

**The President**

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To the members of N.ERGHY

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**N.ERGHY Information Letter no. 1**

Dear N.ERGHY members,

Since our General Assembly on March 17<sup>th</sup>, 2008, important external and internal milestones have been achieved. With this letter, the N.ERGHY Executive Board would like to inform you on the progress of the JTI, on its work, as well as on the next steps. This letter goes to the contact points of all members that signed the founding documents in March and of those who signed the letter of intent or the application form but were not able to sign in March. We will soon establish a formal application procedure and new members are welcome.

Most important, after approval by the European Parliament, the Fuel Cell and Hydrogen Joint Technology Initiative (FCH JTI) has been adopted by the European Council on May 30<sup>th</sup>. 3 days after the publication in the Official Journal on June 12<sup>th</sup>, the Regulations for the FCH Joint Undertaking including its statutes entered into force. Now the Joint Undertaking is being set up; the first meeting of its Governing Board will be on July 14<sup>th</sup>.

The N.ERGHY association has been granted legal personality on May 23<sup>rd</sup>, 2008 and applied for membership in the Joint Undertaking on June 13<sup>th</sup>. Our President, Paul Lucchese, is invited for the first meeting of the JU Governing Board. N.ERGHY established a secretariat at DLR in Cologne, which is funded for 3 years by DLR (50% position). A bank account has been opened and a web site will be set up soon as an information platform for N.ERGHY members (restricted access) as well as for the public. Within a special section the members will present themselves with their activities and competencies. Starting with this letter, a regular newsletter with information from the Board and from the IDA working groups will be sent by the secretariat every 3 months. If you have relevant information for all members, you can contact the secretariat.

The executive board had 5 conference calls and meetings where it brought forward the discussion on draft texts for the first call for proposals, the exchange with the European

Commission and the Regions Grouping (HyRAMP) as well as organisational aspects. We think we can clearly state that N.ERGHY as the representation of European FCH research institutions is now much better known and research aspects have more weight within the JTI.

A major part of the N.ERGHY work took place within the IDA working groups, where for example the texts for the first call were iterated in close dialogue with the groups from the Industry Grouping. This interaction helped to improve the research aspects in the drafts. Attached you find more detailed information from the four IDA chairs.

To bring forward other issues of FCH research, the Executive Board decided to broaden the instrument of working groups. If a certain issue comes up among the members that should be tackled with for some time, members can suggest to the board to establish a working group for this. Until now three working groups on membranes, SOFC and training have been proposed.

Looking ahead, the first call for proposals and the formation of the FCH Joint Undertaking are the next important steps. The Commission informed us that the first call will not be published before September and the deadline for proposals will be mid December. The call will have a budget of 28.1 million Euros. Draft texts on the different topics are being discussed within the IDA working groups at the moment. We will immediately inform you when the call is published.

Another important subject during the next months will be the different administrative agreements that will define the rules and boundary conditions for future projects. The Executive Board and lawyers of their institutions are involved in the finalising of the Grant Agreement, the Consortium Agreement (as a recommendation to project consortia), the Financial Regulations and the rules on Intellectual Property Rights. These regulations will be similar to those in the 7<sup>th</sup> Framework Programme, but there are critical aspects to be watched.

With the progress and the upcoming things described above, N.ERGHY should have its next General Assembly soon. In order to use the possibilities for coordination and information exchange effectively, this next General Assembly should take place before the Fuel Cell and Hydrogen Stakeholder Assembly in mid-October. Therefore, we would like to invite you to the second General Assembly

on September 16, 2008 from 9:00 to 16:00

at

Maison de la Chimie  
28, rue Saint-Dominique  
F-75007 Paris

Details and the agenda will be sent to you soon.

On behalf of the Executive Board,

Sincerely,

Paul Lucchese

# FCH JTI Information Update on the First Call

Status July 2008

The members of N.ERGHY and the Industry Grouping have agreed on the topics for the first JTI call, expected to open in September 2008 and to be closed in mid December 2008. Please note that this proposal is still a draft and may be changed during the discussions under way.

## IDA1, Hydrogen Vehicles and Refuelling Infrastructure

### 1. Large-scale demonstration of road vehicles and re-fuelling infrastructure

#### Overall Project Goal – Objectives

- Initially, one EU-region shall be identified for the car demonstration program based on a set of criteria followed by more regions in later calls. In addition to the onsite demonstration, a few vehicles shall be touring across Europe and provide as much as possible direct experience to a broad public audience thus establishing a public showcase and increasing public awareness.
- The project shall also provide the necessary experience and framework for the establishment of additional demo sites with hundreds of vehicles in other places of Europe.

**Timing and Duration:** Start in 2009, duration 3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total M€
6.4	6.4	-	12.8

### 2. European Fuel Cell Stack Cluster – Feasibility Study

#### Overall Project Goal – Objectives

- A concerted action is needed to establish, channel and coordinate the relevant players in research and industry. Basic research programs are to go hand-in-hand with ongoing applied research programs, based on a joint technology roadmap with research on medium (80°– 130°C) and high (130°– 180°C) temperature membrane electrode assemblies as core element.
- This includes developing links and collaboration between relevant research institutions and Original Equipment Manufacturers and may also include the creation of spin-offs and corresponding venture capital companies possessing leading edge technology and the respective IP portfolio. Such spin-off companies may serve as the core of a European fuel cell stack industry.

**Timing and Duration:** Start in 2009, duration 1 year

### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
1.0	1.0	-	2.0

### 3. 70MPa compressed gaseous hydrogen onboard storage

#### Overall Project Goal – Objectives

Research activities are needed on basic materials and model development, component and system development, as well as the establishment of a test infrastructure and methodologies suitable for the following options:

- Carbon-composite vessel with metallic liner (type III), or
- Carbon-composite vessel with plastic liner (type IV)

Improved performance, maturity and cost reductions need to be achieved allowing market introduction.

**Timing and Duration:** Start in 2009, duration 3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
1.5	1.5	-	3

## IDA2, Hydrogen Production & Distribution

### 4. Development of low cost, low temperature, high efficiency electrolyser

#### Overall Project Goal - Objectives

- To increase electrode stability & efficiency (alkaline tech.) + catalyst & new materials developments incl. advanced power electronics for lowering costs & improved performance
- To improve materials, system, components durability & reliability, robustness in order to reduce costs while optimizing production tech. through design optimization
- Development of low cost, high efficient PEM electrolyser operated at high pressure (10MPa)
- Evaluation of System Integration with RES through improvements in modelling tools & setting up of field demonstration projects
- The budget split should be 60% for PEM and 40% for Alkaline

**Timing and Duration:** Start in 2009, duration 3 years

### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
2.9	2.9	-	5.8

### Reserve Topic:

### 13. Thermo-electrical-chemical processes with solar heat sources

#### Overall Project Goal - Objectives

Demonstrate the technical & economical feasibility of thermo-electrical-chemical processes for CO<sub>2</sub> free/lean H<sub>2</sub> production:

- Water splitting using solar heat (thermal decomposition & thermo - chemical cycles pathways)
- Thermal plasma technologies for NG/Biomass decomposition
- Fossil fuels / Biomass reforming / gasification using solar heat sources to reduce CO<sub>2</sub> emissions.

The core activities belong to the portfolio of long term technologies which will require continued support beyond FP7 duration.

**Timing and Duration:** Start in 2009, duration 5 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
2.0	2.0	-	4.0

## IDA3, Stationary Applications

### BR1: Degradation and lifetime fundamentals of stationary power applications

#### Overall Project Goal - Objectives

- Definition of issues that control loss of performance and focus on understanding failure mechanisms in a near market stationary application
- Produce a 'Sensitivity Matrix' that allows understanding of degradation and deterioration phenomena through systematic analysis of the influence of main parameters
- Coordination of the programme within Europe and the interaction with international activities and feed into other stationary activities

**Timing and Duration:** Start in 2009, duration 2-3 years

### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
5,5	5,5	-	11.1

### AR1: Operation diagnostics and control for stationary power applications

#### Overall Project Goal - Objectives

- Develop and use diagnostic techniques to reveal potential failures, build a database of stack and system level failure mechanisms and run conditions to avoid them
- Produce controls for SFC-systems that provide predictable, safe and more reliable generators capable <20% loss in performance in an application type environment and avoiding operation regimes that yield failure
- Provide controls that allow FC-systems to integrate into the application environment and communicate and react to the existing and developing power generation networks for both renewable or 'conventional' generator interfaces

**Timing and Duration:** Start in 2009, duration 3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
3.0	3.0	-	6.0

### AR2: Component and system improvement for stationary power applications

#### Overall Project Goal - Objectives

Availability of components that are viable for mass production and of a quality that meets performance and lifetime targets associated with stationary fuel cell applications. For 2015, the target system (excluding cells/stack) life is envisaged to be 10 -20 years depending on the end use. Cost in production needs to be reduced to fit with targets for each application. Target costs for full systems including stacks, BoP (including fuel processing) will be defined by the application, e.g. for domestic micro CHP some markets will demand 3000 €/kW<sub>e</sub>, for large industrial generators 1500 €/kW<sub>e</sub> is more pertinent.

**Timing and Duration:** Start in 2009, duration 3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
3.5	3.5	-	7.0

## IDA4, Early Markets

The application area **Early Markets** will start with the demonstration of portable generators, back-up and UPS power systems as the most promising applications for proving technical and economic viability, establishing certification procedures, safety regulations and logistics. These applications respond to critical market demands specifically in back-up and UPS applications and are therefore suited to achieve early commercialisation success benefiting small and micro enterprises. The development of standardized fuel supply solutions for micro and portable fuel cells will be called as a prerequisite for the successful commercialization of such systems.

### 4.1. Demonstration of Portable generators, backup and UPS power systems

#### Overall Project Goal - Objectives

Projects should focus on the deployment of portable generators, backup and UPS power systems. Several projects covering different applications are sought. The advantages of using fuel cells when compared to current technology should be clearly presented. While alpha-testing may be part of proposals, deployment of significant number of units throughout the entire project duration should be clearly and specifically stated and justified. Fuelling infrastructure requirements should be specifically addressed.

**Timing and Duration:** Start in 2009, duration 2-3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
2.6	2.6	-	<b>5.2</b>

### 4.2. Joint call IDA3/IDA4

We are discussing the possibility of a joint call from IDA 3 and 4. The topic would be:

#### Applied R&D to improve stationary-type fuel cells

#### Overall Project Goal – Objectives

Projects should focus on improvement of stationary fuel cells with respect to real life operating conditions in order to improve commercialisation timeline. These include start-up time, freeze-thaw cycles, layman abuse, fuel impurities, and constant operation after long idle times, among others. The technical targets vary depending on the specific application, although backup power systems and Uninterruptible Power Supplies (UPS) are representative examples. Accelerated and harmonised testing procedures should also be applied.

**Timing and Duration:** Start in 2009, duration 3 years

#### Budget and Budget Breakdown

Public EC	Private Industry	Public non EC	Total €m
4.0	4.0	-	<b>8.0</b>

**Reserve Topic:**

**4.3. Fuel supply technology for Portable Micro FC, Micro-reforming BOP optimisation, Support component**

**Overall Project Goal - Objectives**

Projects should focus on the development of innovative fuel supply systems for micro fuel cell applications. Fully integrated systems should be developed that demonstrate how the proposed fuelling system fits into an overall scheme that meets application requirements. Thus, the fuel supply should be the focus of development within an effort that develops full systems.

A variety of approaches may be used. Proposals should justify the choice of fuel and fuelling system. Novel approaches including new materials, hydrides, micro-reforming of carbon-containing fuels or even direct-feed high temperature fuel cells, among others, may be used.

**Timing and Duration:** Start in 2009, duration 3-4 years

**Budget and Budget Breakdown**

Public EC	Private Industry	Public non EC	Total €m
3.0	3.0	-	6.0