



International Partnership *for the* Hydrogen Economy



Country Report: Italy

Joint 12th IPHE ILC & SC meeting

Washington DC
December 1-3, 2009

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Main activities

- **National Platform on H₂ & FC**
- **R&D National Program on H₂ &FC**
- **R&D EU FP Projects**
- **Development Projects for Industry 2015**
- **Regional (public) and industry H₂ Demo Activity**
- **EU FC & Hydrogen JTI**
- **Italian Hydrogen & FC Association**
- **HYRAMP Partnership**



International Partnership *for the* Hydrogen Economy



National Platform on H₂ & FC

Institution of a **National Platform on H₂ & FC** with the objective of defining a RD&D strategy to support the market development towards a sustainable H₂ Economy for the CO₂ emission reduction.

Priority items 2008-2016: H₂ production from renewables and fossils, transport and storage, power gen, distributed energy production, automotive application, early markets.

Anticipated budget: 10 million Euro for first year



R&D National Program on H₂ & FC

The R&D National Program will end by January 2010

Three year budget of 90 millions Euro (51 M€H₂, 39 M€FC)

36 RESEARCH CENTERS involved

FUEL CELL	Hydrogen
PEFC and SOFC fuel cells: applications and new materials	H ₂ micro-combustors
Hybrid and inorganic nano-systems for FC	H ₂ production and storage in nano- materials
Development of a pressurized MCFC system and demonstrative 500kW plant	Innovative H ₂ production systems from renewables
New MCFC systems for distributed generation	Integrated H ₂ production systems and utilization in distributed generation
Development of protonic membranes for PEFC applications	H ₂ production from multi-fuels
	Innovative H ₂ production from biological processes
	H ₂ production from petrochemical refinery waste



R&D EU FP Projects (6&7 FP)

- **UNIQUE: Aquila Un & ENEA, H2 from biomass gasification**
- **ZERO REGIO: FC cars and stations, Mantova & Frankfurt**
- **ENFICA FC: Politecnico Torino, City Aircraft**
- **HYRAIL: Enea & Pisa Univ, H2 in railways**
- **HOST: Roma Univ, New concept of city cars & city vehicles**
- **LIFE: Emilia Romagna Reg, City bus Mix H2/NG**



Development Projects for Industry 2015

- **Microgen 30:** ICI Caldaie S.p.A (30kWe PEM FC Pd cat NG HT reformer)
- **VISION:** H2 boat for lake service (12 boat fleet) H2 and PV
- **EFESO** (Environmental Friendly Energy from Solid Oxide Fuel Cell).
- **HYDROSTORE :** Venezia Tecnologie S.p.A, H2 storage
- **PBI** (Piattaforma Bus Innovativi)



Regional and industry Demo activities (1)

- **Lightening Ercolano ruins (PV 30 kW; FC 10 kW)**
- **FC motorcycle protot: Benevento & Arcotronics**
- **FC blu car (7kW): Emilia Romagna Reg**
- **H2 from renewables: Lazio Reg**
- **TEPSI (Technologies and Processes to Prepapre the Transition to H) Lazio Reg & Enea**
- **H2/NG mix: Lombardia Reg (20 cars, 2 stations)**
- **H2 Center: Lazio Reg**



Regional and industry Demo activities (2)

- **PEM cogen unit: ICI Caldaie Sidera: (electricity, heating, cooling: H₂ from NG ref)**
- **PEM Microgen30 (30 kWe Pd-cat HT reformer: ee 35% total energy efficiency 85-90%)**
- **LEAF: zero emission building (advanced insulation and H₂ storage)**
- **IDRA 08: Piemonte reg: Politecnico Torino: FC and high efficiency electric engine)**



Regional and industry Demo activities (3)

- **Celco YACHT: Piemonte Reg: Environmental Park (FC 8kW for auxiliary power gen: H₂ from diesel reforming on board)**
- **TURBOCARE: (Siemens): FC powered canteen**
- **Gold District: Arezzo City: H₂ distribution through pipe to gold labs**
- **First hydrogen boat April 6, 2009.**



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EU FC & Hydrogen JU

INDUSTRY GROUPING

- SOFC power
- Ansaldo Fuel Cells
- Fiat Research Center
- Sapio
- Environment Park
- ILT Technologies
- Labor

RESEARCH GROUPING

- CNR
- ERSE (ex CESI Ricerca)
- ENEA
- Universities



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Italian Hydrogen & FC Association (H2IT)

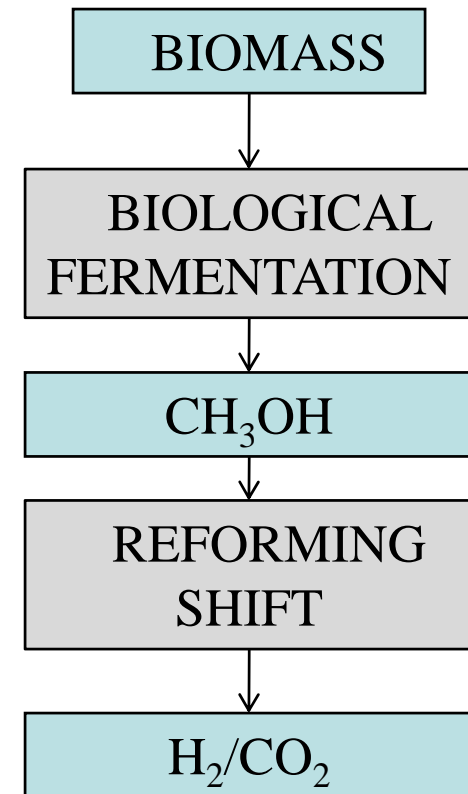
Established in 2004, today has over 120 members with a large number from the private sector.

- 11 Italian companies**
- 3 Foreign companies**
- 3 Regions**
- 1 Research Institute**
- 9 Vehicle components producers**
- 3 Univ**
- 93 Individuals**



Research project: H₂ from biomass processes

- Potential of Hydrogen production from waste of winery and fruit juice factory
- Partners: Italian Ministry for Environment and University of Tuscia
- The idea of the project is using fruits waste for the production of methanol by using pectinolytic enzyme and bacteria





HYRAMP Partnership

Founding Members:

- **Abruzzo**
- Andalusia
- Aragon
- Baden-Württemberg
- British Midlands
- Castilla La Mancha
- Catalonia
- Galicia
- Hamburg
- Hessen
- Lazio
- Ljubljana
- Lombardy

- Madrid
- Midi Pyrenées
- Nord East of England
- North Rhine-Westphalia
- Oldenburg-Wilhelmshaven
- Piemonte
- Rhone Alpes
- Scandinavian Regions (N, SE, DK)
- **Trento**

New Members:

- Outer Hybrides
- Tuscany
- Bolzano
- Wroclaw