DELIVERABLE

Project Acronym: BeingEnergy

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Project Title: Integrated low temperature methanol steam reforming and high temperature polymer electrolyte membrane fuel cell

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D6.2 - Dissemination Plan

Revision: 1.1

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Dissemination Level		
P	Public	
C	Confidential, only for members of the consortium and the Commission Services	X

Revision History

Revision	Date	Author	Organisation	Description
1.0	1/03/2013	Alfredo Silva	INOVA+	First version
1.1	5/03/2013	Adolfo Iulianelli	ITM-CNR	Review

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1. Executive Summary

The present document aims to detail the road map for the dissemination effort the BeingEnergy consortium has developed to guide their work during the three-year duration of the project.

The deliverable was structured in successive sections as to follow a logic path, from a generic presentation of the project, to the final conclusions. The deliverable sections are thus organized in such a way that each section supports the next:

- Project Objectives: what the what the dissemination effort aims to accomplish;
- Target audiences: who are the intended receivers and their relevance to the project;
- Methods and tools: how the dissemination will be accomplished;
- Timing: estimated dates for the several efforts;
- Potential Risks: what factors might jeopardize the dissemination efforts, and counter strategies

This document was conceived during the first six months of the project's life based on careful analysis of the original contract's proposed tasks and schedule, further detailing it via discussion on realistic approaches to execute each of them. These discussions took place primarily in a number of meetings, namely: the consortium kick-off meeting (Porto, 14/09/2012), the consortium's first technical meeting (Hobro, 19/10/2012), the first quarterly Web-conference (03/12/2012), plus several other bilateral exchanges.

2. Objectives and Consortium

2.1 Project Objectives

The aim of the BeingEnergy project is to develop a fuel cell power supply prototype that responds or overpass all the requirements proposed by the call SP1-JTI-FCH.2011.4.4. BeingEnergy targets the development of a compact, easy to use, power supply based on the synergetic integration of high temperature polymer electrolyte fuel cell (HT-PEMFC) stack and low temperature methanol steam reforming reactor using a very active new reforming catalyst.

The main objectives of the BeingEnergy project are:

1. Synthesizing, characterizing, and optimizing of catalysts for low temperature methanol steam reforming (LT-MSR, 170 °C) and the developing of strategies for industrial preparation of the selected catalysts;
2. Development, characterization and optimization of a cell-reactor for the LT-MSR;
3. Integration, characterization and optimization of the low temperature methanol steam reforming reactors with a high temperature polymer electrolyte membrane fuel cell (HT-PEMFC);
4. Development, characterization and optimization of the LT-MSR/HT-PEMFC 350 We prototype.

This new power supply will contribute for strengthening the European portable FC industry by developing a prototype capable of entering the market in the near term. The new power supply will meet the EU requirements for weight and volume power density, starting up time, cost and lifetime.

2.2 Project Consortium

Eight organisations are involved in the execution of the project:

Num.	Short Name	Country	Long Name
1	UPORTO	PT	Universidade do Porto, Faculdade de Engenharia
2	DLR	DE	Deutsches Zentrum für Luft und Raumfahrt e.V.
3	VTT	FI	Teknologian Tutkimuskeskus VTT
4	SerEnergy	DK	SerEnergy A/S
5	ITM-CNR	IT	Consiglio Nazionale Delle Ricerche
6	UPVLC-ITQ	ES	Universidad Politecnica de Valencia
7	INOVA+	PT	Inovamais - Servicos de Consultadoria em Inovacão Tecnologica S.A.
8	Rhodia	FR	RHODIA Operation

Table 1– List of organisations that are part of the BeingEnergy consortium

2.3 Dissemination Objectives

Work Package 6 (WP6), led by INOVA+, is the BeingEnergy task aimed at building awareness to the project and its results, as well as to prepare its post-FCH-JU-funded exploitation phase. The dissemination work has the following specific objectives:

- Create awareness: make the project known to industry and academia across Europe, through participation in conferences and workshops, and contacts with associates/clients;
- Disseminate project results: make the project results known in order to prepare their future exploitation;
- Feedback collection: obtaining responses from dissemination audiences in order to improve the project's work, and improve the future exploitation plan.

As part of the WP6's expected results, the BeingEnergy work plan for establishes the following deliverables:

Num.	Title	Lead Partner	Delivery Date	
			Project Time	Calendar Time
D6.1	Dissemination Website	INOVA+	2	Oct-12
D6.2	Dissemination plan	INOVA+	6	Feb-13
D6.3	Conference: special session in international congress	INOVA+	24	Aug-14
D6.4	Dissemination report	INOVA+	36	Aug-15
D6.5	Exploitation plan	INOVA+	36	Aug-15

Table 2 – List of deliverables from WP6

3. Target Audiences

The dissemination strategy considers the following primary target audiences:

- Scientific community: research centres, universities, and any other organisations dedicated to R&D in the energy sector that could have an interest in the technology being developed;
- SMEs/large companies: companies of all sizes that could have an interest in the fuel cell technology as systems integrators, business partners, or end users;
- Venture capitalists: entrepreneurs that could be interested in investing in the fuel cell area, and in the BeingEnergy technology.
- Public sector: public sector organisations such as Energy, Technology, or Environment Ministries that could have an interest in supporting the deployment of new fuel cell technologies for economic, technological, or environmental reasons.

In addition to the above the consortium also considers a number of secondary target audiences. These are audiences which will not be specifically targeted, but which could nevertheless be exposed to the project as a result of other dissemination activities (e.g. the project Web site, a paper publication, participation in one event, etc.). In this case the consortium will respond to their interest in an individual basis, and, should it be considered there is potential for the involvement of other similar organisations, adapt the dissemination plan to also target them. Secondary targets include:

- Organisations outside the energy sector: entities which are not part of the primary targets of the dissemination work, but that nevertheless could have an interest in the results of the project.

- General public: all individuals, related or not to the core target audiences that show an interest will be given information on the project work and the fuel cells sector. While they are not considered to be potential partners or end users, it is believed that the raising of awareness to the fuel cell area in general and the BeingEnergy services in particular will provide positive coverage and word-of-mouth activity that might raise interest in other parties.

4. Dissemination Methods and Tools

4.1 Introduction

There are a wide variety of dissemination methods and tools envisaged to be mobilized and used by all project partners: project Web site, contact networks, participation in seminars and relevant events, press releases and publications in media, etc. While these are the planned activities, the consortium will try to take advantage of any other dissemination opportunities that might arise during the project's duration.

Experience has shown that dissemination plans involving several different activities (such as in this case) will often have uneven results, with some activities being more successful than others. As such the consortium will also adopt a flexible position in order to change and adapt the plan should the feedback prove it necessary.

The table below gives a quick summary on the relationship between the target groups and the dissemination methods and tools.

Dissemination activity	Target Groups	Means and Tools
Local dissemination of project results	- Private or public organisations - General public	- Personal contact - Meetings - Press releases - Web site
Dissemination of general applicability world wide	- Public sector service - Companies (system integrators, end users) - Venture capitalists,	- Printed materials - Personal contact - Web site
Dissemination of commercial potentials	- Companies (system integrators, end users) - Venture capitalists, - Public sector service organizers	- Distribution network of SerEnergy, Rhodia and Inova+ - Newsletters - Personal contact - Meetings
Dissemination of the scientific results	- Scientific community - Companies interested in the developed products	- Scientific papers - Event participation - Patents

Table 3 – Relationship between targets and means of dissemination

4.2 Project Web Site

The project's website (deliverable D6.1), which is located at www.beingenergy.eu, was designed by partner INOVA+ in the second month of the project.

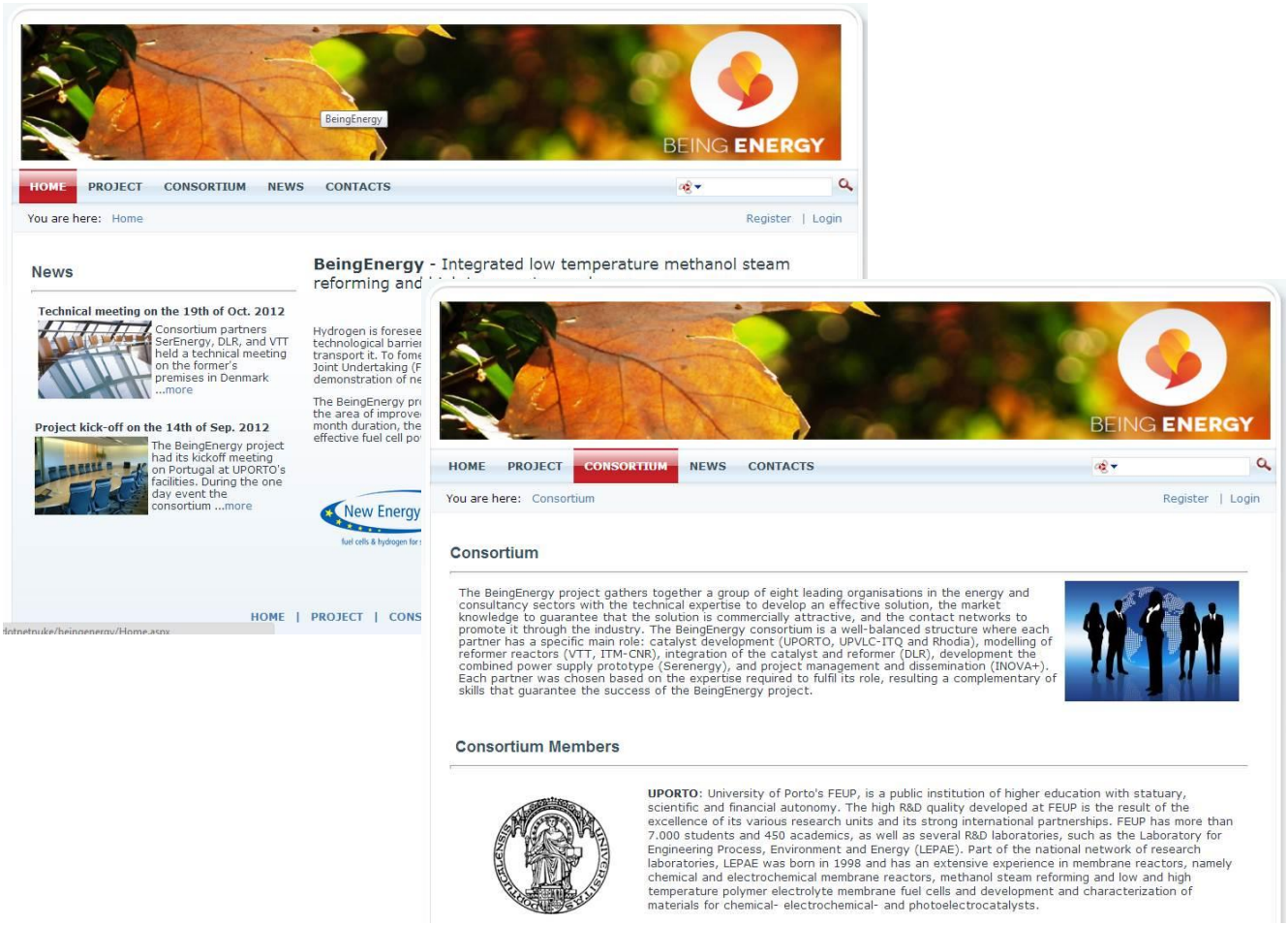

Image 4 – BeingEnergy Web Site

The final website includes several features with the intent to help disseminate the BeingEnergy project as much as possible, and it will be maintained and updated regularly by INOVA+, with the support of the other consortium partners. Features include:

- News: this is the same type of news reports that already exists in many websites, with relevant developments, both in the project or related to it, being listed in the front page ordered by date. News content include title, date and description;
- Description/fact sheets: a description of the BeingEnergy project. This content will be continually maintained to include updates and correction of mistakes on the basis of new project developments, input from the users, the Commission, the monitoring performed by the partners, or any new information deemed relevant;
- Partners/Contacts: quick description of the consortium partners;
- Energy industry developments: achievements of interest in the fuel cell energy area will be publicized in the website;
- Dissemination Materials: PowerPoint presentation, Leaflets, and other promotion material will be made available for download for any interested parties;

- Restricted Area: part of the Web Site that requires a login to access, used by the project partners for project management. All of the project's deliverables, partner contacts, work plan, contract, and other restricted information is available there for the consortium and the FCH-JU.

4.3 Client/Associate Contacts

Most of the consortium partners have long worked on the energy and fuel cell area, and have a large number of clients and associate organisations that have an interest on this area. These networks of contacts are a prime resource for dissemination which the BeingEnergy will use to build awareness and collect feedback.

To this end each partner will identify from its overall list of contacts the ones they judge to be either potentially interested in the technologies the project is developing, or that might help in the dissemination effort by using their own networks of contacts. Once the relevant target organisations and individuals are identified they will be contacted, and based on the received feedback as well as their knowledge of the contacts' interests, the consortium will decide how to best communicate with them (e.g. a contacted research organisation that expresses an interest in the technology could then be involved in the future technical exploitation of the project results; a company could expresses interest could be involved in the commercial exploitation, etc.).

4.4 Participation in Events and Conference

Over the run of the project the consortium partners will participate in many events of various types such as conferences, workshops, etc., in the energy area. Whenever possible the partners will use this as an opportunity to raise awareness for BeingEnergy, by talking to participants, distributing leaflets, and collecting contacts and feedback that might prove of interest for the preparation of the exploitation plan, and the post-FCH-JU-funded phase of the project.

In addition to the above, at the middle of the project an international congress will be selected for holding a special section dedicated to the project. Possible congresses are ICCMR 11 (International Conference on Catalysis in Membrane Reactors), to be hold in Portugal in 2013 and organized by partner UPORTO, and the European Fuel Cell Forum, that in 2011 was organized by partner DLR.

4.5 Publications in Media and Patents

Several of the partners are organisations that are involved in R&D activities in the energy area and regularly publish papers on scientific journals (e.g. UPorto and ITM-CNR). Over the run of the project several partners have planned to publish papers that involve the results obtained in it, with full acknowledgement of BeingEnergy (and the FCH-JU). These publications thus provide an important source of dissemination as they expose the project to both the scientific community, and the organisations/projects that work on the full cell area.

The Intellectual Property developed in the project will be patented. This serves as a dissemination means as well, particularly among the scientific community and large companies which have a direct interest in new developments in the fuel cell field.

4.6 Other

The consortium will create and regularly update a leaflet / brochure on the BeingEnergy service, which can then be given by the consortium partners at events, to interested parties, to contacts, etc.

Another possibility under consideration is the advertisement of the project on web sites from other projects or organisations of the Energy sector. This and other potential dissemination channels will depend on opportunity based on contacts with other projects and entities that show an interest in BeingEnergy.

Another consideration is the creation of a newsletter. This is based on the perceived interest from the entities and individuals contacted during the dissemination activities (particularly event participation and personal contacts). Should there be a sufficiently large audience the consortium will create a periodic newsletter detailing the latest developments in the project and the overall full cell and energy sectors.

As mentioned the consortium will try to take advantage of any unexpected opportunities that might arise during the project. These might include dissemination channels which at the present are not considered, or use in new ways of those that are.

5. Timing

Timing is an important variable in the Dissemination Strategy plan in terms of its impact on the purpose and key messages of the dissemination activities. For example actions taken in the extremes of the project's life might not have the required effect; too soon and there's not enough results, too late and potential interest from organisations will not come in time to help shape the final business plan.

The timings of several of the dissemination initiatives are fixed in some way outside the control of the consortium, e.g.:

- Participation in events is dependent on their dates;
- Unexpected dissemination opportunities (e.g. contacts by interested parties).

For the remainder activities the consortium will plan the timings depending on such considerations as the current state of the project or the approaching of some relevant milestone.

The planned dissemination actions per partner are as follows:

UPORTO

Action	Topic	Expected Month
Manuscript submission	The effect of calcination of ZnO on the catalytic performance of PdZn/ZnO catalyst in low temperature methanol steam reforming	M9
Manuscript submission	Journal of Catalysis about Methanol steam reforming for hydrogen generation via conventional and membrane reactors: a review (cooperation with CNR-ITM)	M9
Manuscript submission	Synergetic application of HT-PEMFC with methanol steam reforming promoted by highly active copper catalysts	M9
Event participation	ISGC2 will take place in La Rochelle (France) 2013	M9
Manuscript submission	Influence of the preparation conditions on the physico-chemical properties of shape-controlled ZnO solids.	M9
Manuscript submission	Submission in Chemical Engineering Science regarding the comparison between methanol steam Reformers with radial and tubular designs.	M10
Event participation	Participation on HYCELTEC in Lisbon (Portugal) - 2013 (Poster about comparison between methanol steam reformers with radial and tubular designs)	M10
Manuscript submission	Synthesis, characterization and catalytic behaviour of Cu-based catalysts prepared by co-precipitation.	M12
Event participation	Participation on ICCMR11 in Porto (Portugal) - 2013 (Poster and/or oral presentations about polymeric and carbon membranes).	M11
Manuscript submission	Synthesis, characterization and catalytic application of PdZn/ZnO materials.	M11
Event participation	To be determined	M13-M24
Manuscript	Study of the influence of methanol slip on the HT-PEMFC performance.	M16

submission		
Manuscript submission	Influence of the synthesis method on the physico-chemical and catalytic properties of Cu-based catalysts.	M16
Manuscript submission	Physico-chemical and catalytic aspects of bimetallic combinations of Cu and noble metals catalysts for the LT-MSR.	M20
Manuscript submission	Submission in Chemical Engineering Science concering methanol steam reforming in a radial design reactor using a novel catalyst.	M24
Manuscript submission	Manuscript submission in an international journal regarding polymeric membranes for CO2 removal.	M24
Manuscript submission	Manuscript submission in an international journal about purification of H2 using adsorbents.	M24
Event participation	To be determined	M24-M36
Manuscript submission	Synthesis, characterization and performance evaluation of Pd and Pd-alloys catalysts for the LT-MSR.	M24
Manuscript submission	Catalytic activity of Cu/ZrO2-CeO2 and Cu/ZrO2-Y2O3 for the LT-MSR.	M30
Manuscript submission	Characterization of the integrated system.	M32
Manuscript submission	Catalytic activity of Pd/ZrO2-CeO2 and Pd/ZrO2-Y2O3 for the LT-MSR.	M34

DLR

Action	Topic	Expected Month
Manuscript submission	Experimental investigation of a coupled liquid cooled high temperature proton exchange membrane (HT-PEM) fuel cell with a low temperature methanol stem reformer (International Journal of Hydrogen Energy or comparable)	-
Event participation	Display at F-Cell event	M12-M18
Event participation	64th Annual Meeting of the International Society of Electrochemistry	M12
Event participation	Display at F-Cell event	M24-M30

VTT

Action	Topic	Expected Month
Event participation	Participation in Hannover Fair 2013	M7
Manuscript submission	Master's thesis on the kinetic modelling of MSR reaction by Francisco Vidal Vázquez	M8
Event participation	Participation in 11th European Congress on Catalysis (EuropaCat-XI) in Lyon, France with a presentation about kinetic modelling of MSR reaction	M12
Event participation	Participation in EFC2013 in Rome with a presentation about the integration of MSR and HT-PEM	M15

Event participation	Participation in Hannover Fair 2014	M19
Manuscript submission	Article manuscript submitted on the shallow reformer concept if proven successful (Journal of Power Sources)	M24

SerEnergy

Action	Topic	Expected Month
Event participation	SerEnergy attends commercial trade shows and fairs on a regular basis (e.g. the Hannover Fair[1]); information about the BeingEnergy project will be made available at its booth on every participation during the duration of the BeingEnergy project	-

ITM-CNR

Action	Topic	Expected Month
Manuscript submission	H2 Production by Low Pressure Methanol Steam Reforming in a Dense Pd-Ag Membrane Reactor in Co-Current Flow Configuration: Experimental and Modeling Analysis (International Journal of Hydrogen Energy)	M4
Manuscript submission	Evaluation of Dense Pd-Ag and Silica Membrane Reactors Performance for Hydrogen Production via Methanol Steam Reforming: Modelling Study (International Journal of Hydrogen Energy)	M6
Manuscript submission	H2 Production in Silica Membrane Reactor via Methanol Steam Reforming: Modeling and HAZOP analysis (International Journal of Hydrogen Energy)	M6
Manuscript submission	Journal of Catalysis about Methanol steam reforming for hydrogen generation via conventional and membrane reactors: a review (cooperation with UPorto)	M9
Manuscript submission	Manuscript submission on Catalysis Today about modelling analysis and experimental validation of LT-MSR in both FBR and composite Pd-membrane reactors	M18
Manuscript submission	Manuscript submission on Journal of Membrane Science about optimization of the performance of Pd-based membrane reactors: modelling analysis and experimental validation	M24
Event participation	Participation to ICCMR11 in Porto (Portugal) - 2013 (Poster and oral presentations about LT-MSR in Pd-based membrane reactors: modelling and experimental analyses)	M11
Event participation	Participation to World Hydrogen Conference (China) - 2013 (Poster and oral presentations about LT-MSR in Pd-based membrane reactors: modelling and experimental analyses)	M13
Event participation	Participation to EFC12 in Rome (Italy) - 2013 (Poster and oral presentations about LT-MSR in silica, FBR and Pd-based membrane reactors: modelling and experimental analyses)	M16

[1] www.hannovermesse.de

UPVLC-ITQ

Action	Topic	Expected Month
Client/associate dissemination	Dissemination in the partners of Felder EU project Train2 at Zaragoza 3 & 4	M4
Client/associate dissemination	Spanish School of Molecular Material Almagro	M6
Manuscript submission	Various joint publications of scientific articles summarizing the results of catalytic activity for the various materials	-
Event participation	Spanish-Japanese meeting at Tsukuba	M7
Event participation	Spanish-Italia Scholl at Como Lake	M10
Client/associate dissemination	Pro-active dissemination at Abengoa Renewables	M11

INOVA

Action	Topic	Expected Month
Client/associate dissemination	Dissemination among associates connected to R&D in the energy sector (Libelium, Labor S.A.)	-
Event participation	Researcher's Night 2013	M12
Event participation	Special session in international congress (deliverable D6.3); event to be determined, current options are International Conference on Catalysis in Membrane Reactors, or the European Fuel Cell Forum	M24-M30
Event participation	Researcher's Night 2014	M24

6. Potential Risks and Counter Methods

As with any work there are a number of risks involved in the dissemination effort. The consortium has identified a number of such risks, and methods to counter them:

- Risk: the ways organisations in different countries are used to be made aware of information varies widely (e.g. in one country companies are accustomed to consult printed media, while in another digital sources are preferred), thus creating the risk of the BeingEnergy project failing to make itself known to part of its potential audience.

  Counter Strategy: the BeingEnergy dissemination strategy is designed to use a large variety of informational channels: modern dissemination tools such as project website and e-mailing services and more conventional approaches like publications, participations in events, and personal visits. Thus entities in different countries are offered access to varied formats of tailor-structured information provided by the experienced project teams (technical knowledge and communication skills) of the partnering organisations in the BeingEnergy consortium.

- Risk: the dissemination strategy fails to fully communicate all relevant information to the target audiences that show an interest in the project.

  Counter Strategy: the dissemination strategy plans opportunities for person-to-person contacts with entities through participation in events, and use of the vast network of contacts from the consortium partners for personal communication, as well as by virtual communication through the project web site.

- Risk: resistance to change / unwillingness to take advantage of the opportunities offered by the new technology.

  Counter Strategy: having the willingness to try new technologies or the capacity to see fresh opportunities is a difficult, often resource-consuming process that requires persistence and commitment. In an increasingly innovation-driven economy it will be very difficult for entities to escape the need to take advantage of new developments or risk falling behind. This "inevitability" angle will be explored in the dissemination efforts to overcome the probable scepticism of the contacted entities, as most of them will probably see the great advantages offered by improved energy sources.

- Risk: entities prefer a competing technological solution.

  Counter Strategy: there are two main factors that influence the choice of a technology by an organisation: cost and performance. In the former case the BeingEnergy work clearly focuses on developing a solution that is affordable and can be mass-produced at low cost. In the latter case the technology will offer greater energy density in a smaller package, which should make it compare favourably with rival solutions.