



European field trials for residential fuel cell micro-CHP

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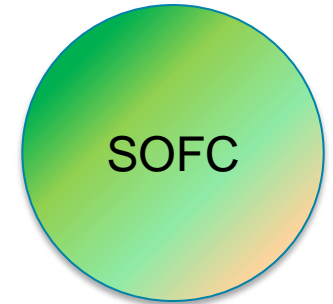
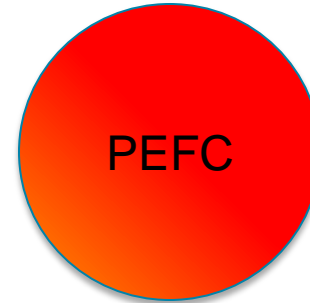
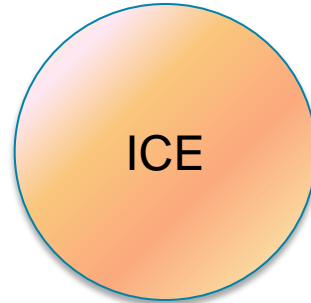
EUSEW 2012

Project Aims

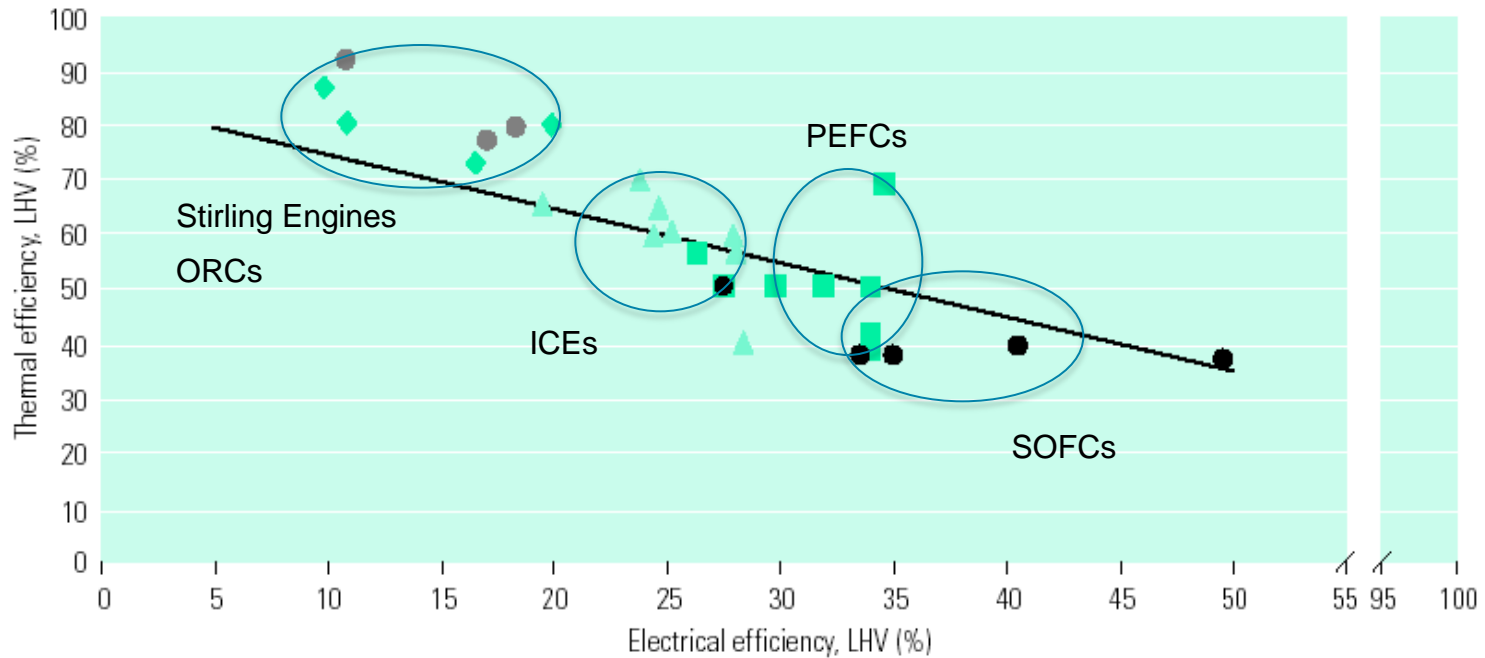
- The ene.field project will be a major step to overcoming the challenges of commercialising fuel cell technology used in Combined Heat and Power (mCHP) mode in residential buildings. The project allows a group of Europe's leading mCHP developers to embark on a large field validation of the technology under a common analysis framework.
- Ene.field will deploy and monitor around 1,000 new installations of residential fuel cell CHP across 12 key member states. It represents a step change in the volume of fuel cell deployment for this sector in each country. By learning the practical implications of installing, operating and supporting a fleet of fuel cells with real world customers, ene.field will demonstrate the environmental and economic potential of FC mCHP, and lay the foundations for market exploitation.



Flavours of Micro-CHP



- ◆ Stirling engines
- ▲ Internal combustion engines
- Solid oxide fuel cells
- PEM fuel cells
- Rankine-cycle engines
- Reference showing 85% overall efficiency



Flavours of Micro-CHP – Low-carbon house



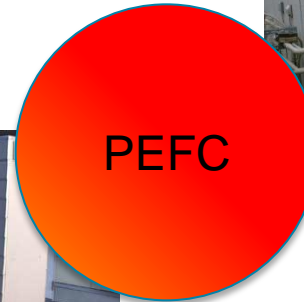
Annual energy demand <10,200 kWh

Heat demand ~12%

Electricity demand ~88%



Tokyo Gas & Panasonic



Ebara Ballard



Ceramic Fuel Cells

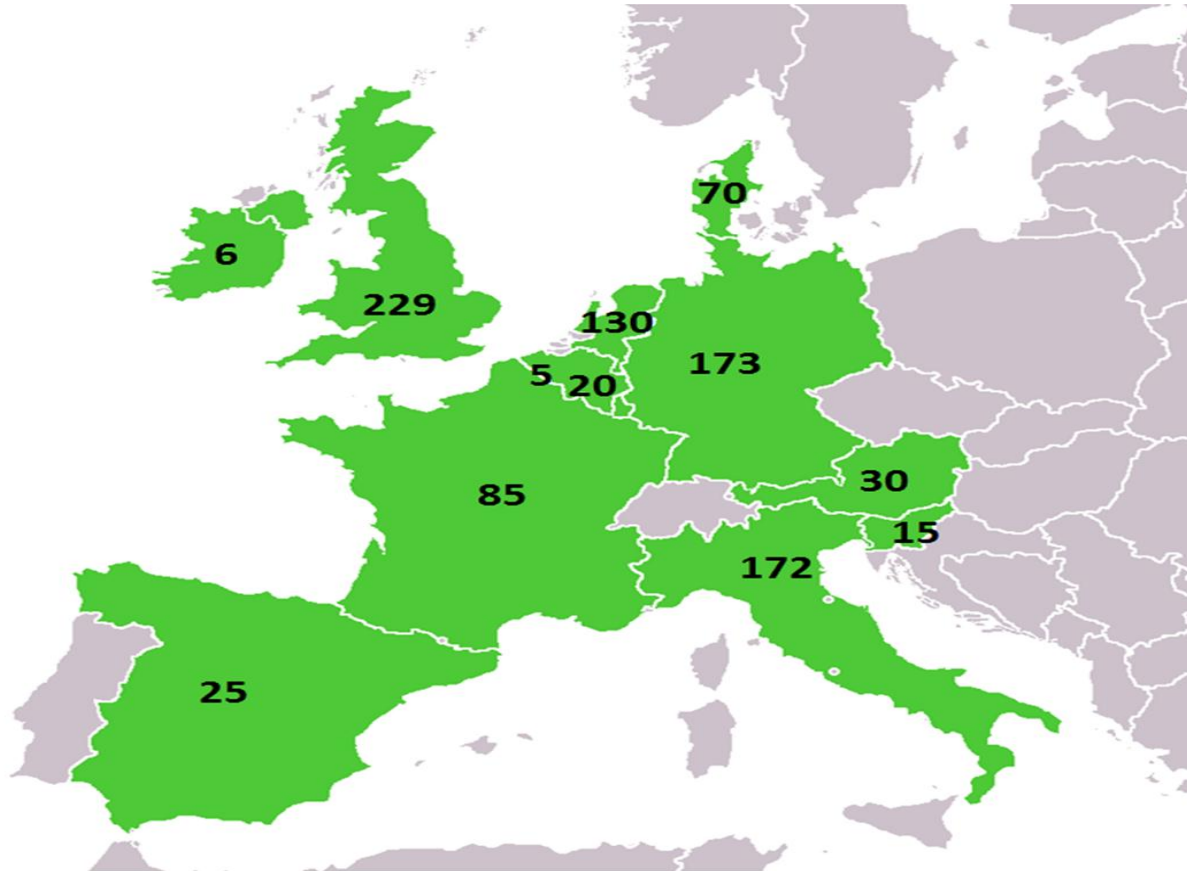


Hexis



Osaka Gas & Kyocera

Micro CHP deployment plan under ene.field



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Outcomes

- **Real world learning** - demonstration of market potential, segmentation, cost and environmental benefits of micro FC-CHP
- **Developed market focused-product** specifications and harmonised codes and standards
- **A more mature supply chain**, readied for deployment of micro FC-CHP in 12 member states.
- **An evidence base on cost and environmental performance**, that can be used to accelerate policy support from governments, and adoption by channels to market.

Strategic objectives -FCH JU

Ene.field project objectives

Demonstration

Proven systems deployed in a real end-user environment
Establish installation, operation and maintenance services.
market capacity building

- **deploy up to 1,000 residential fuel cell CHP units** across 12 EU states
- **establish well-developed supply chains and support networks** to prepare for commercial deployment

Analysis

Evaluate energy, environment and economic sustainability

- **evaluate the performance of mCHP technologies in the field** including LCA and LCC
- Assess **socio-economic barriers** to deployment.

Dissemination

Promote public awareness and understanding
Outreach to new routes to market

- provide clear **position papers and advice for policy makers** to encourage the take up of fuel cell mCHP
- **validate new routes to market** and expand existing routes through utilities to a broader base

Strategy

EU at forefront of FC and H2 technologies
Move technology towards commercialisation

- Move towards **market ready FC mCHP systems** from each of the 9 manufacturers
- **Stimulate cost reduction** of the technology by moving towards serial volume production

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WP1: Trial Deployment

Trial co-ordination

Manufacture, installation and operation of units

Trial 1

Trial 2

Trial 3

Trial 4

Trial 5

Trial 6

Trial 7

Trial 8

Trial 9

WP4: Dissemination

Internal and external

WP2: Data Monitoring

Formation of a common specification for data
Aggregation of data from trials

WP3:

Analysis

Field Support
Barriers
LCC + LCA
RCS working group
Grid working group

WP5:

Commercialisation

Cost and Market Projections
EU supply chain
Policy
Macro-economics

WP6: Project Management

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Project statistics

- Under negotiation : final stages
- 26 partners including manufacturers, utilities, research institutes, universities.
- Project over 5 years
- Demonstration over 3 years in each case
- Lifecycle cost assessment, Barriers report, commercialisation framework