technology to provide grid balancing services and supply hydrogen for the long term business model of MPreis with

- ❖ a long term perspective for use of the installation after the project using the produced hydrogen as industrial gas, transport fuel or power-to-gas
- ❖ a sufficiently rapid response time of 2 seconds and the possibility of operation under partial load
- ❖ the participation in the existing primary and secondary grid balancing markets
- ❖ demonstration of the benefits from grid services revenue streams and power price opportunities
- ❖ an energy performance of less than 52 kWh per kg_{H2}
- ❖ CAPEX of 630 € per kW respectively 2.5 million €

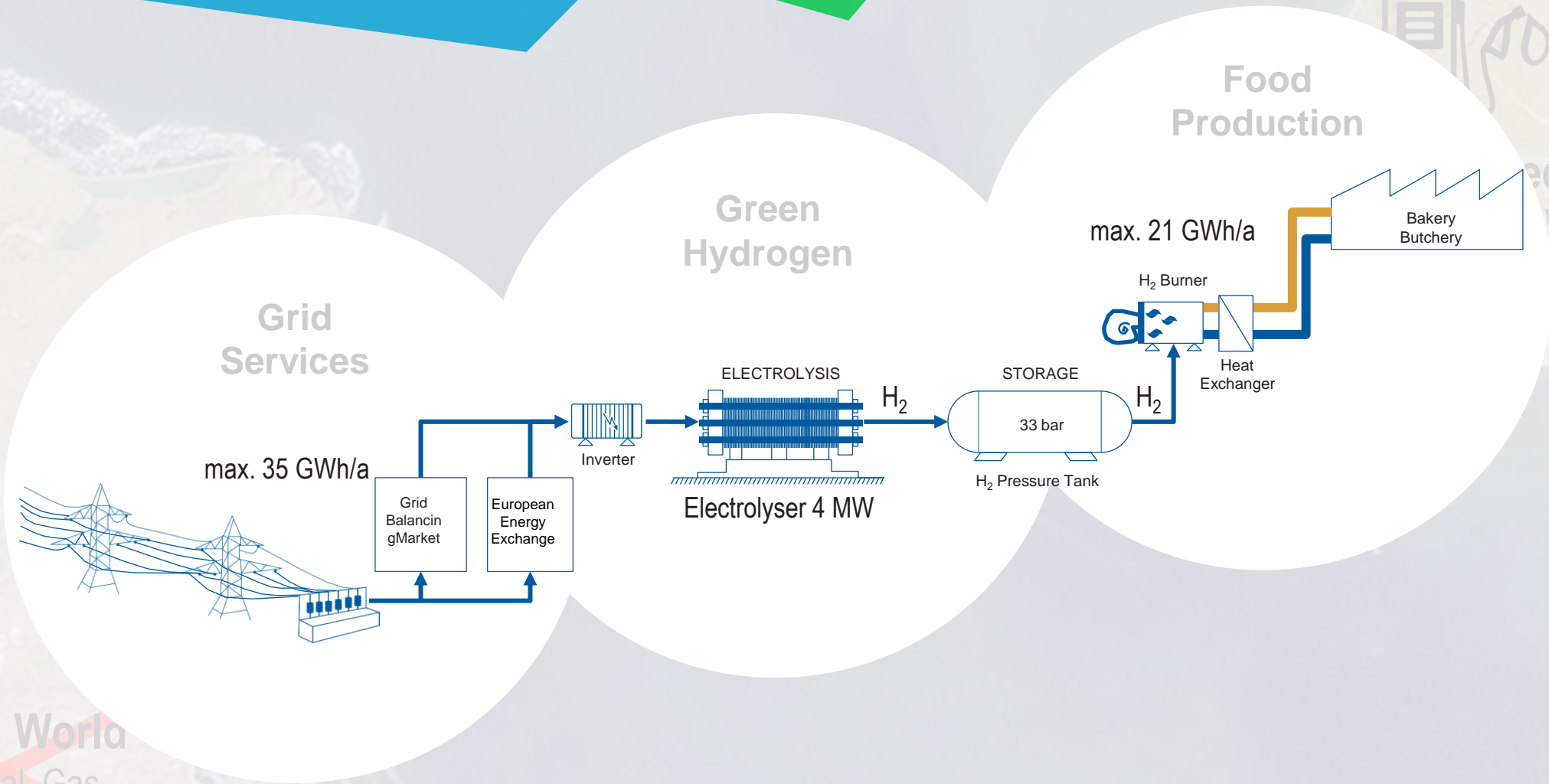
Large Scale Electrolyser



Demonstration Site at MPreis



Demo4Grid – Short Term Business Model

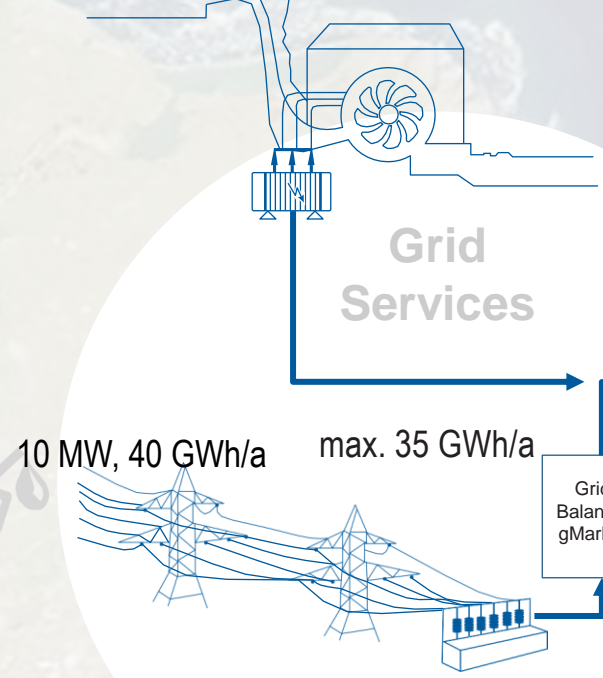


~~Fossil World~~
 Oil, Coal, Gas,
 CO₂, Dust, Noise

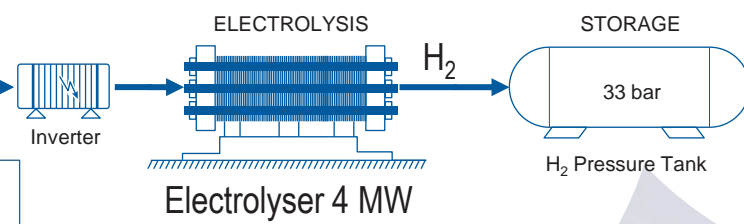
Green World
 Water, Wind
 ? , Dust, Noise
 Fleischhacker

Demo4Grid – Long Term Business Model

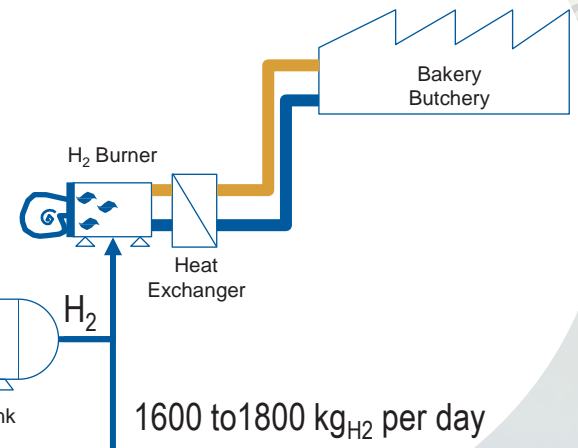
KW Sellrain
Regional Hydro Power Plant



Green Hydrogen



Food Production



Public Transport



30 to 50 FCE-Busses

HRS



Private Mobility



300 to 500 FCEV's

MPREIS Logistics



30 to 50 FCE-Trucks

~~Fossil World~~
Oil, Coal, Gas,
CO2, Dust, Noise

Green World
Water, Wind
Dust, Noise
Leischhacker

Expectations

- ❖ Demonstrate feasible operation of large scale rapid response electrolysis
- ❖ Implement the necessary grid interfaces to provide grid balancing services
- ❖ Techno-economic analysis of the performance of these systems
- ❖ Projections of the value and size of the markets addressed by provision of the grid balancing services and supply to multiple hydrogen markets
- ❖ Assessment and operation experience of the contractual and hardware arrangements required to access the balancing services and operate the electrolyser systems
- ❖ Assessment and operation experience, including safety, of the contractual and hardware arrangements required to distribute and supply hydrogen to multiple markets such as industrial gas, transport fuel and/or power-to-gas
- ❖ Assessment of the legislative and RCS implications of these systems and any issues identified in obtaining consents to operate the system
- ❖ Recommendations for policy makers and regulators on measures required to stimulate the market for these systems



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