



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

H2FUTURE

Hydrogen meeting future needs of
low carbon manufacturing value
chains



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Programme Review Days 2018

Brussels, 14-15 November 2018

H2FUTURE PROJECT OVERVIEW



- **Call year: 2016**
- **Call topic: Call H2020-JTI-FCH-2016-1 Demonstration of large-scale rapid response electrolysis to provide grid balancing services and to supply hydrogen markets**
- **Project dates: January 2017 – June 2021 (4.5 years)**
- **% stage of implementation 01/11/2018: 30%**
- **Total project budget: 18 million €**
- **FCH JU max. contribution: 12 million €**
- **Other financial contribution: none**
- **Partners: VERBUND Solutions GmbH (coordinator), voestalpine Stahl GmbH, K1 MET GmbH, Siemens Aktiengesellschaft, Austrian Power Grid AG, TNO**



The H2FUTURE consortium

Strong partners to meet project goals



- (1) **VERBUND** is Austria's largest electricity utility. 96% RES production (hydro, wind, PV), TSO, trading & sales, Austria's largest provider of grid balancing services
- (2) **voestalpine Stahl** steel production plant in Linz is location partner for the PEM electrolyser
- (3) **SIEMENS** is technology provider for the 6 MW PEM electrolyser
- (4) **APG** is Austria's TSO and partner for grid services provided by the electrolyser
- (5) **K1MET** is a specialised R&D institution
- (6) **TNO** is responsible for assessing replicability in other industrial sectors as well as regulatory framework



H2FUTURE Challenges

Producing green hydrogen for steel production process



Climate Change

- Immediate action and strategy for climate change mitigation
- Decarbonisation of industry, transport, heating/cooling sectors to meet greenhouse gas reduction targets

Sectorial Integration

- Close cooperation across sectors (industry-energy)
- Leveraging benefits via cooperation in innovative projects
- Assessment and revision of regulations

European Competitiveness

- Creating a level playing field for European and international actors
- Early stage investments in innovative technologies and coverage of technological and economic risks

Electrification

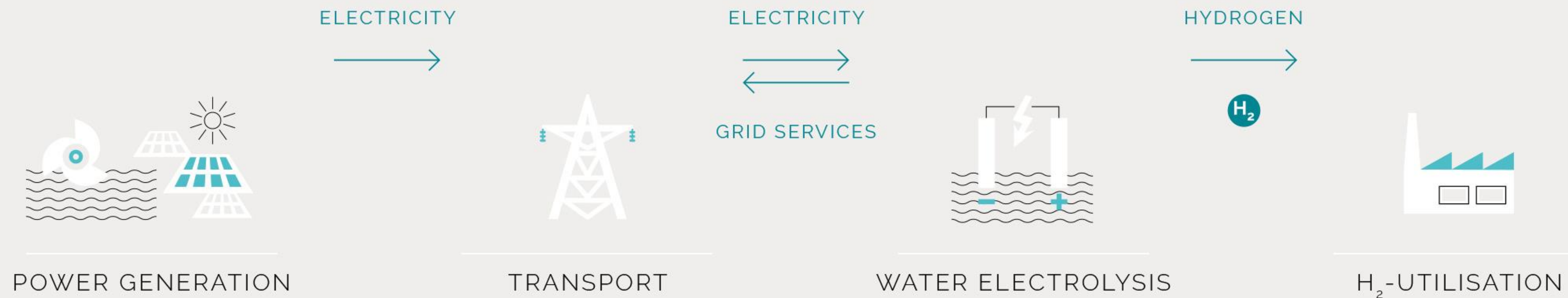
- Increase of share of volatile renewables
- Generation/transport/storage/conversion of electricity or renewable gas across sectors
- Digitalisation supporting development of new products and services



H2FUTURE PROJECT SUMMARY



Production of Green Hydrogen



H2FUTURE Project summary

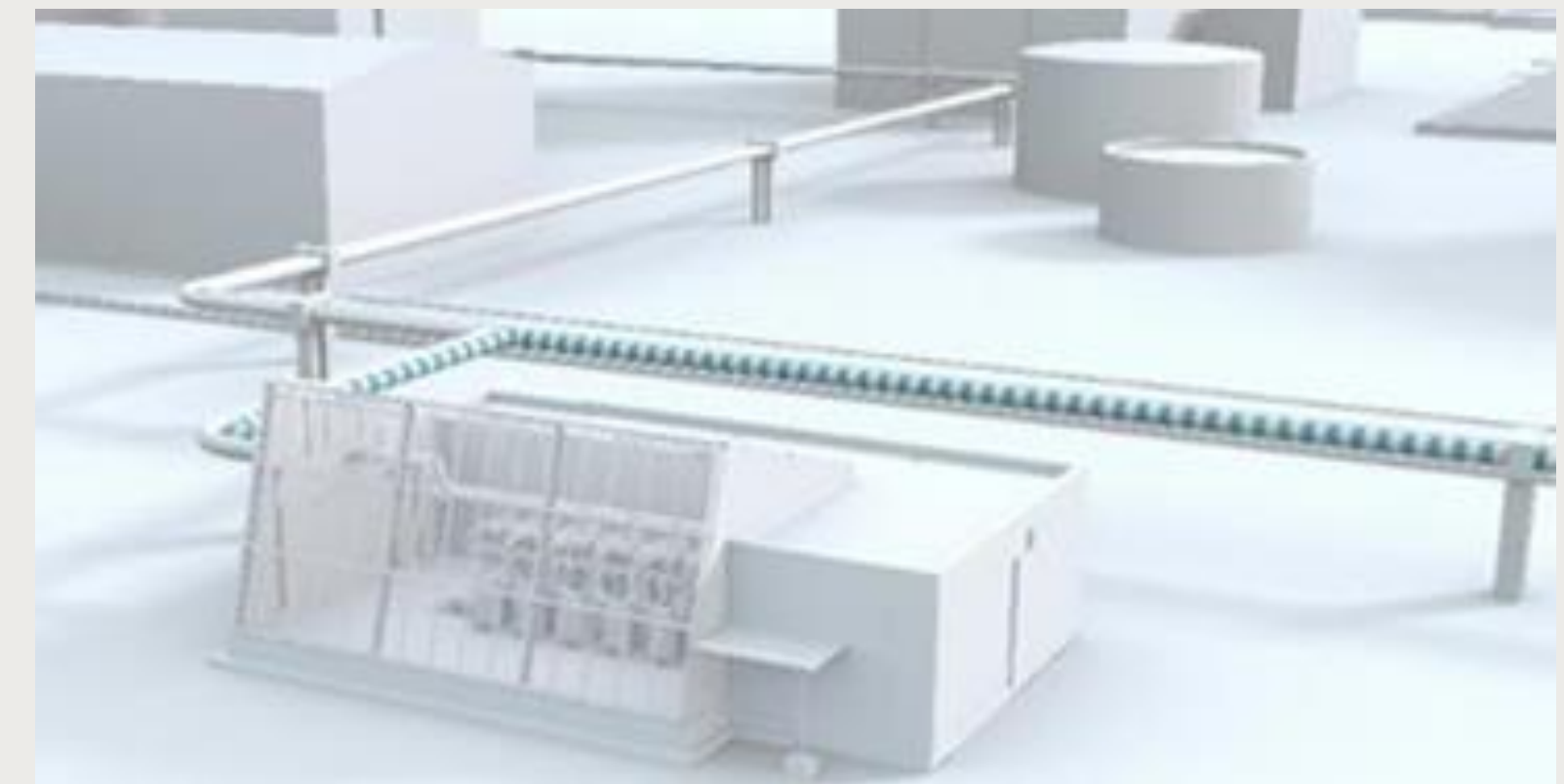
Hydrogen meeting future needs of low carbon manufacturing value chains



H2FUTURE is a European flagship project for the generation of green hydrogen from electricity from renewable energy sources.

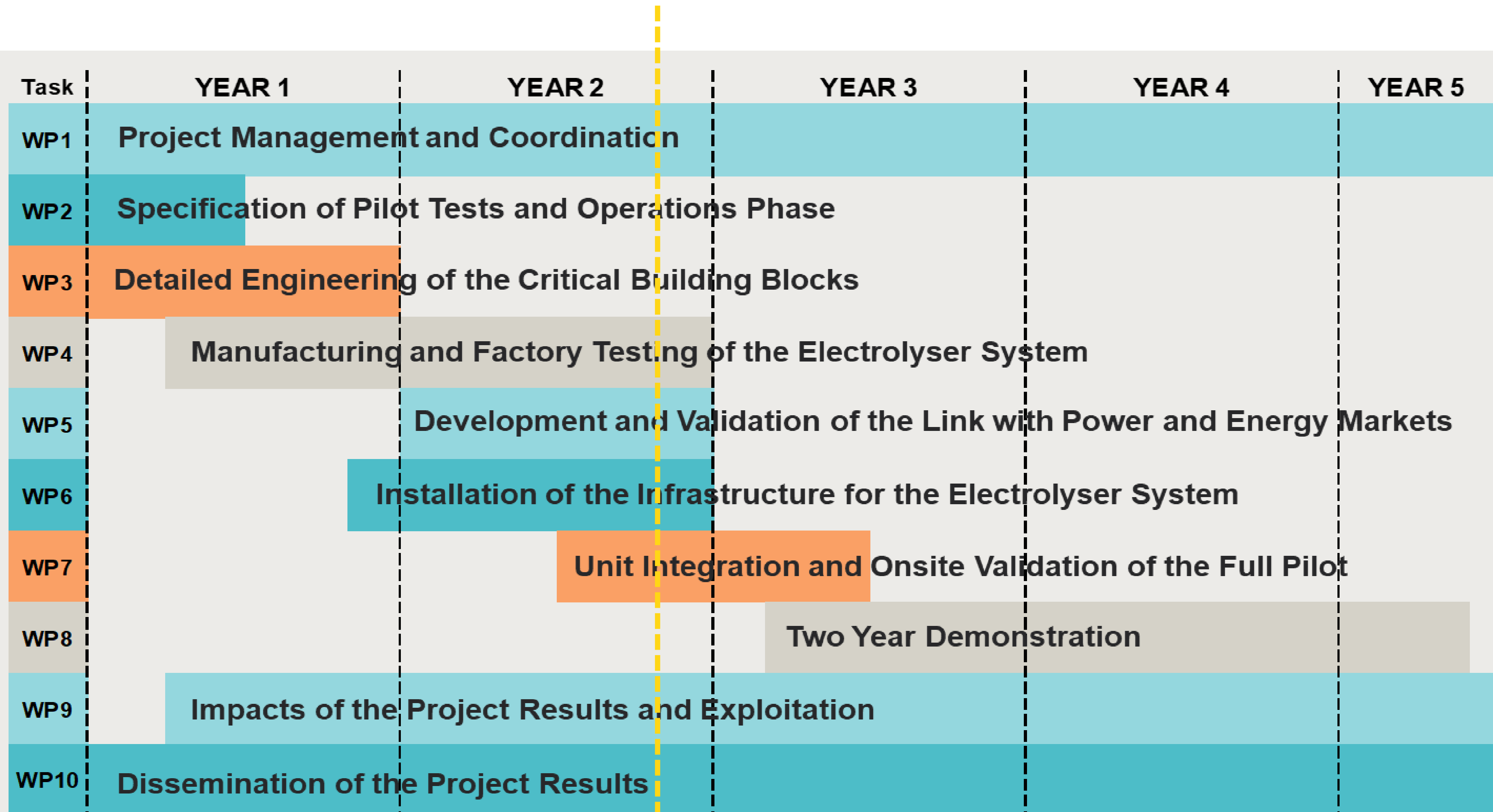
Key Objectives:

- Design and installation of a **6 MW PEM electrolyser** system at the voestalpine steel plant
- **Industrial integration** of renewable hydrogen production in the steelmaking process
- **26-month demonstration** of the electrolyser system
- **Provision of grid services** for balancing the electricity grid
- **Continued operation** after the end of the project
- **Roll-out scenarios** for replacing coal and coke by green hydrogen

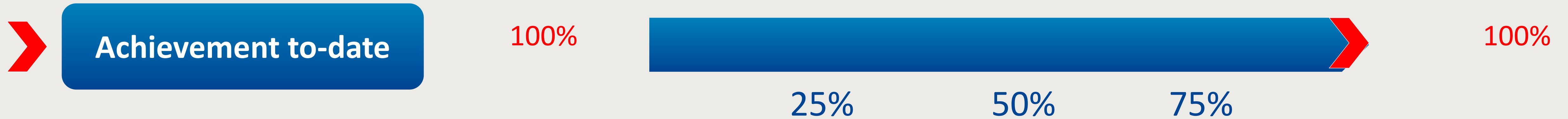


H2FUTURE Project organisation

Hydrogen meeting future needs of low carbon manufacturing value chains



PROJECT PROGRESS/ACTIONS – Specification of pilot tests and operation



Work Package 2:

- Joint development of 5 use cases in the test operation phase
- Joint development of specification for the quasi-commercial operation
- Joint development of specification for final tests
- Joint development of KPIs to monitor demonstration and perform the exploitation tasks

Reports are available on the project website (publications), still subject to approval by FCH JU.



PROJECT PROGRESS/ACTIONS – Manufacturing and factory testing of the electrolyser system, installation, integration



Achievement to-date

80%



100%

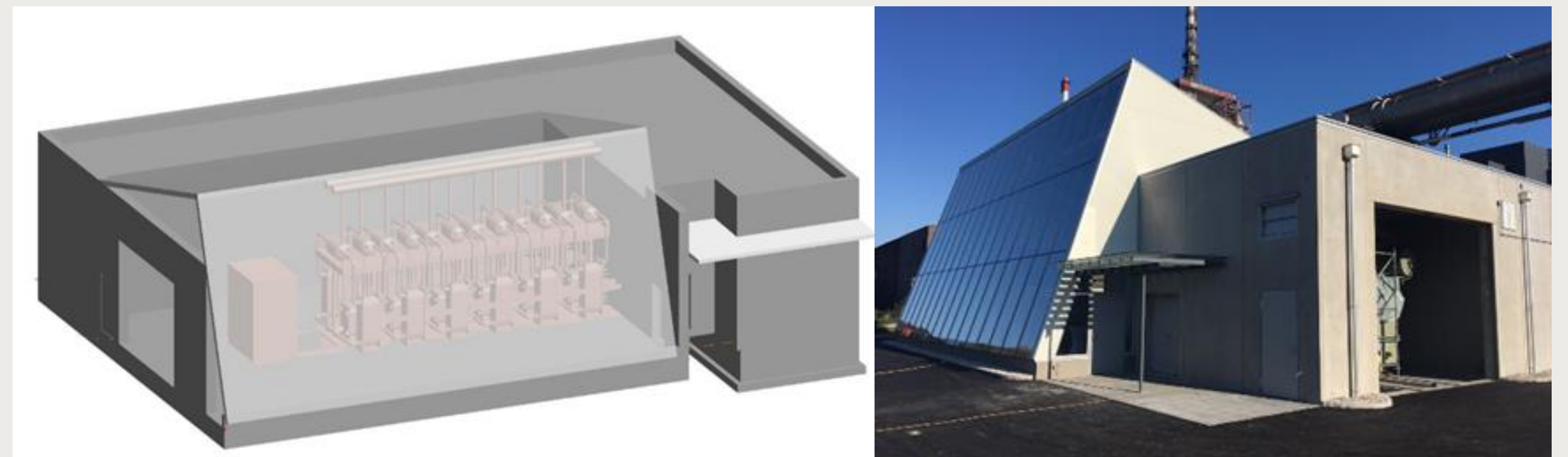
25%

50%

75%

Work Package 3 (closely linked with WP6 “installation” and “unit integration” (WP7):

- All permissions to build the electrolyser system at voestalpine Linz granted (by end of 2017)
- Electrolyser building finished, preparatory works for integrating the electrolyser ready
- Manufacturing and factory testing to be finished by end of 2018
- Delivery of electrolyser to voestalpine Linz to be finished by end of 2018



PROJECT PROGRESS/ACTIONS – Manufacturing and factory testing of the electrolyser system, installation, integration



Achievement to-date

80%



25%

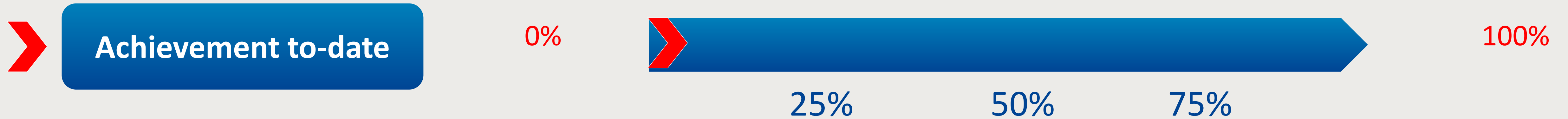
50%

75%

100%



PROJECT PROGRESS/ACTIONS – OUTLOOK: 2 year demonstration phase



Work Package 8 (outlook):

- The 2 year demonstration phase will start in Q1 / 2019 (running 5 use cases defined in WP2)
- Accompanied communication and dissemination activities will be organised



H2FUTURE Communications Activities



Since project start, H2FUTURE performed over 60 communication activities, ranging from presentations at expert events (EU and abroad), high-level press conferences, partner in EU18 high level energy conference (Austrian EU presidency), exhibitor at Hannover Messe and TEN T Days Ljubljana, videos, articles in daily press as well as expert media, radio interviews, organization of own events, workshops with stakeholders and other EC funded projects.

H2FUTURE can be found on:

Project website: <https://h2future-project.eu/>



H2FUTURE project video (published as part of the official kick-off in February 2017):

<https://www.youtube.com/watch?v=qpiF6pzRkzY>

H2FUTURE on track (published as part of the CEO press conference in April 2018):

<https://www.youtube.com/watch?v=t-ZnNOraUT8>



@H2Future on Twitter: <https://twitter.com/H2Future>



H2FUTURE Communications Activities



Kick Off press conference
February 2017 (Vienna), CEOs



H2FUTURE on track press
conference April 2018 (Linz),
CEOs



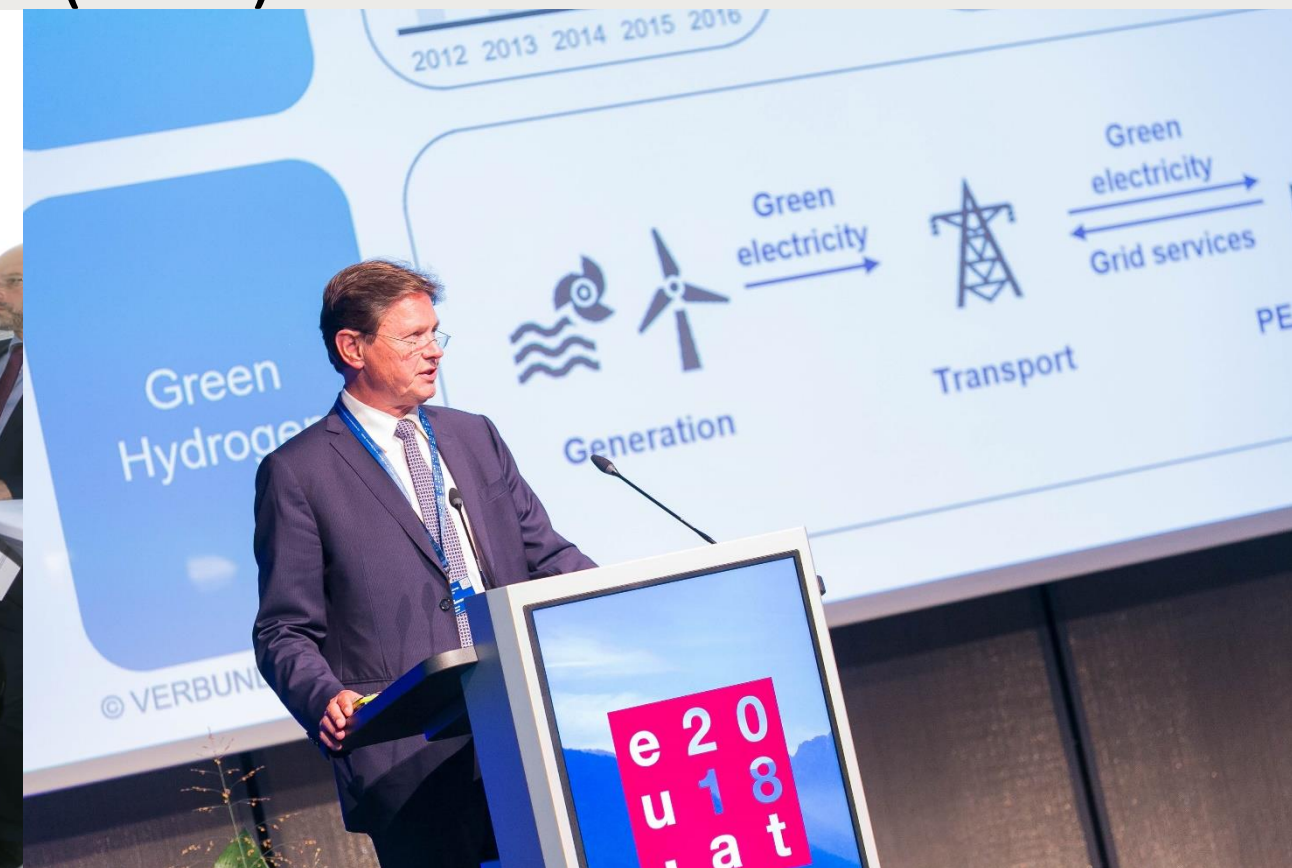
TEN T Days 2018 project
exhibition (Ljubljana), Dirk
Beckers (INEA)



ACER / CEER workshop 2017
(Brussels) with HE, TSO2020



High Level Energy Conference
(EU18, Linz), Commissioner
Miguel Arias Cañete visiting
H2FUTURE site



High Level Energy
Conference (EU18,
Linz), CEO
Anzengruber
presenting
H2FUTURE

EXPLOITATION PLAN/EXPECTED IMPACT



Exploitation

WP9 (“impacts of the project results and exploitation”) activities are targeted to exploit project results.

- Focus on **steel industry** (replication potential in Europe).
- Focus on **fertilizer industry** (replication potential in Europe).
- Development of recommendations to **regulatory bodies**.

Impact

Exploitation activities closely linked to WP10 (communication & dissemination). Target groups:

- Energy and environmental **policy makers** (national and EU).
- **Steel industry** community.
- **Power industry** and electricity sector.
- **Regulatory bodies** at national and EU level.



H2FUTURE Project Video

Verbund

voestalpine

ONE STEP AHEAD.

SIEMENS

WZL MET
metallurgical competence center

APG
AUSTRIAN POWER GRID

TNO innovation
for life

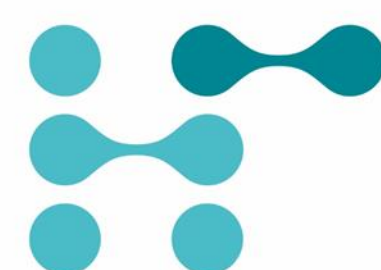




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