



EUROPEAN
COMMISSION

Community Research

EC funded (FP6) projects with potential IPHE interest

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European Commission



Recognition of IPHE projects

× **Additional strategic criteria:**

- ✓ **Added value of the International Cooperation**
- ✓ **Critical Mass for an impact at global scale**
- ✓ **Respond to priorities in scoping papers and roadmap: the IPHE framework**
- ✓ **High potential for knowledge sharing**



FP6 – First Call – Hydrogen Projects

Area	Project Acronym	Type of Action	Topic	EU indicative funding (M€)	Co-ordinator
H2 production	CHRISGAS	IP	Hydrogen rich gas from biomass	9,5	Växjö University, Sweden
	SOLREF	STREP	Solar MSR for synthesis gas Production	2.1	DLR, Germany
	HYTEC	STREP	High Temperature Thermochemical cycles	1,9	CEA, France
	Hi2H2	STREP	Solid oxide water Electrolyser	0,9	EDF, France
H2 storage	STORHY	IP	Next generation storage technologies for on-board applications	10.7	Magna Steyr Fahrzeugtechnik, Austria
H2 safety, regulations, codes & standards	HYSAFE	NOE	Networking research in safety issues	7	Forschungszentrum Karlsruhe, Germany
	HARMONHY	SSA	Harmonisation of Standards and regulations	0.5	Vrije Universiteit Brussel, Belgium



FP6: First Call – Hydrogen Projects (Cont.)

Area	Project Acronym	Type of Action	Topic	EU indicative funding (M€)	Co-ordinator
H2 pathways	HYWAYS	IP	Elaborating a European Hydrogen Roadmap	4	L-B Systemtechnik, Germany
	HYCELL-TPS	SSA	European H2/FC Technology Platform Secretariat	0.5	Ernst & Young, Belgium
	NATURALHY	IP	Investigating infrastructure requirements for H2 and natural gas mixes	11	Gasunie, The Netherlands
	INNOHYP-CA	CA	Innovative high temperature production routes for H2 production	0.5	CEA, France
H2 end use	ZERO REGIO	IP	H2 FC fleet demonstration	7,5	INFRASERV, Germany
	HYICE	IP	Internal combustion engines	9	BMW, Germany
	PREMIA	SSA	Effectiveness of demonstration initiatives	1	VITO, Belgium

FP6: First Call – Fuel Cell Projects

Area	Project Acronym	Type of Action	Topic	EU indicative funding (M€)	Co-ordinator
High Temperature Fuel Cells	Real-SOFC	IP	Next generations SOFC planar technology	9	Research Centre Jülich (FZJ) (Germany)
	BIOCELLUS	STREP	Biomass Fuel Cell Utility System	2,5	TU Munich (Germany)
	GREEN-FUEL-CELL	STREP	SOFC fuelled by biomass gasification gas	3	CCIRAD (France)
Solid Polymer Fuel Cells	HYTRAN	IP	Innovative systems and components for road transport applications	9	Volvo (Sweden)
	FURIM	IP	High temperature polymer electrolyte membrane (PEM)	4	DTU, Technical University of Denmark
Portable applications	MOREPOWER	STREP	Compact direct (m)ethanol fuel cell	2,2	Geesthacht Research Centre, GKSS (Germany)

Examples of ongoing FP6 projects with potential IPHE interest

- × **HyWAYS** – hydrogen pathway analysis
- × **HySAFE** network for hydrogen safety
- × **StorHy** – compressed and liquid hydrogen storage
- × **HARMONHy** – gap analysis strategy for pre-normative RTD
- × **NATURALHy** – distribution of H₂/NG mixes
- × **FURIM** – high temperature PEM membranes
- × **Zero-Regio** – hydrogen cars demonstration





HyWAYS

- × **Objectives:** Development of policy guidelines and industrial targets based on hydrogen pathway energy/environment impact analysis, coupled with socio-economic assessment
- × **Outcome:** Socio-economic analysis at micro-, meso- and macro-level for hydrogen penetration/transition pathway scenarios; selected scenarios will be developed jointly by stakeholders. Results provide policy guidelines in respect of cost-effective :
 - ✓ Reduction in Greenhouse Gas Emissions,
 - ✓ Diversification of primary energy sources;
 - ✓ Penetration of hydrogen ICE/FCE applications for stationary, transport
 - ✓ Phase 1: France, Germany, Greece, Italy, Netherlands, Norway; expansion in phase 2.
- × **EC contribution:** 4.0 M€
- × **Co-ordinator:** L-B Systemtechnik GmbH, Germany
- × **Consortium:** 32 participants including strong industrial representation, national energy agencies, research centres, universities, from 11 European countries
- × **Duration:** 3 years
- × **IPHE members in the consortium:** F, D, I, NO, UK
- × **Website:** www.HyWays.de



HySAFE

- × **Objectives:** Development, harmonisation and validation of methodologies for the safety of H₂ as energy carrier
- × **Outcome:** Action Plan for H₂ safety,
 - ✓ safety and risk studies,
 - ✓ hydrogen incident and accident database,
 - ✓ creation of a set of specialized research facilities,
 - ✓ extracting net outcomes from safety and risk assessment studies as input to regulations, codes and standards
- × **EC Contribution:** 7 MEURO
- × **Co-ordinator:** Forschungszentrum Karlsruhe (Germany)
- × **Consortium:** 25 organisations; partnership involves research organizations, universities, safety agencies, car manufacturers, hydrogen suppliers
- × **Duration:** 5 years
- × **IPHE members in consortium:** I, F, NO, CA, D, UK
- × **Website:** www.hysafe.net



StorHy

- × **Objectives:** To develop robust, safe and efficient on-board vehicle H₂ storage systems with emphasis on compressed gas (700-bar) and cryogenic liquid lightweight materials and technologies.
- × **Outcome:** Identification of the most promising solutions, construction and testing of prototype tanks, development of production technologies, safety studies and pre-normative research, socio-economic and environmental assessments.
- × **EC contribution:** 11 MEuro
- × **Co-ordinator:** Magna Steyr Fahrzeugtechnik (Austria)
- × **Consortium:** Strong partnership (35 organisations) led by the major European car manufacturers and hydrogen suppliers
- × **Duration:** 5 years
- × **IPHE members in consortium:** D, F, I, UK, NO, Canada (indirectly through Dynetek Europe)
- × **Website:** www.storhy.net



HARMONHy

- × **Objectives:** To strengthen European involvement in the international field of Regulations, Codes and Standards for H₂/FC
- × **Outcome:** Gap analysis and assessment of pre-normative research required to support the standards-making and regulatory process for H₂/FC
- × **EC Contribution:** 0.5 MEURO
- × **Co-ordinator:** AVERE- European Association for Battery, Hybrid and Fuel Cell Electric vehicles (Belgium)
- × **Consortium:** 12 partners, involving hydrogen producers, car manufacturers, research organisations, consultants
- × **Duration :** 1 year
- × **IPHE members in the consortium:** I, D, NO



NATURALHy

- × **Objectives:** Investigate the feasibility of using the existing, extensive NG system in Europe for distribution of gas/hydrogen mixes.
- × **Outcome:** Testing of critical components in order to assess safety, durability, and integrity aspects, evaluation of end use applications, socio-economic and LCA.
- × **EC contribution:** 11 M€
- × **Co-ordinator:** Gasunie (Netherlands)
- × **Consortium:** 39 partners led by the major NG network operators and involving hydrogen producers, academy and research centres.
- × **Duration:** 5 years
- × **IPHE members in the consortium:** D, F, I, UK, NO
- × **Website:** www.naturalhy.net



FURIM

- × **Objectives:** Development and improvement of a temperature-resistant polymer membrane with respect to durability and operability to around 180°C
- × **Outcome:** Development of advanced materials, demonstration of the high temperature PEMFC tack and integration of such a system with hydrocarbon fuel processor for stationary applications.
- × **EC contribution:** 4 M€
- × **Co-ordinator:** Technical University of Denmark
- × **Consortium:** 13 partners
- × **Duration:** 4 years
- × **IPHE members in the consortium:** D, USA, NO, UK
- × **Website:** <http://www.furim.com/>



Zero-Regio

- × **Objectives:** Development and demonstration of infrastructure systems for hydrogen as an alternative motor fuel
- × **Outcome:** Development of infrastructure systems for hydrogen (e.g. production, storage, distribution, refuelling) and field tests of a fleet of passenger cars in two different EU urban locations, Rhein-Main (Germany) and Lombardia (Italy).
- × **EC contribution:** 7.5 M€
- × **Co-ordinator:** InfraSerV GmbH & Co Höchst KG (Germany)
- × **Consortium:** 16 partners
- × **Duration:** 5 years in 2 phases: (i) Infrastructure; (ii) Demonstration and evaluation
- × **IPHE members in the consortium:** D, I



Closed 8th Dec 2004 : EU funding ca. 130-150 Meuros (Projects to start in 2005 and 2006)

Main RTD&Demo topics:

- ✓ Fuel cell materials, processes and systems for small, large stationary CHP, also road vehicle traction; marine and aircraft APUs
- ✓ FC system modelling and testing
- ✓ Hydrogen production: large scale gaseous fossil fuels fuel processors, electrolysis, vehicle fuel dispensers
- ✓ Hydrogen storage advanced materials
- ✓ Demonstration of H₂ and alternative fuelled vehicles and infrastructure
- ✓ Benchmarking, planning for integrated RTD and demonstration of hydrogen and fuel cell “communities” (HyCOM, HyPOGEN)
- ✓ Pre-normative research for regulatory and safety of vehicles and hydrogen infrastructure

Proposals encouraged with IPHE dimension!



Project identification and review issues

- ✘ **Need to establish vehicles to foster a transparent and efficient process**
- ✘ **Focus on increasing the valorisation for IPHE of recognised projects**
- ✘ **Progress monitoring through peer review involving stakeholders to include identification of gaps, redundancies and opportunities for expanding cooperation**
- ✘ **Assess cross-national possibilities for funding instruments, including proposals for addressing legal constraints**

