Demo4Grid

DEMO 4GRID

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Programme Review Days 2019

Brussels, 19-20 November 2019

PROJECT OVERVIEW

- **Call year:** 2016
- **Call topic:** FCH-02-7-2016 Demonstration of large-scale rapid response electrolysis to **provide grid balancing** services and to **supply hydrogen markets**
- **Project dates:** 01/03/2017 > 31/08/2023
- **Stage of implementation 01/11/2019:** 30 %
- **Total project budget:** 7,736,682.50 €
- **FCH JU max. contribution:** 2,932,554.38 €
- **Swiss Government contribution: approx.** 1,380,000.00 €
- **Other financial contribution:** 3,360,000.00 €
- **Partners:** FEN SUSTAIN GMBH (AT), FHA ARAGON (ES), IHT SA (CH), INYCOM SA (ES), MPREIS GMBH (AT)

Schweizerische Eidgenossenschaft
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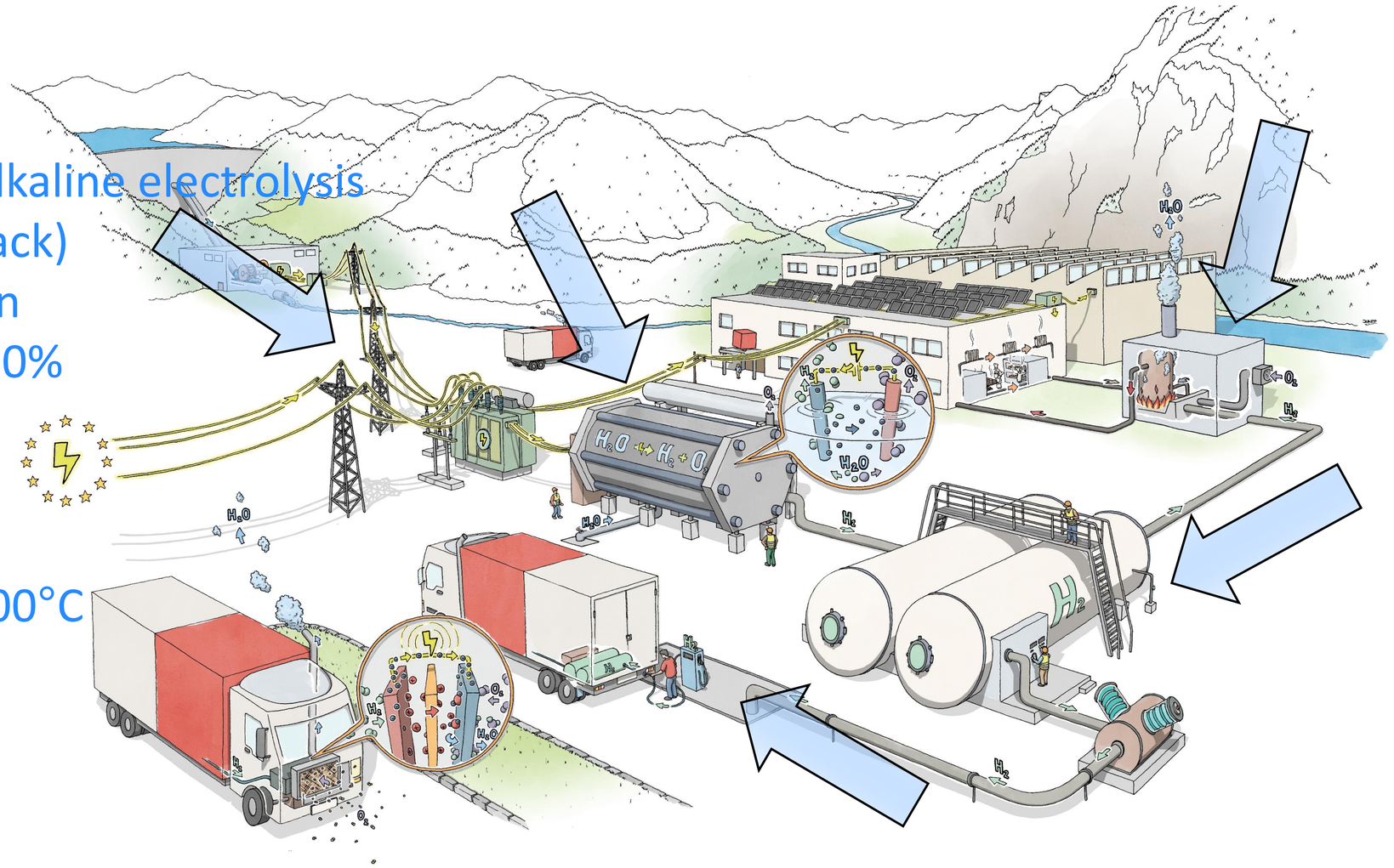
State Secretariat for Education, Research and Innovation SERI

PROJECT SUMMARY

Demonstration for grid services

Objectives:

- **Availability**
- Rapid-response pressurized alkaline electrolysis
- Large scale (3,2 MW single stack)
- Production of Green Hydrogen
- Integrated Plant Efficiency > 90%



Applications:

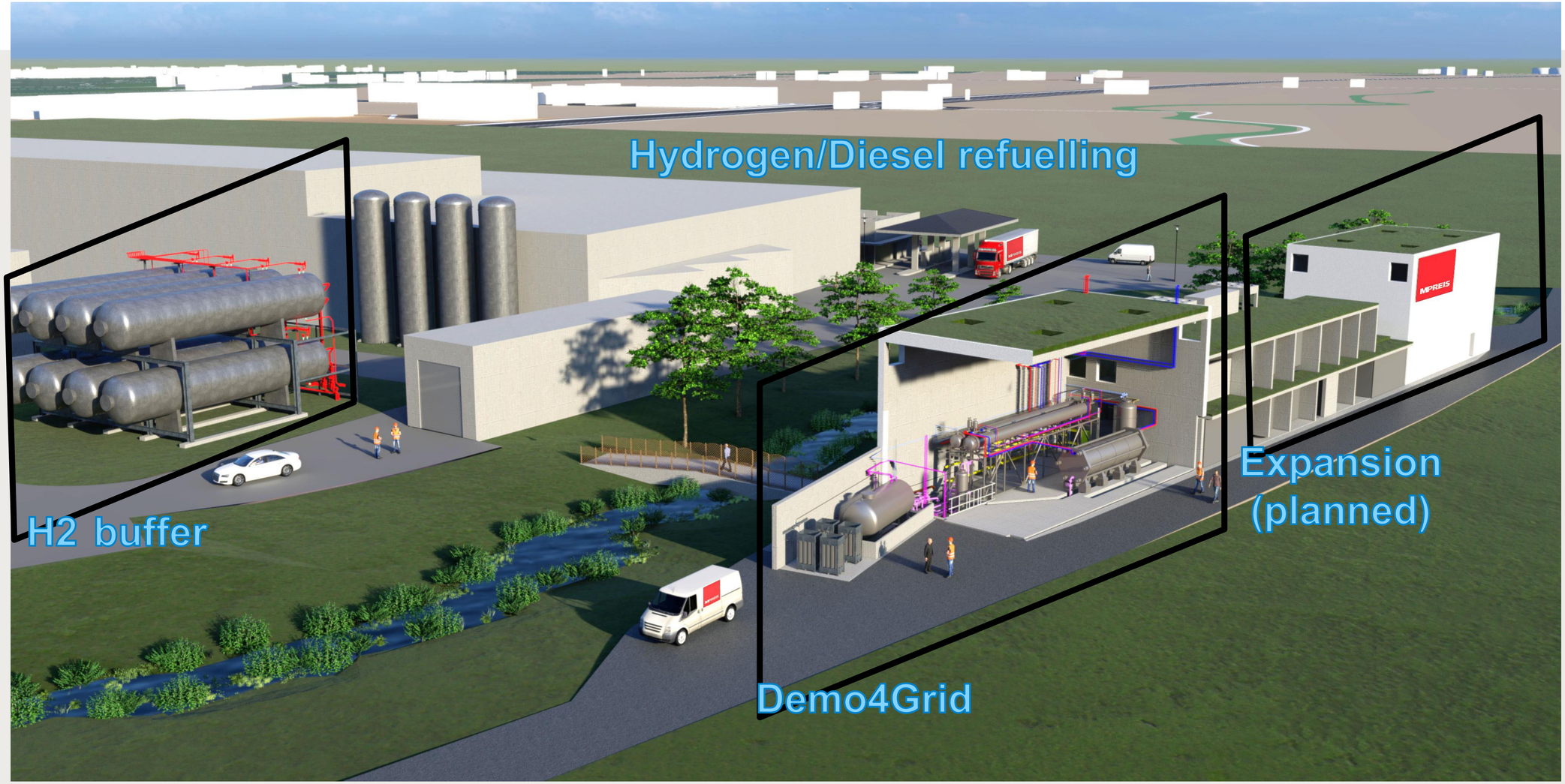
- Industrial process heat 60°C;300°C
- Mobility market

SoA reference

Demo4Grid PAE technical targets vs. state-of-the-art and 2020 KPIs

	Internat. SoA PAE specifications	*D4G PAE technical targets*	*MAWP FCH-JU Objectives*	*Water electrolysis in the EU FCH-JU Study*
	Base Load PAE Technology for Chemical Market	Dynamic PAE technology Grid Balancing/Energy Market	2020 KPIs	
Efficiency [kWh/Nm³]	*4,6*	*4,6*	*4,67*	*4,67*
Stack lifetime [y]	*15*	*15*	*-*	*11*
System lifetime [y]	*30*	*30*	*-*	*28*
Availability [h/y]	*8585*	*8585*	*-*	*8585*
Current densities [A/cm²]	*0,18*	*0,35*	*-*	*0,7*
Prod. range [% full load]	*25-100*	*15 – 130*	*0-200*	*15 min.part load*
Ramp-up [%full load/s]	*5*	*15 (<6s)*	*-*	*17*
Ramp-down [%full load/s]	*10*	*25 (<4s)*	*-*	*25*

PROJECT PROGRESS: Site implementation I



PROJECT PROGRESS: Site implementation II

Engineering Plant, H2 buffer, H2/CH4-burner

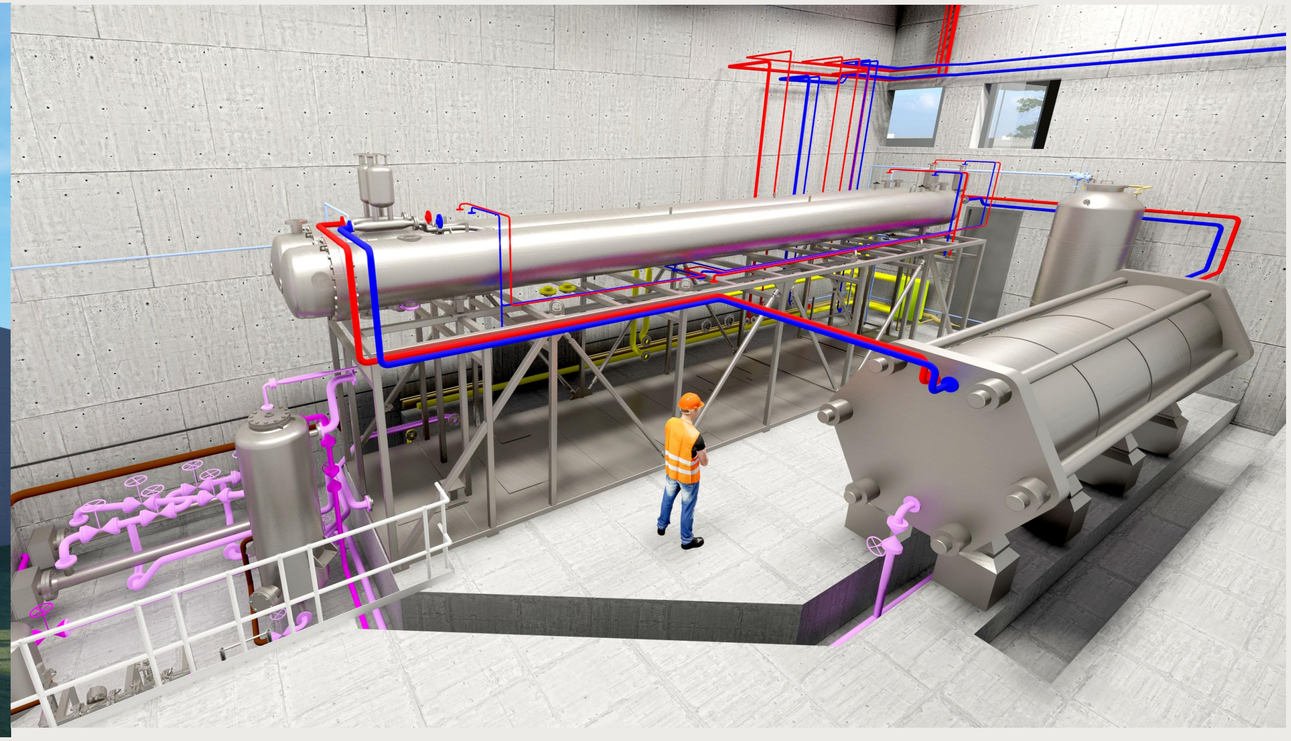
Engineering done

25% 50% 75%

Stack & BoP manufacturing

Stack operation

25% 50% 75%



PROJECT PROGRESS: Site implementation III

Grid service provision, rapid-response engineering

Building permit, operation permit

Prequalification

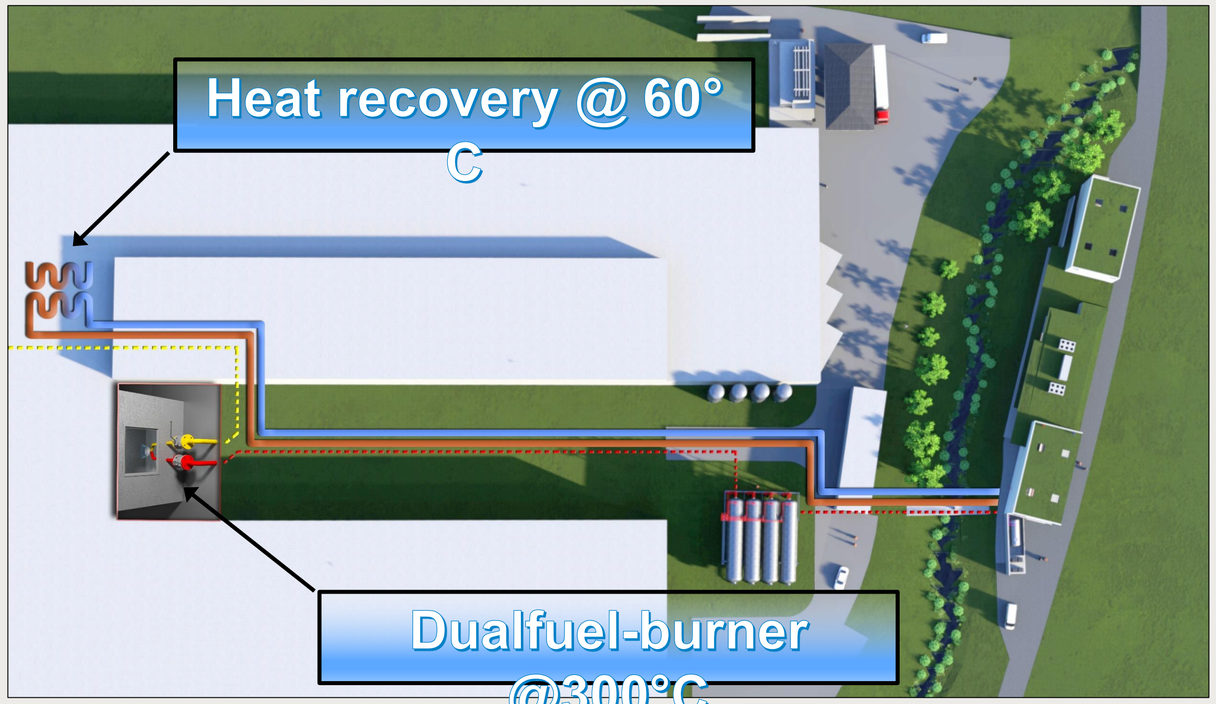
Start building (I/2020)

25% 50% 75%

Start Plant testing (III/2020)

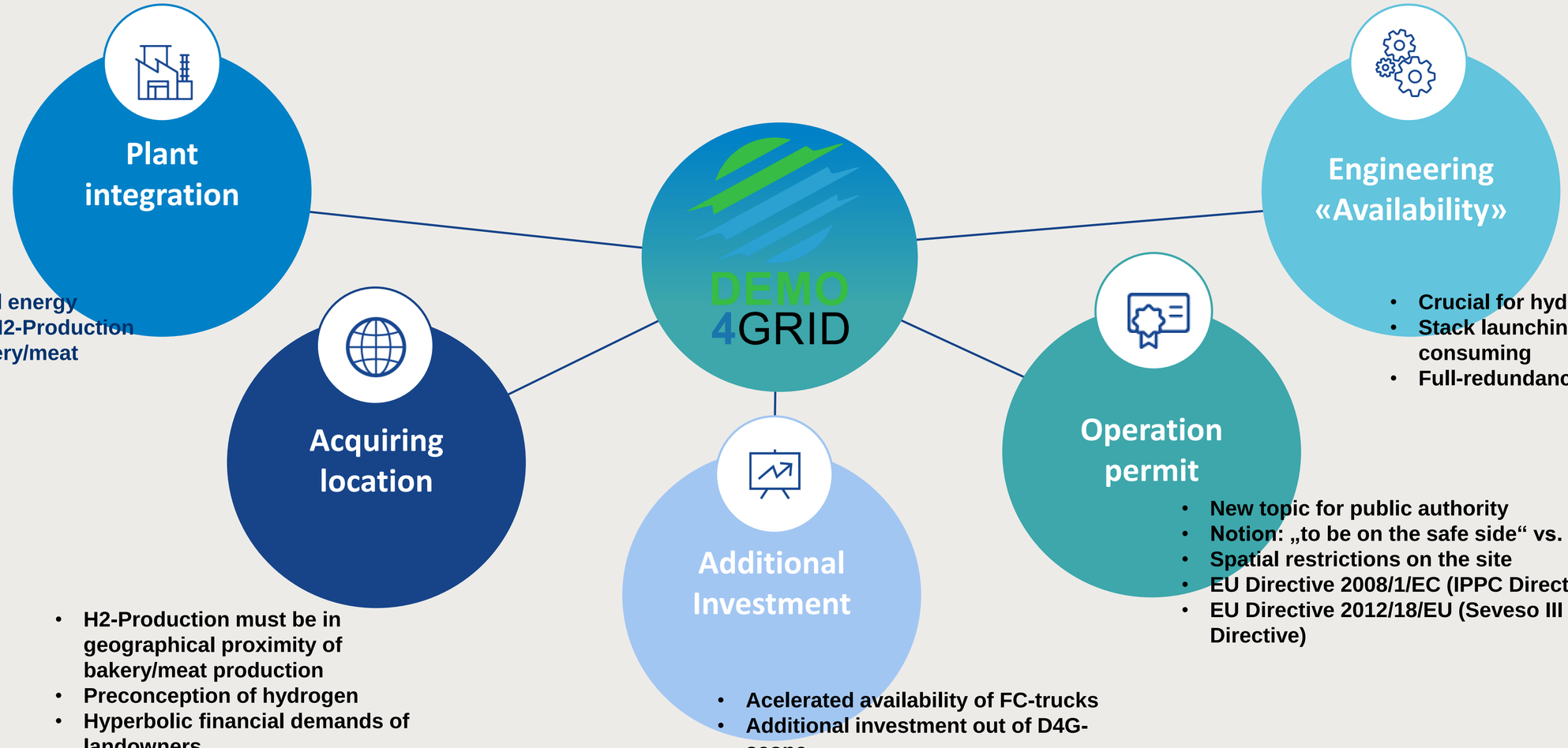
25% 50% 75%

Operation permit received (II/2020)



Risks and Challenges

Main risks and challenges and how the D4G-consortium mitigate them



- Supply of thermal energy decoupled from H2-Production
- Interfaces to bakery/meat processing
- Thermal buffer
- Dualfuel-burner

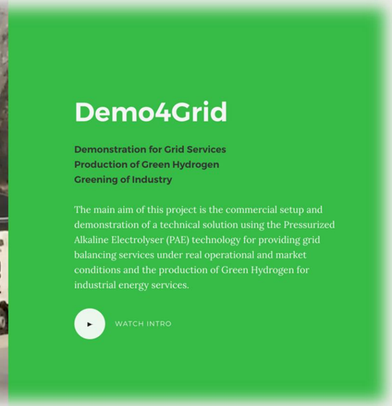
- H2-Production must be in geographical proximity of bakery/meat production
- Preconception of hydrogen
- Hyperbolic financial demands of landowners

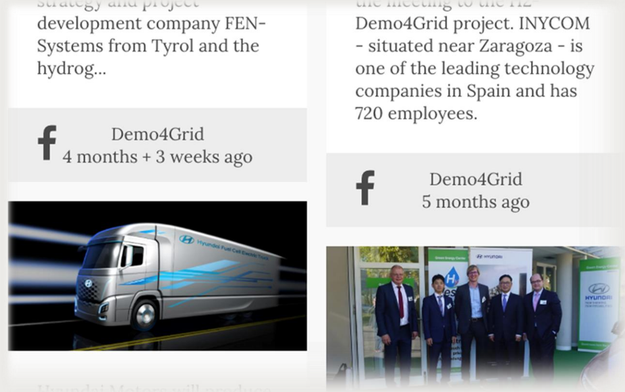
- Acelerated availability of FC-trucks
- Additional investment out of D4G-scope
- D4G as source of green H2 for other evolving projects –> H2 logistic

- New topic for public authority
- Notion: „to be on the safe side“ vs.
- Spatial restrictions on the site
- EU Directive 2008/1/EC (IPPC Directive)
- EU Directive 2012/18/EU (Seveso III Directive)

- Crucial for hydrogen mobility market
- Stack launching procedure time-consuming
- Full-redundancy approach

Communications Activities





35
Publications in partner media

28
Participation in Conferences, Fairs, WS

2
Publications in magazines

3
Press Releases (2 nationals & 1 EU)

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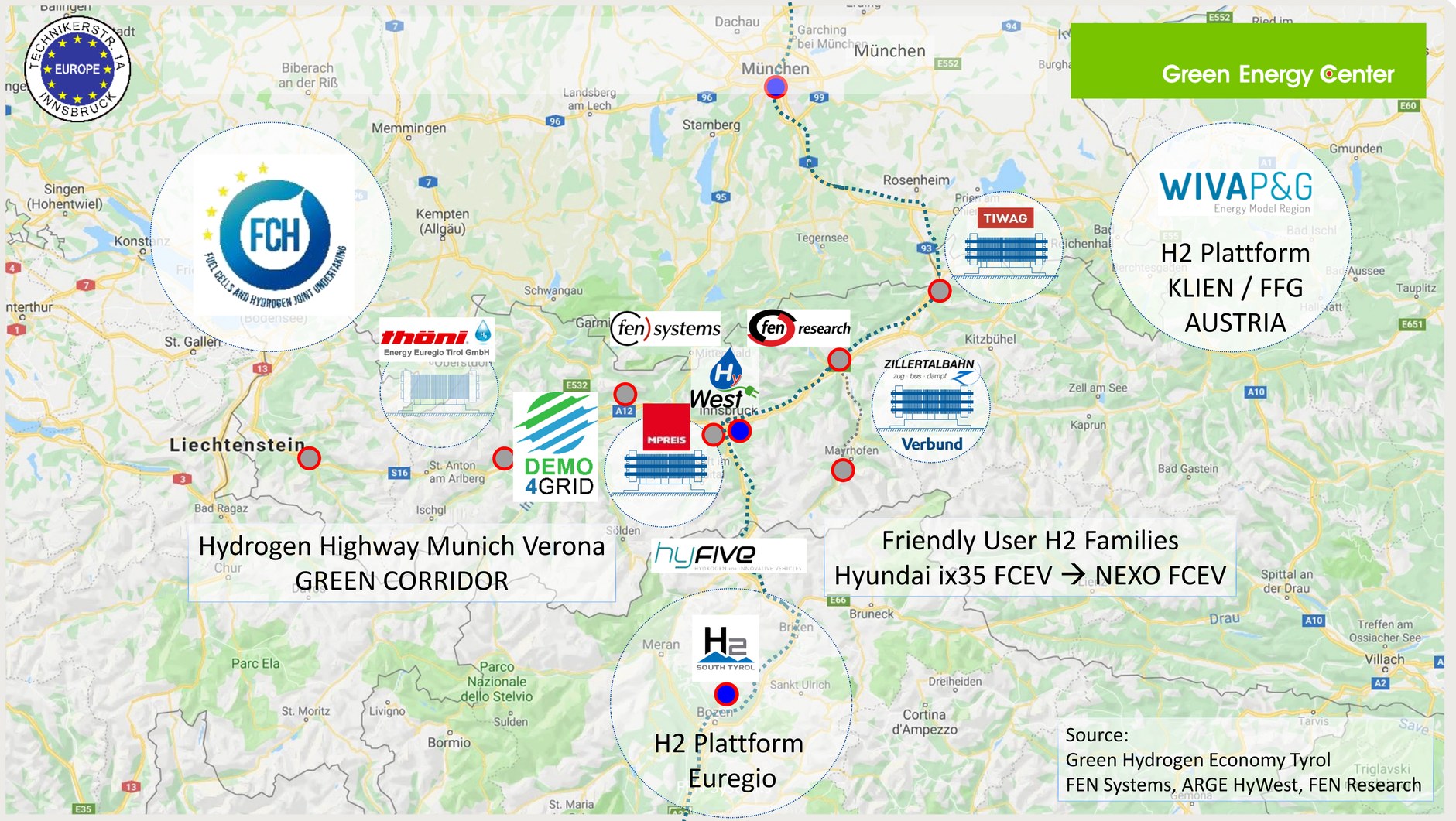
EXPLOITATION PLAN/EXPECTED IMPACT

Green Hydrogen Economy Tyrol

FCH2JU Project HyFIVE
FCH2JU Project Demo4Grid
WIVA Project HyTruck
WIVA Project HyTrain
FFG Project HySnowGroomer
WIVA Project HyWest Green H2 Region



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