



THE IMPACT OF RESEARCH ON INDUSTRY

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Session: European hydrogen economy in a worldwide context

FCH 2 JU Stakeholder forum, November 16 2018 | Florence Lambert

A WORLDWIDE EFFORT FOR DEVELOPING THE HYDROGEN ECONOMY

- 2018 major initiatives worldwide for developing the hydrogen economy
 - First hydrogen Ministerial meeting, Tokyo
 - Mission Innovation on renewable and clean hydrogen innovation challenge IC-8 (Australia, European Commission and Germany co-lead)
 - Linz declaration on sustainable hydrogen
 - Hydrogen Council, San Francisco
 - IRENA and IEA reports
- Hydrogen enables sector coupling (gas, heat and electricity)
- Technology is mature: several sectors of hydrogen industry are developing in Europe
- Market development and scaling-up are major issues

FCH technologies Fundings



130 M\$



115 M\$



35 M\$ RD



40 M\$ RD



100 M€

RESEARCH HAS A MAJOR ROLE TO PLAY

- Decrease products, systems and services costs
 - Improve durability & performances
 - Scale up manufacturing at industrial level
 - Prepare the next generation through technological breakthroughs
 - Provide case studies for safety and regulations
 - Educate and train to ensure a highly qualified workforce

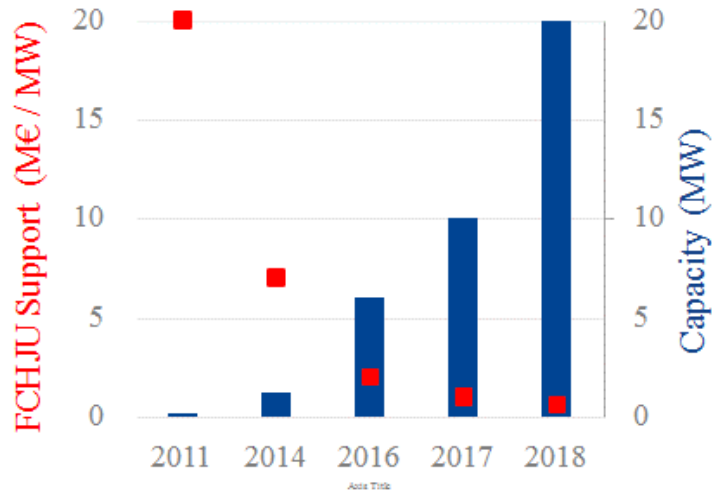


FCH JU CONNECTS RESEARCH TO THE NEEDS OF INDUSTRY

Electrolysis

Low temperature

Cost decrease and performance improvement



High temperature: technology development



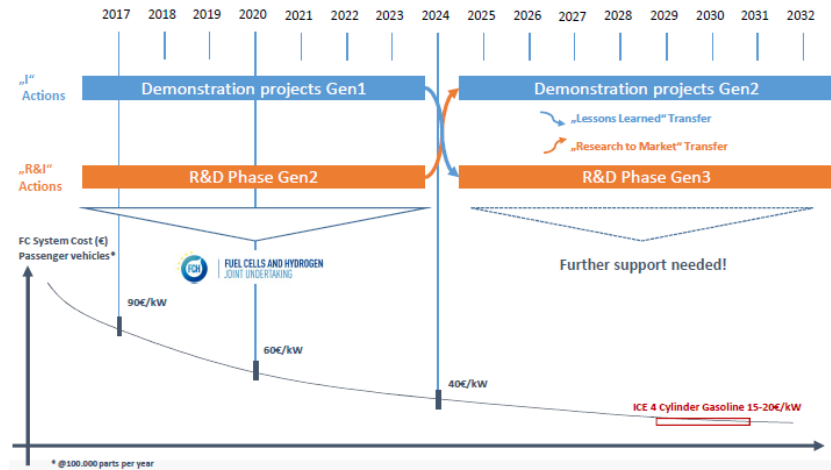
- Electricity consumption < 40 kWh/kg
- Production loss rate < 1.9%/1000h
- Availability >95%,
- Reversible efficiency 54%
- Co-electrolysis / Integrated methanation

Integration of renewable energies



FCH JU CONNECTS RESEARCH TO THE NEEDS OF INDUSTRY

European automotive stack



Established a EU supply chain for a fuel cell stack

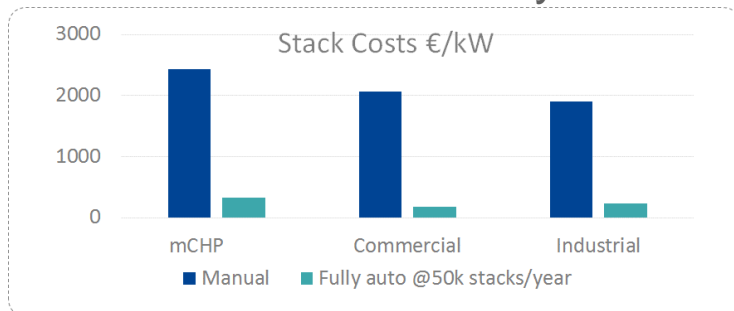
Automotive tanks

Reduced cost by 5 to 3,000€
20% reduced mass by design
Use of robots to produce



CHP systems

Validation of screen printing pilot line
Automated stack assembly



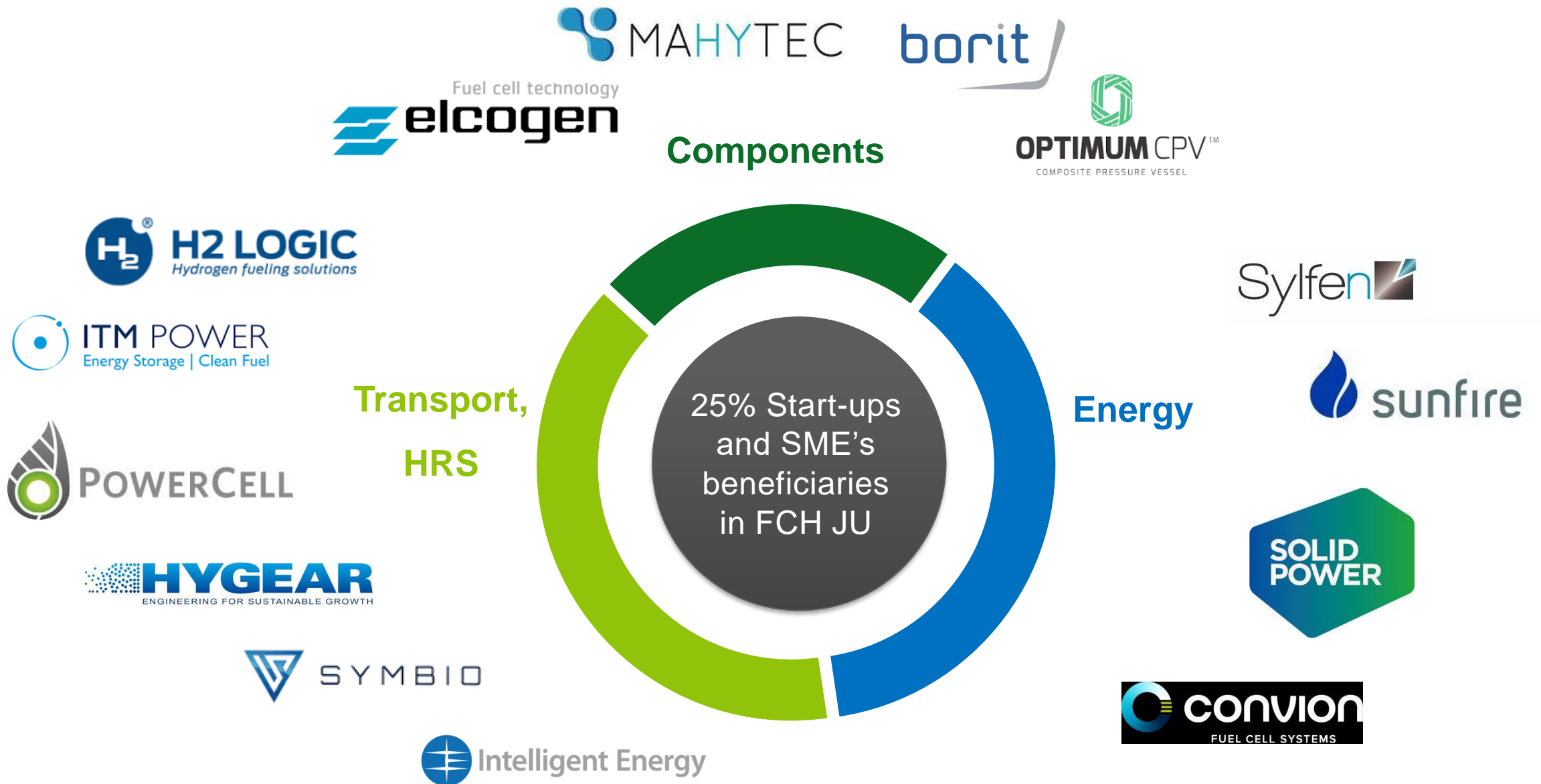
→ 80% future reduction of cost

Decarbonisation of industry

Introduction of green H₂ in refineries and steel plants,
First r-SOC



START-UPS AND SMES BENEFIT FROM FCH-JU RESEARCH PROJECTS



CONCLUSIONS

Close collaboration between research and industry is the basis
of the European leadership in the sector

Public Private Partnership instruments have a fundamental role
to develop technological research and maintain European competitiveness

Scaling up manufacturing at industrial level and breakthrough research
will need Horizon Europe strong support.



Member of



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