

# **Research working with Industry for FCH take off**

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## ***Status of Fuel Cell and Hydrogen technologies for energy or transportation applications:***



- « Already known » technologies

- **Rupture in the energy landscape**

→ new scenario, new boundary conditions, new specifications, new business cases, .....  
new approach ?

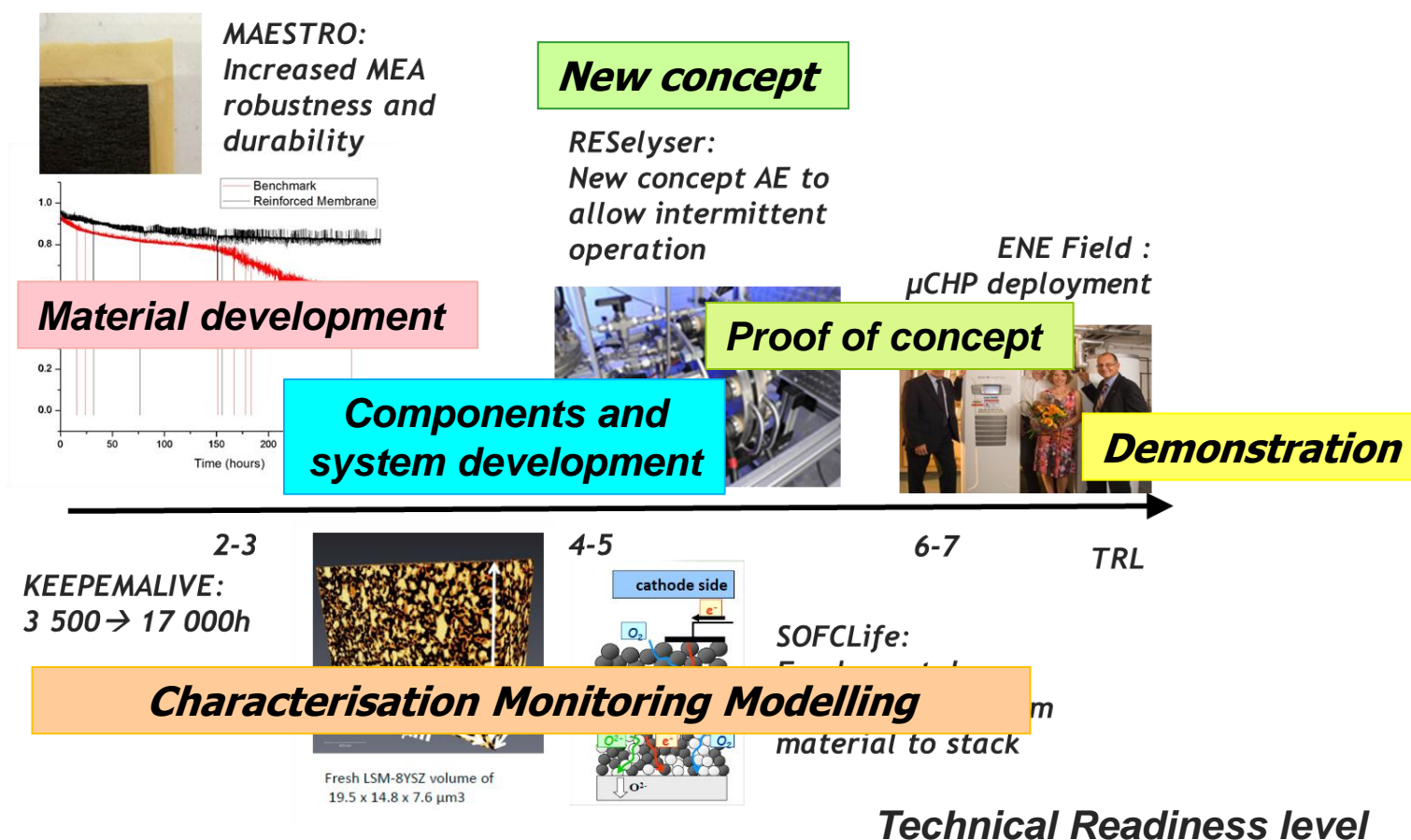


- Need **adaptations and improvements**
- **But:** specifications of hydrogen -energy applications  
(*intermittent and transient operations, compactness, low cost*)  
non completely defined ...



# Major progresses achieved with FCH JU

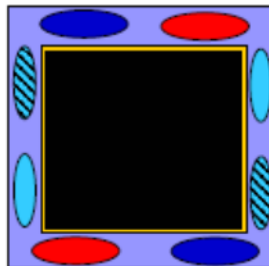
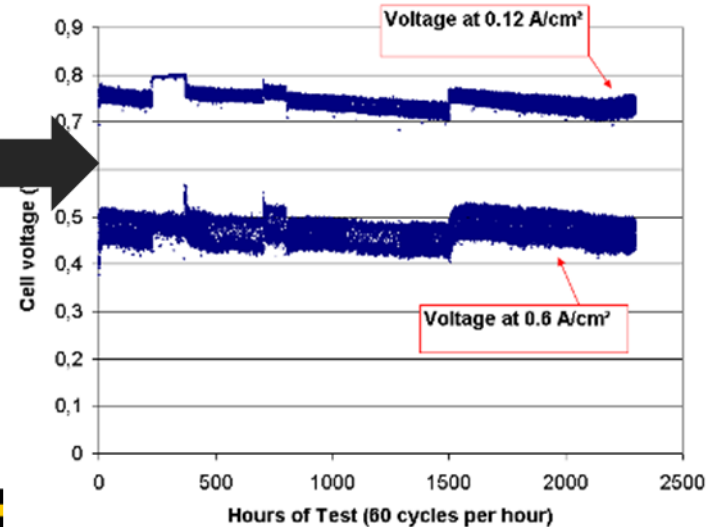
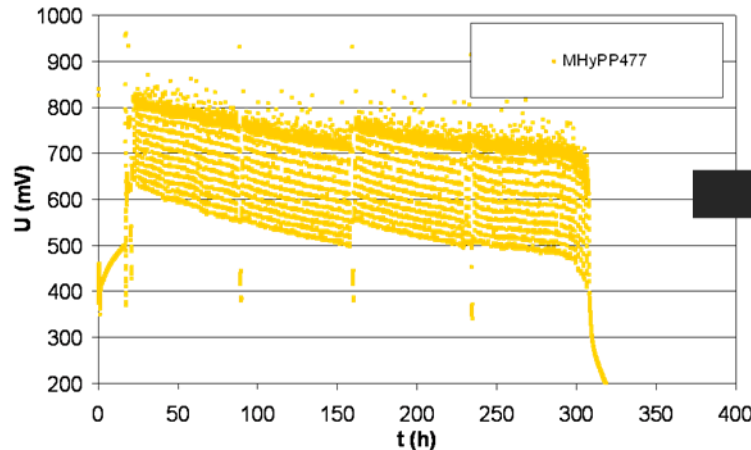
- Exploration** of various energy solutions over the entire TRL scale:



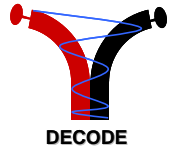
## Major progresses achieved with FCH JU

- **Exploration** of various energy solutions over the entire TRL scale:
- **Success stories**

### MEAs Lifetime X 5 upon dynamic testing



Membrane **with edge protection** avoiding ionomer contamination



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- **Exploration** of various energy solutions over the entire TRL scale:
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### History in brief

- 2007: SOFCpower set-up, acquisition of HTceramix;
- 2007-2008: material development in FP7  
REAL-SOFC & SOFC600 projects
- 2008: Pilot Plant in Mezzolombardo (TN) operative;
- 2011: 2.5 kW modular  $\mu$ CHP generator design (**several FCH-JU projects**)



### Recent updates

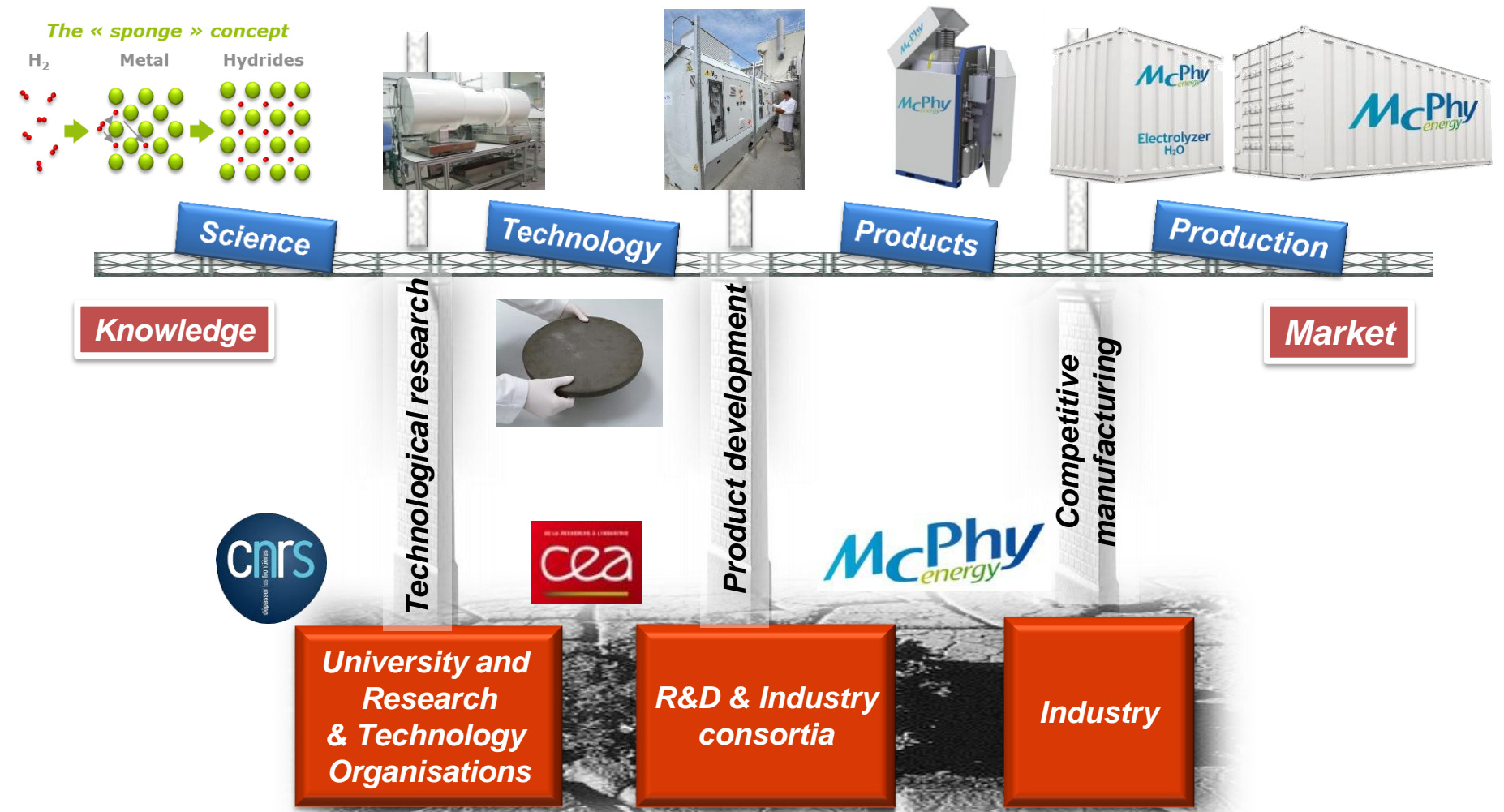
- Private investments for >30mio € (private/public investments ratio > 300%)
- 80 employers (SOFCpower is employing during crisis)
- Production Plant ONE (nom. Capacity 5MW/y) operative
- First 4 EnGen<sup>TM</sup>-2500 mCHP operated for Dolomiti Energia, within **Ene.field**

**SOFCpower:**  
a leading European Company  
in fuel cell  $\mu$ CHP technology





# ***Example of McPhy Energy (France) in disruptive H<sub>2</sub> solid storage technology***

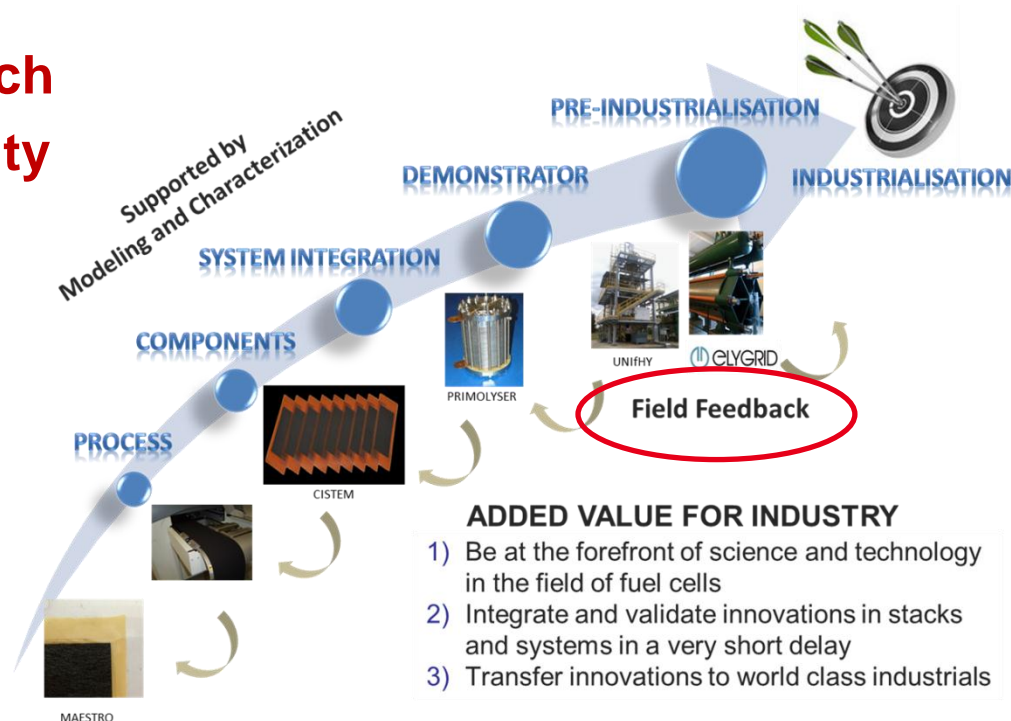




## *Major progresses achieved with FCH JU*

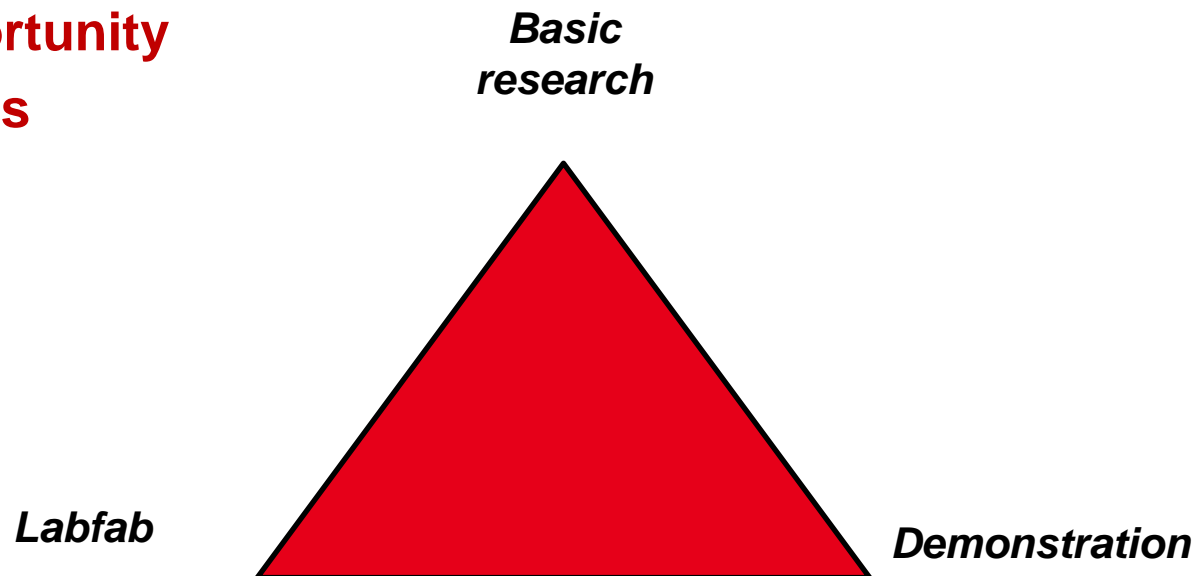
- FCH 1 JU allowed an identification of « more realistic » specifications and technological bottlenecks
- However, some of the FCH 1 JU programs lack a clear alignment with Industry's commercialisation needs

➔ FCH 2 JU provides Research and Industry the opportunity to resolve these issues together...



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  - However, some of the FCH 1 JU programs lack a clear alignment with Industry's commercialisation needs
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## ***To conclude***

- ➔ Major role of **demonstration driven by industry** for specifying boundary conditions and for assessing technical feasibilities
- ➔ Major role of **research organisations** for **defining and proposing** relevant R&D approaches on energy systems,
- ➔ **Iterations** between demonstration and R&D required for **bridging the gap** between **demonstrated technical feasibility** and the availability of solutions being economically and environmentally relevant, liable to be introduced on the market and submitted to societal acceptance
- ➔ **Continuous dialogue between R&D and Industry: only way** to overcome technology roadblocks
- ➔ **FCH JU** = unique place for such a dialogue and for implementation of a **virtuous innovation loop**