Verso una piattaforma italiana per l'idrogeno e le celle a combustibile

2° WORKSHOP TOSCANO SULL'IDROGENO e TECNOLOGIE COLLEGATE OPPORTUNITA' e FINANZIAMENTI

Firenze, 25 Luglio 2014

REGIONE TOSCANA

Comune di Pontedera

PONTECH
Pontedera & Tecnologia

HYER

Hydrogen, fuel cells and
Electro-mobility in European Regions

Aiming HyER

Verso una piattaforma italiana per l'idrogeno e le celle a combustibile

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July 25, 2014

Florence

HyER at a glance

Membership increase:
2008 (9) < 2014 (38)

Population: 115 mln

GDP: 363 bln

New members in 2014

Catalonia-Barcelona (ES)
Copenhagen (DK)
Arnhem-Nijmegen (NL)

Structure

1. **HyER Action points: Connecting the dots…**
2. Facilitate fact-based policy recommendations…
3. Develop European support framework…
4. Compile robust market introduction plans…

HyER action points: connecting the dots

1. Facilitate fact-based policy recommendations

to inform decision-makers on state of the art of advanced technologies based on latest stage project and technology findings

2. Develop European support framework

to provide local authorities with a long-term financial framework to support technology deployment by liaising with relevant European institutions

3. Compile robust market introduction plans

to support industrial planning based on proven regional action plans for sustainable market roll-out and technology introduction by evaluating and developing members individual development plans

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The European Electromobility Observatory

Set up in December 2012 by the European Commission

- To answer key questions on drives and support schemes
- To compile learning from best practices across Europe
- To identify robust deployment channels based on specific local conditions
- To become a major tool for policymakers at all levels

EEO's role highlighted in CPT directive (2013):

"*...facilitate information exchange and coordinated regional action across the EU...*"

EEO Partners:

The European Electromobility Observatory

1. First EEO workshop on 24th January 2013 in Brussels : launch EEO activities and get first input from stakeholders

2. A survey on April 2013 to collect regional/local government needs and expectations with respect to monitoring, information exchange and EEO support

3. 24th of June 2013 workshop "*Want to be in charge? Business models for charging infrastructure"* during the Eu Electromobility stakeholder Forum co-organized by Hyer and the Green e-Motion and FR-EVUE projects

The EEO – 1 year of operations

1. First Annual General Survey
2. Maps
   i. European electromobility (related) programs
   ii. European electromobility (related) projects
   iii. National and regional data sheets (online and ongoing)
3. Workshops & Webinars
   i. Launch and stakeholder needs & expectations
   ii. Business models for infrastructure
   iii. Stimulating electric vehicle uptake
   iv. Towards a EU-wide Interoperable Electromobility System
4. Cooperation & alliances
   i. First EU project alliances
   ii. Clean Vehicle Portal (CVP)
   iii. Electric Vehicles Initiative (EVI)
5. EU input
   i. Presentation of first findings in EP hearing on the CPT

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Clean Power for Transport

Two main causes for lack of alternative fuel infrastructure:

1. The technology is substantially mature but the standards are not common EU-wide, thereby discouraging potential infrastructure investors, car manufacturers and consumers

2. The co-ordination failure among vehicle manufactures, infrastructure providers, national authorities and final users must be addressed. Initiatives addressed at promoting infrastructure appear necessary to break this deadlock

…addressed by HyER action points…

1. Facilitate fact-based policy recommendations
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HyER input into Clean Power for Transport

- EEO's role highlighted in CPT directive (2013):
  "*...facilitate information exchange and coordinated regional action across the EU...*"

- Presentation of first EEO findings in EP hearing on the CPT

- HyER position on CPT
  - Highlighting need for regional and local authority buy in
  - Leading to: "*In close cooperation with regional and local authorities and with the industry concerned*" - Report by EU Parliament rapporteur Carlo Fidanza

Structure

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CHIC – Clean Hydrogen in European Cities

- 26 fuel cell buses operated in 5 Phase 1 cities; together with the Phase 0 cities more than 55 buses in operation
- 3 different bus manufacturers in the Phase 1 cities
- 2 refuelling stations per Phase 1 city (one existing & one new station)
- 25 partners from 9 countries

Duration: April 2012 - December 2016

Total budget: €81.8 m

EU Contribution (FCH JU): €26 m

www.chic-project.eu

High V.LO-City – Cities speeding up the integration of hydrogen buses

- 12 partners led by bus manufacturer VanHool
- 14 FCH buses to be deployed in 3 EU regions (Flanders (BE), Liguria (IT), Scotland (UK)):

→ Buses arrived in San Remo (IT) and Aberdeen (UK), arriving soon in Antwerp (BE)

- 3 hydrogen production and refuelling facilities (H2 production by different sources)

Objectives:

- Standardisation of H2 refuelling infrastructure
- Policies on environmental, health, energy efficiency, socio-economic benefits
- Increase awareness and broader adoption of H2 buses

Duration: January 2012 – December 2016

Total budget: €31.6 m

EU contribution (FCH JU): €13.5 m

www.highvlocity.eu

HyTransit – Hydrogen Transit Buses in Scotland

- A novel hybrid FCH bus fleet for transit applications expanding the European H2 bus market to Scotland
- A H2 corridor connecting the North with the South of the UK, and to the wider European H2 network
- 6 FCH buses: an industrial consortium across Europe

Objectives:

- 14 hours and 270 km per day operation
- Refuelling station supplied from H2 generated at a nearby wind farm
- 30% to 50% CO_2 reduction vs diesel buses
- H2 cost: 6 €/kg, assuming 200 kg/day

Duration: January 2013 - December 2017

Total budget: €11.4 m

EU contribution (FCH JU): €7 m

www.aberdeencity.gov.uk

HyTEC

- Demonstration of fuel cell vehicles in London and Copenhagen
  - Taxis and passenger cars in London with a refuelling station with delivered hydrogen
  - Passengers cars in Copenhagen with a refuelling station based on 100% green H2
- Increase number of H2 refuelling stations in London and Copenhagen

Objectives:

- Share lessons learned and commercial benefits to key local stakeholders
- Engage key EU decision makers to accelerate commercialisation of public transport fleets

Duration: Sept. 2011 – Dec. 2014

Total budget: €29,5 m

EU contribution (FCH-JU): €11,9m

www.hy-tec.eu

FREVUE: Validating Freight Electric Vehicles in Urban Europe

8 locations across Europe: Stockholm, Oslo, London, Rotterdam, Amsterdam, Lisbon, Madrid and Milan
15 industry partners, 6 research organisations
124 electric vehicles

Freight applications include a wide range of:

- Goods deliveries
- Innovative logistics systems and ICT
- Test of different vehicle types
- Diverse climate conditions

FREVUE Joint Stakeholder Forum
with Green eMotion and ZeEEUS
held in June 2014, Brussels

Duration: January 2013 - 2018
Total budget: €13.8 m
EU Contribution (FP7): €8 m
www.frevue.eu

ene.field

- 9 European micro FC-CHP (Combined Heat and Power) manufacturers to deliver trials across Europe
- 4 utilities, housing providers and municipalities
- 1,000 residential FC mCHP installations

Objectives:

- Engage with local authorities and local distribution system operators to identify the role of FC in clean local energy networks
- Insight of the socio-economic barriers to widespread deployment of mCHP
- Engage with EU stakeholders to increase political acceptance

- Regional workshops in 2013/2014

Duration: Sept. 2012 – Aug. 2017

Total budget: €53,2 m

EU contribution (FCH JU): €25,9 m

www.enefield.eu

Hydrogen Infrastructure for Transport (HIT)

- 7 partners, with the support of 4 EU Member States, co-funded by the EU (TEN-T)
- HRS roll-out plan along 1,000 km corridor from Gothenburg to Rotterdam with links to hydrogen hubs in DE and the UK

- 1 pilot station of Air Liquide in Rotterdam
- 2 pilot stations in DK by H2Logic

- Geographical planning aligned with the EU's TENtec mapping system

Final HIT event with presentation of Synchronised Action Plan, November 2014

HIT 2 project approved July 2014!!!

Duration:
Nov. 2012 – Dec. 2014
www.hit-tent.eu

More? Follow HyER!

- HyER Website (**www.hyer.eu**):

59,381 unique visitors in 2013

126,327 visits in 2013

- **Newsletter to 7,000 contacts!**

Help us spread the word and promote HyER regions and their activities to the world!

Are you on twitter? **Follow us @hyer_eu!**

Facebook page (facebook.com/hyer.eu)

Contacts

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REGIONE LOMBARDIA
Past and ongoing experience in hydrogen projects

ZERO REGIO project

FC A-Class(one with 70MPa storage)

72 kw stack from Ballard
Storage capacity: 1,8 kg of Hydrogen (35 Mpa)
Range 170 km ((35 Mpa)

3 Fiat panda hydrogen

70 kw stack from Nuvera

Storage capacity: 2,5 kg of Hydrogen (35 Mpa)

Range 300 km ((35 Mpa)

REGIONE LOMBARDIA

Past and ongoing experience in hydrogen projects

CHIC PROJECTS (Milano, Oslo, Arau, London, Bolzano)

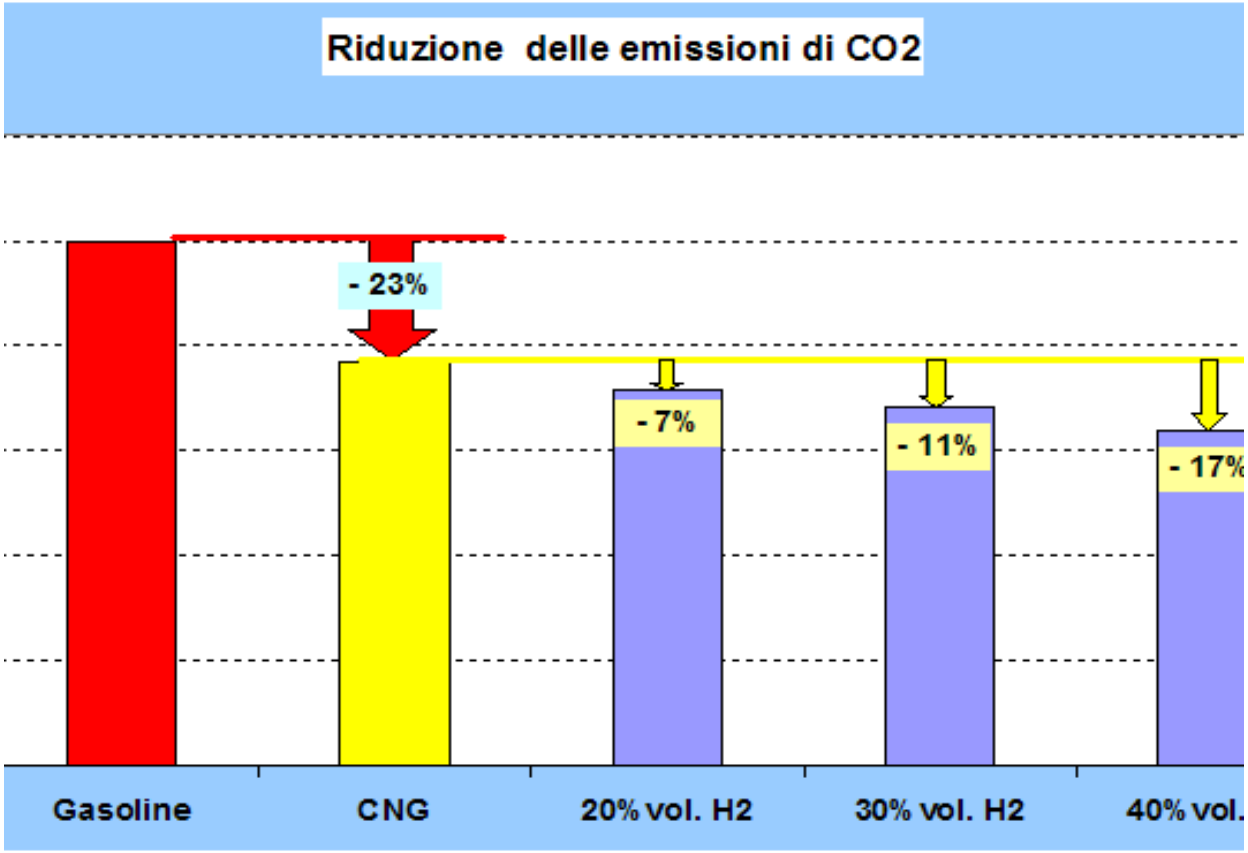
Cofunded by RL:

- 2,8 M€ for purchase 3 H2 buses (total cost 5,6 M€)
- 1,4 M€ for fuel stations (total cost 4,3 M€)

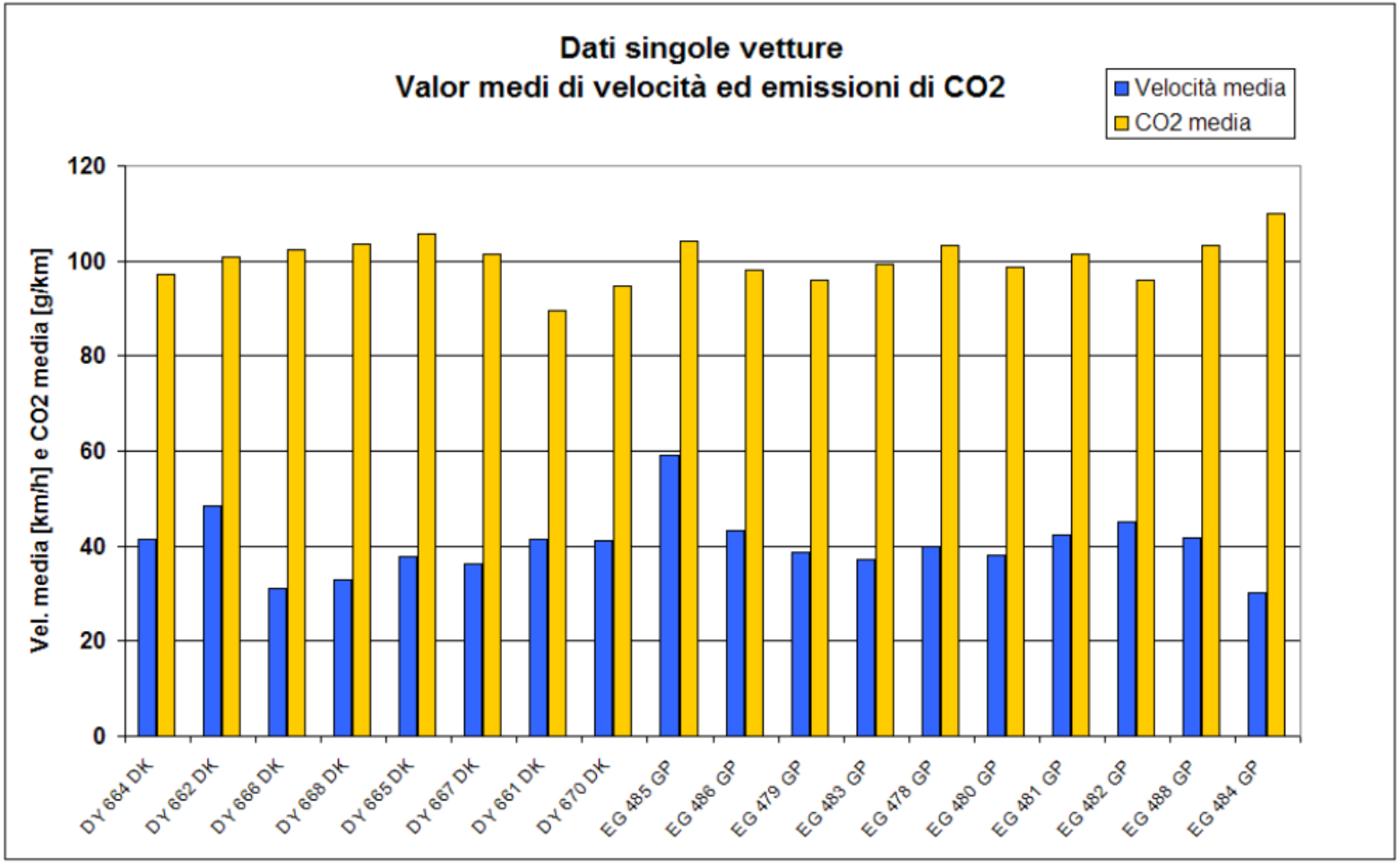
MyGas project
(why methane and hydrogen blend)

This is a intermediate solution towards sustainable mobility because it is cheaper than pure Hydrogen and it allows pubblic acceptance

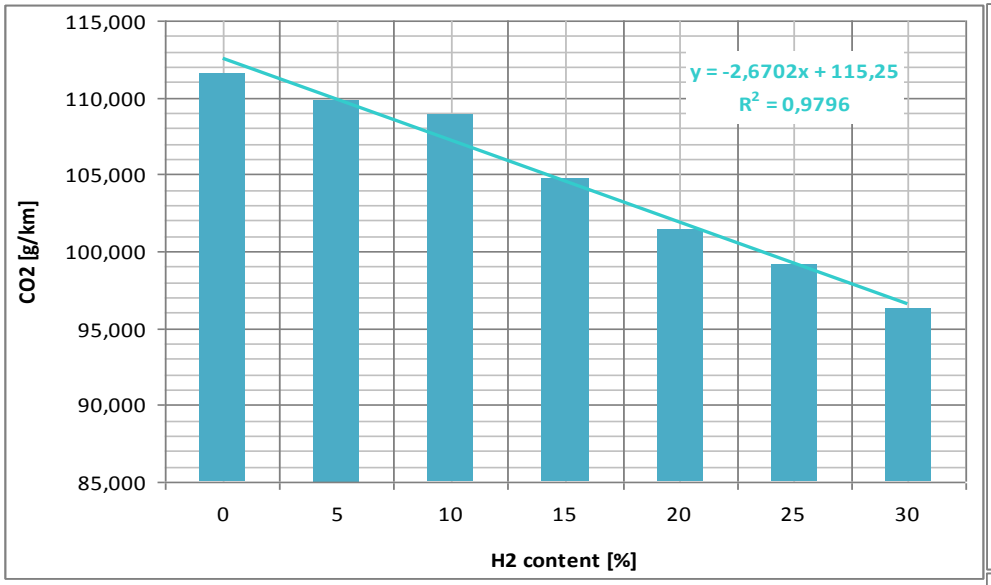
20 vehicles Panda and 1 refuelling station

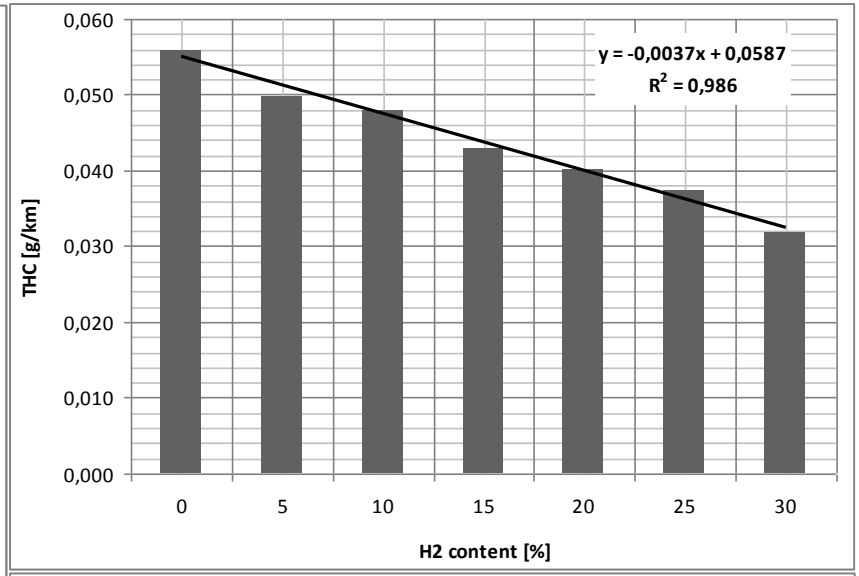


Blend is 30% in volume of hydrogen for 11 % reduction of CO_2 than pure methane (-34% less than gasoline)

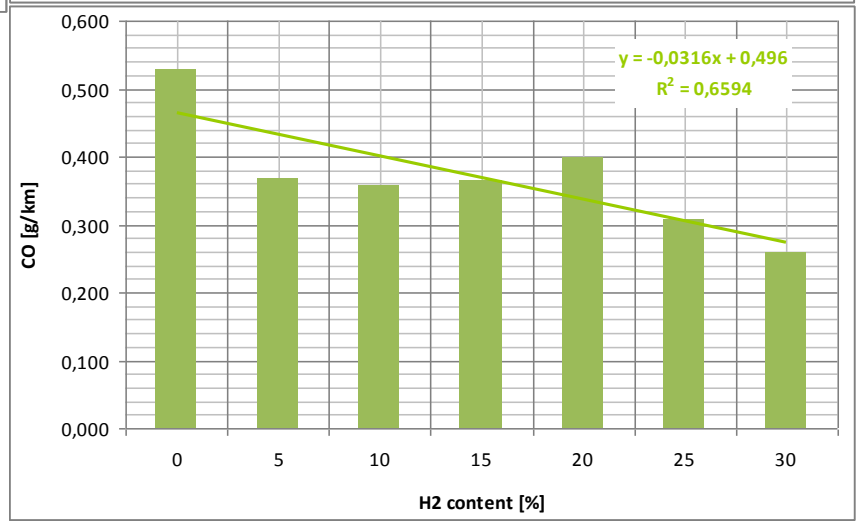

Dati singole vetture
Valor medi di velocità ed emissioni di CO2
Velocità media
CO2 media
Vel. media [km/h] e CO2 media [g/km]
120
100
80
60
40
20
0
DY 664 DK
DY 662 DK
DY 666 DK
DY 668 DK
DY 665 DK
DY 667 DK
DY 661 DK
DY 670 DK
EG 485 GP
EG 486 GP
EG 479 GP
EG 483 GP
EG 478 GP
EG 480 GP
EG 481 GP
EG 482 GP
EG 488 GP
EG 484 GP

Prove condotte c/o JRC Ispra
Ciclo omologativo NEDC





I risultati sperimentali hanno confermato le riduzioni di emissioni proiettabili a calcolo



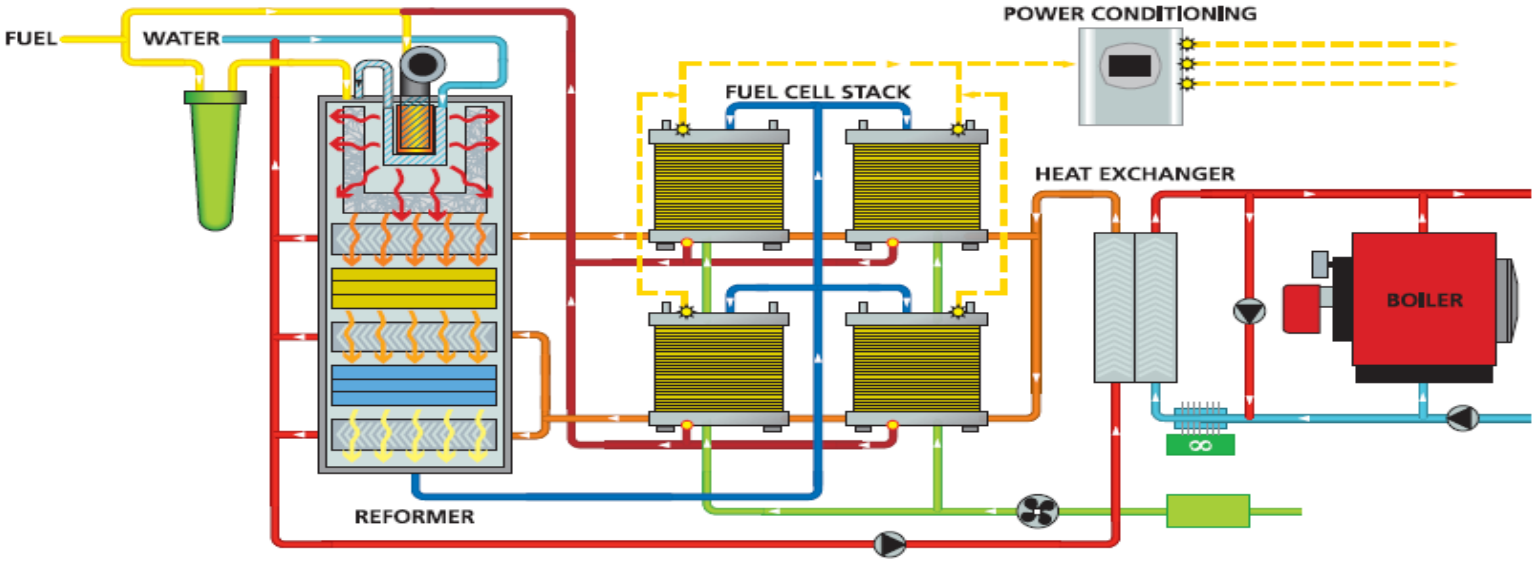
Il Progetto Real Fuel Cell

FC-CHP (Combined Heat and Power)- MONZA VILLA REALE

Il Progetto Real Fuel Cell

FC-CHP (Combined Heat and Power)- MONZA VILLA REALE

The result of experimentation is electric power >24Kw and heat power with performance of 81%.



Grazie per l’attenzione

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Please visit: http://ev-observatory.eu/

European Electro-mobility Observatory