



Magyar Hidrogén és
Tüzelőanyag-cella Egyesület

Hidrogén és Tüzelőanyag-cella Nemzeti Technológiai Platform, valamint a

**Magyar Hidrogén és Tüzelőanyag-cella Egyesület
működése és eredményei**

Margitfalvi József, elnök

Budapest, 2013. május 7.



Activities and achievements of the „Hydrogen and Fuel Cell National Technological Platform” and the „Hungarian Hydrogen and Fuel Cell Association”

Jozsef Margitfalvi, president

Budapest, May 7, 2013.

Background information

Autumn 2006: Hydrogen Forum was organized in Budapest by the Hungarian Energy Association (MET, Mr. Ernő Balogh)

Hydrogen Forum: participants representing

- the industry (energy sector),
- R+D,
- bank sector, and
- decision makers

The idea to create the Hydrogen Section within the frame of the Hungarian Energy Association (MET) was formulated at the above meeting.

The Hydrogen Section of MET was officially organized first months of 2007. It had about 40 members. Companies, universities , other organizations were not allowed to have a membership.

The Hydrogen Section of MET joined the **EHA** and the **International Association for Hydrogen Energy.**



List of activities

Autumn 2008: The project „**Hydrogen and Fuel Cell National Technological (HFCNT) Platform**” has been launched.

The HFCNT Platform was established with the aim to promote a better co-operation between the academic, industrial and governmental sectors. The 28 members of the Platform were companies and research institutions interested in the hydrogen economy.

„**Hydrogen and Fuel Cell National Technological Platform**” had two main tasks:

- (i) Creation of a National Strategic Research Agenda (SRA)**
- (ii) Establishment of an Action Plan (AP)**

The Action Plan has taken into account Hungary’s limited resources within the context of the European and national SRAs.



Our general view on „Hydrogen technologies”

Production

Purification

Storage

Applications

- **It is a very complex network combining all elements of the whole chain from production up to the application in fuel cells.**
- **Our main conclusion: New materials are needed for all of the above areas in order to achieve the final goal, i.e., the creation of highly effective „hydrogen economy”.**
- **The development of these new materials requires new approaches and new methods.**

Hydrogen technologies

Production

Sources of hydrogen:

Methanol
Ethanol
Glycerol
Biomass
Water

- Steam reforming of methanol and ethanol has been investigated by different research groups using supported heterogeneous catalysts
- Bio-hydrogen production methods have been investigated at Szeged University

Purification

Selective removal of CO from hydrogen rich gas mixtures
(PROX) (Preferential Oxidation)

Several new type of supported gold catalysts were designed using high-throughput and combinatorial methods



Hydrogen technologies

Storage

The main task is:

Development of selective adsorbents

**Systems investigated: (i) Alloys of Mg,
(ii) Modified activated carbon**

Hydrogen technologies

Applications

Fuel cells

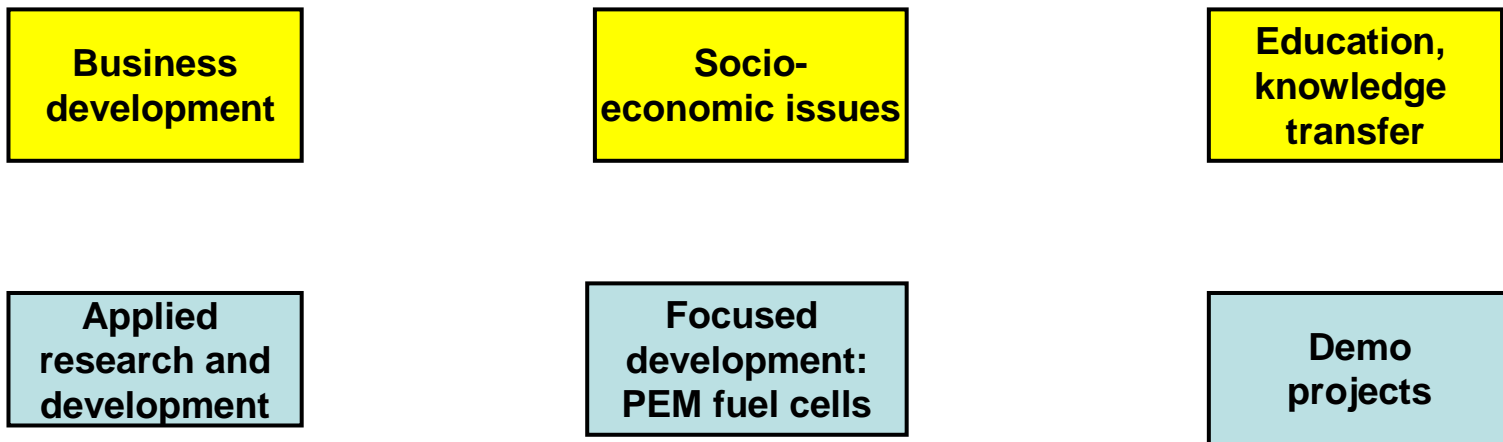
The focus on:

Development of Polymer Electrolyte Membrane Fuel Cells (PEMFC)

Main R+D tasks:

- **New catalysts for cathode**
- **New catalysts for anode**
- **Reliable polymeric bipolar plate**
- **Regenerative fuel cells**
- **Catalyst degradation**

Recommended main activity areas



There were two main categories:

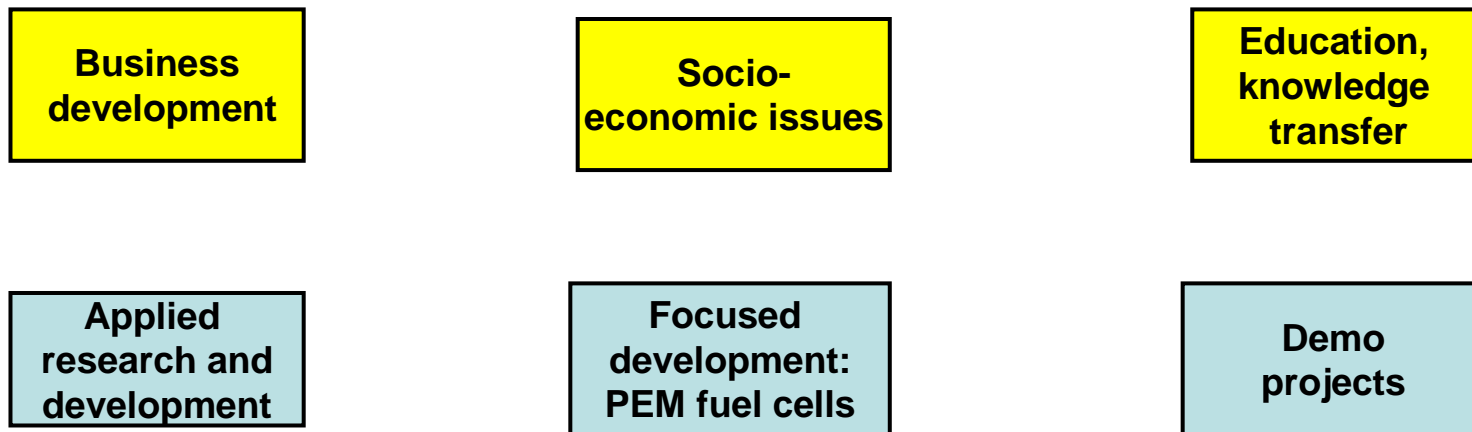
- (i) Business, socio –economic and educational issues;
- (ii) Research and technical tasks.

In each area various tasks were formulated

Activity Areas

Business development	Socio-economic issues	Education, knowledge transfer	Applied research and development	Focused development: PEM fuel cells	Demo projects
Cooperation Center	Extra-industrial relations	New educational programs	Infrastructure development	Electro-catalysts	Hydrogen infrastructure
International relations	Legal and compliance issues	Reinvestigation of the national curriculum and training framework	Measurement and control methods	New membrane structures	Transport
Venture capital and incubation	Policy research	Improvements in popular and basic knowledge	Hydrogen production	MEA development	Back-up power supply
Marketing and PR activities	Facilitate public procurement	Technology transfer service	Hydrogen storage	Modification of GDL	Micro cogeneration
	Environmentally friendly energy	Domestic and foreign conferences	Reversible PEM fuel cells	Bipolar plates	Cogeneration
			Smart grids	Balance of plant	
			Military applications	System integration and modeling	

Recommended research and demonstration areas



Different government organizations, such as Ministries, Agencies, Hungarian Academy of Sciences were detailed informed about our Plans and recommendations.

Achievements:

- Hydrogen as a fuel has been included into the new Szechenyi plan;
- The need for „hydrogen infrastructure” was also mentioned in this plan.

However, up to now no direct steps for realization were done.

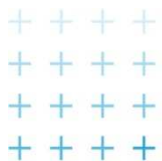
Further activities of the Platform

- **Ambition to have an independence from the Hungarian Energy Society (MET)**
- **Transformation of the Platform into an Association maintaining the approaches, philosophy and the attitudes of the Platform;**
- **In January 2012 the *Hungarian Hydrogen and Fuel Association* has been established having with full independence and a legal status;**
- **The activity and the program of the *Hungarian Hydrogen and Fuel Association* is similar to that of other countries and the European Hydrogen Association.**

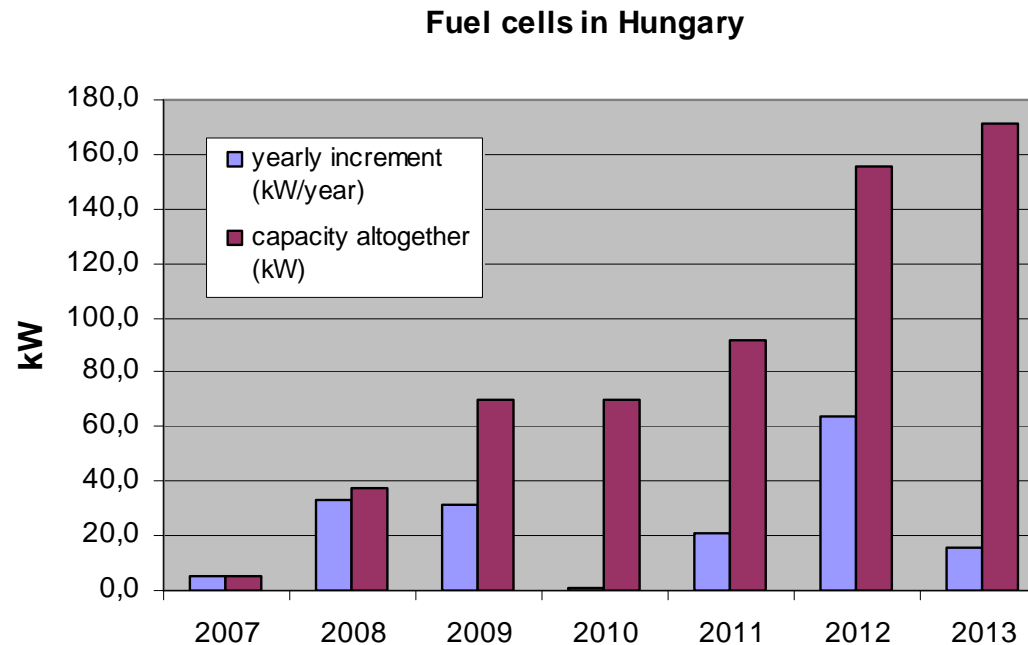


Activities of the Association

- **Participation in different consultations related to government initiated programs in respect to energy, transportation, sustainable environment, etc.;**
- **Collection of statistical figures related fuel cell application;**
- **Publication of a quarterly issued „*Hydrogen and Fuel cell Newsletter*” ;**
- **Based on the lobbying activity of the Association since 2012 Hungary has a representative in FCH JU State Representative Group;**
- **Initiation of the establishment of an „*Eastern European Competence Center*” for hydrogen and fuel cell research;**
- **In the period of 2008 and 2012 our Platform and our Association organized eight different meetings and workshops related to the application of hydrogen and fuel cells.**



Collection of statistical figures related fuel cell application



Content

EU strategy for clean fuels.....	1
List of HFC projects starting in 2013	1
Hydrogen in TEN-T grids	2
FC testing and teaching at TÜV	3
Reforming.....	4
Cooperation in the car industry.....	4
Guide by government: μ -CHP German governmental institutions	6
Nippon Oil: hydrogen filling stations in Japan.	7
US DoE: hydrogen cost calculations.....	7
Events and conferences in 2013.....	8
Suggestions for reading	8

Editors:

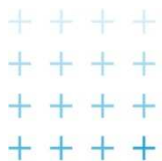
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Future plans

- **Establishment closer contacts to the Ministry of National Development, Ministry of National Economy and National Innovation Agency;**
- **Coordinate research and demo projects in the field of hydrogen and fuel cells;**
- **Helping Hungarian companies, Universities and Research Institutes finding partners for EU and FCH JU projects;**
- **Accelerate public acceptance of hydrogen and fuel cells;**
- **Promote efforts related to the education in all levels;**
- **Extension of international relationship;**
- **Creation a WEB site (an application for grant was submitted to the „Norwegian Foundation”).**



Acknowledgement

**The organizers of this meeting express their
thanks and gratitude to the
Ministry of National Development,
and especially to
Mr. Márk Alföldy-Boruss
for the help to have this meeting**



Thank you for your kind attention

