D 11.5 Final version of the Awareness & Dissemination plan

And

D11.6 Training material

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Summary

The Final version of the Awareness & Dissemiantion plan is a public document delivered in the context of WP11, Task 11.1: Awareness and Dissemination with regard to the development of a strategy for dissemination activities to achieve a wide awareness and understanding of the MESS technology, its benefits and impacts and usefulness of project outcomes.

This document is about the description of the dissemination strategy and planned dissemination activities carried on by all MESSIB partners.

Aim of these activities is to mobilize users, decision makers and supporters – all MESS related actors involved in the building and energy sector (i.e. European key stakeholders) in order to understand the MESS technology and to ensure effective branding of MESSIB and disseminate key results, such as innovative elements, training courses and workshops for different stakeholders, new business models and possibility of use both in building and district lever and adaptation of the developed technologies to Cultural Heritage applications, among target stakeholders through publications, national and international events, public relations, etc..

The key target groups for the dissemination are Local Authorities & National/regional Public Bodies as policy makers, Architects' Associations, Building industry providers and instalers, Construction companies Associations, Energy Efficiency promoters, clients and users and all other potential business partners, such as Energy Services Companies. The main group for internal communication are partners, executives and the members of the consortium.

To reach the awareness level intended, dissemination is suported by communication materials, such as website, promotional brochure, posters and newsletters. For that reason the graphical identity was created, with logo and templates for presentations and posters.

In this report, suggestions for an active dissemination campaign are provided to the MESSIB consortium.

This document can be viewed as complementing the Deliverable D11.4 – 3th version of the Awareness & Dissemiantion plan.

Contents

Abbreviations

AICS	Advanced Intelligent Control System
BMESS	Business models for Energy Storage Services
DG	Design Guide
DM	Dissemination Manager.
EC	European Commission
EU	European Union
IEA	International Energy Agency
GHG	Green House Gas
MESS	Multy-Source Energy Storage Systems
MESSIB	Multy-Source Energy Storage Systems integrated in Buildings.
RES	Renevable Energy Sources
RS	Recommendations for standards
SC	Steering Committe
ST	Simulation Tools
STC	Scientific/Technical Committe
T	Training materials and training courses
WP	Work Package

1. Introduction

Deliverable D11.5 is produced in the context of WP11, Task 11.1: Awareness and Dissemination with regard to the development of a strategy for dissemination activities to achieve wide awareness and understanding of the MESSIB technology, its benefits and impacts and usefulness of project outcomes.

The objectives of the task are to ensure effective branding of MESSIB and disseminate key results targeting EU policy makers, authorities, researchers, decision makers through publications, national and international events, public relations, etc and to establish grounds for effective training and learning for engineers, architects, developers and building owners and take-up of MESSIB results.

The target groups of this report are the members of the MESSIB Consortium and any party interested in getting involved in the project.

This document is based on the activities deployed in Deliverable D11.2. "1st version of the Awareness & Dissemiantion plan", and D11.3 "2nd version of the Awareness & Dissemiantion plan", D11.4. "3th version of the Awareness & Dissemiantion plan", and that were carried out by MESSIB project´s partners.

Deliverable D11.5 is important for further development of dissemination activities, which will be after the official end of the project.

Based on the presentation of dissemination activities, explained in the DOW of the MESSIB project and guidelines for effective dissemination, this report highlights which requirements need to be met to create awareness around the project and mobilize interested parties in the dissemination strategy and campaign.

This deliverable and all related documents are available to the project participants on the MESSIB Intranet.

All partners in MESSIB consortium will use the results of this deliverable to ensure effective dissemination and to achieve the dissemination goals.

Integral part of this report are also:

Appendix 1: Summary report of dissemination activities

Design guide to integration of MESSIB energy storage technologies

2. Dissemination strategy

The most important objectives of WP11 are:

- To ensure effective branding of MESSIB and disseminate key results targeting EU policy makers, authorities, researches, decision makers through publications, national and international events, public relations, etc.
- To establish grounds for effective training and learning of engineers, architects and installers and take-up of MESSIB results.
- To provide effective management of IPR and ensure standardisation of key results.

Leader of WP11 is the CCS. However all MESSIB partners are involved for the successful development of these steps of the project.

Awareness, dissemination and training are relevant subjects of MESSIB. They are one of the pillars of MESSIB approach to get the involvement of as many of representatives of the construction supply and value chain as possible in the project's development, implementation and future exploitation.

The Awareness and Dissemination plan contains the following elements:

Identification and classification of target stakeholders to be addressed.

The dissemination methods and their specific associated activities

Individual dissemination plans.

Schedule and complementarily of the dissemination activities among partners.

Development of the Training Plan and Programme.

2.1 Dissemination for Awareness

All partners in MESSIB consortium are involved in dissemination for awareness during the whole life cycle of the project and beyond, according to their possibilities and economic interest. All target groups must be at least informed about MESSIB project.

This could be done by face to face communication through clustering activities, emailing, publishing information on websites, etc.

2.2 Dissemination for Understanding

Some target groups can directly benefit from what MESSIB project has to offer. It is important, therefore, that these groups/audiences have a deeper understanding of the project's work. This was and will be done via publications (scientific literature and dedicated journals and reviews in the field of energy, storage systems, architecture and construction trends, engineering and processes, etc.), via conferences, workshops, symposia, conferences, exhibition fairs, via clustering activities with other European related projects and related associations, via Technology Transfer offers through Innovation Relay Centres and other European market places and via direct communication to the policy makers.

2.3 Dissemination for Action

« Action » refers to a change of practice resulting from the adoption of products, materials or approaches offered by your project. These groups/audiences will be those people that are in position to « influence » and « bring about change » within their organisations. These are the groups/audiences that will need to be requipped with the right skills, knowledge and understanding of your work in order to achieve real change.

Source : [1]

2.4 Methodology

Dissemination plan was developed in accordance with:

- SAVE Dissemination Guide:
  "How to ensure impact at a wider scale", developed for the SAVE II Programme, the predecessor of Intelligent Energy – Europe, and available at: http://ec.europa.eu/energy/intelligent/files/implementation/doc/save_dissemination_guide_en.pdf and
- Communicating EU Research & Innovation, A guide for projects participants, available at http://ec.europa.eu/research/social-sciences/pdf/communicating-research_en.pdf

STEP 1: What should we disseminate ? **Result:** A list of the main outcomes of the project.
STEP 2: Who should be informed/involved ? **Result 1:** A list of group of actors that should be approached by the project or partnership, categorised under three headings (user, decision maker, supporter). **Result 2:** A list with links, indicated between the project outcomes and groups of actors.
STEP 3: How to disseminate (inform/involve) ? **Result :** A list of means or media that are being used to contact potential users, decision makers and supporters.
STEP 4: When to disseminate ? **Result :** A calendar for the activities selected in STEP 3.
STEP 5: Implementing and updating the strategy of dissemination.

Table 1. Step by step process of preparation of the dissemination plan:

3. List of main outcomes of the MESSIB project

3.1 The most relevant innovative elements of MESSIB project

	Innovative elements
1	New phase change materials (PCM) for improved active components (that allow energy transportation within the building by circulating phase change slurry and water). The active components will be implemented in building envelope, indoor walls, floors and ceilings.
2	Advance ground storage (GS) technology combined with radiant systems and ground thermal contact improvement by the development of a conductive fluid material (CFM).
3	Composite materials (with nanomaterials) for flywheels (FW) to increase the storage capacity. Adaptation of the whole system for new use in buildings.
4	More durable vanadium redox flow batteries (VRB) improving vanadium stability and more compact system adapted for its use in buildings.
5	Integration of the storage systems in the building with conventional installations.
6	Renewal energy sources integrated with the storage technologies in the building.
7	Combination of thermal and electrical energy storage.
8	Combination of short and long term storage. Short storage (during a day): by means of the PCMs and FW. Medium term and Seasonal storage: by means of GS and VRB.
9	Simulation tools to properly integrate the technologies developed, in the design phase of the building.
10	Advanced intelligent control system to manage the energy demand of buildings by adapting the storage times and rates to the different energy customers demand profiles.

Table 2. The most relevant innovative elements of the MESSIB project

3.2 Project results

	Project outcome
1	Underground thermal storage system
2	Uponor G12 heat collector
3	Phase Change Slurries
4	Knauf Smartboards
5	Vanadium Redox Flow Battery
6	Flywheel
7	Design Guide with instructions for installers

Table3. Project results

4. Identification and classification of target stakeholders

Basically, target audience can be divided into internal and external.

4.1 Internal target audience

The target audience for internal communication are participant organizations of the consortium and their staff which could be **aware** of MESSIB project. The consortium is composed by 21 partners from 8 EU countries: Finland, France, Greece, Germany, Italy, Slovenia, Spain and Poland with great internal dissemination potential.

Examples:

ACCIONA employing **14000 employers** and has an international presence in more than **30 countries**.

AIDICO is **constituted by more than 500 associated** companies involved in the construction process.

BASF is the world's leading chemical company.BASF has over **95,000 employees** around the world.

More about internal dissemination potential is described in Appendix A: Internal dissemination potential in MESSIB consortium, which is uploaded on MESSIB intranet (see WP11 folder). Usual methods for dissemination for awareness are e-mailing, face to face meetings, MESSIB website, promotional brochure, project partners newsletters and websites and similar.

It is assumed that most actions will be taken in the post project period and related to exploitation activities, what is depending on partner's interest.

4.2 External target groups

A dissemination plan addresses all stakeholders' supply and value chain in sustainable construction. They are all potential business partners, promoters, policy makers and end users of MESSIB technology. In general, MESSIB target audience are:

Local Authorities & National/Regional Public Bodies are key players as policy makers, favourable legislative framework creation, public procurements, owners and promoters of their own buildings.
Architects' Associations need to be provided with appropiated tools to consider energy storage systems and smart energy management systems for new and retroffited buildings.
Building industry providers and installers through national, European and international associations related with the technologies developed in the project.
Construction companies associations should be aware of the new technologies that will be installed in new and existing buildings.
Energy Management Agencies
Promoters can offer to their clients the advantage of the developed system
Clients and users

Depending on the main role, stakeholders can be divided into three subgroups:

End-users comprise all those who might actually use the products developed in the project,

Decision-makers include those who are able to take relevant decisions on important parts of your project (direct participation, financing, etc.), or might take the decision to start using the products of your project within their organisation.

'Supporters'or interested parties cover those who have, in one way or another, an interest in seeing project outcomes or recommendations being accepted by the decisionmakers.

4.3 Identification of stakeholders

In general, all stakeholders are interested in MESSIB project as a whole, but some of them are more interested for some project results. In accordance with this assumption, stakeholders were identified in relation to project results, as is presented in the tables below.

4.3.1 WP2 Thermal Energy Storage Technologies for buildings

4.3.1.1 Enhancement of the Underground thermal storage systems

stakeholders	key message(s)
Investors/owners (public and private)	The new heat exchanger developed by UPONOR could be a valid solution for geothermal systems because this system reduces the borehole resistance and increase the thermal resistance between the upward and downward going flow is mostly denoted. This will trigger a decrease of the drilling needs (less metres to drill) and subsequently will produce a reduction of the initial investment. The second product named as CFM is an inert product to be used either for grouting or for injection in those soils with low values of thermal conductivity. The injection of those products in the ground produces an increment of the thermal properties and as a consequence, the performance of the geothermal system is enhanced. This product could be considered as a thermally enhanced grouting material that could be also injected to increase the area of heat exchange as was established in the initial figure:
Architects	
Air conditioning installers	
Heat pump professionals	
Project managers	
Consultancies and project offices for air conditioning	
Energy managers	
Renewable energy integrated services	
Suppliers of materials for Ground storage systems (specially grouting material suppliers)	
Technical planers,	
Installers	
Construction service providers	
Drillers	

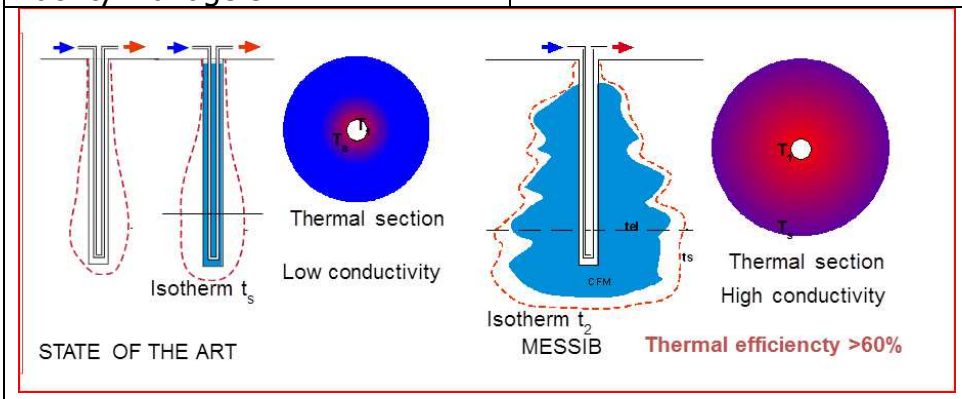
Facility managers	
	

Table 4: WP2 stakeholders (ground storage)

4.3.1.2 Phase Change Slurries

stakeholders	**key messages**
Plant engineers	Designers of HVAC systems. Material data is available to configure system according to the rqirements of PCS.
Architects	PCS offers the possibility to decrease storage sizes which provides new option to uses space inside buildings.
Building services	Provider / constructors of building installations have to be informed about the potentials and requirements of / for PCS.

Table 5: WP2 stakeholders (Phase Change Slurries)

4.3.1.3 Knauf Smartboards

stakeholders	key messages
Energy producers / suppliers	The implementation of PCM smartboards in buildings allows for a more efficient energy management and consumes fewer resources.
Designers / Planners / Architects	By understanding the phenomena and operation of PCMs in building structure, their implementation will be easier and beneficiary
Construction industry	PCM Smartboards is a new storage technology, that can be combined with existing HVAC technologies,in order to promote energy efficient buildings
Equipment manufacturers (BEMS-energy systems	To understand the benefits of using PCM Smartbords in the building and to enhance it by using appropriate energy systems
Household members	By using PCM Smartbords in the building lead to less energy consumption and lower energy bills.
Maintenance - service providers	To promote the use of PCM Smartboards along with other RES

Table 6: WP2 stakeholders (Knauf Smartboards)

4.3.2 WP3 Electrical energy storage

4.3.2.1 Flywheels

stakeholders	key messages
Manufacturer of power systemy for industrial and telecommunication markets	The flywheel could work like a UPS system. When utility power is interrupted, the UPS will convert the mechanical energy stored in the flywheel into electrical energy. Said energy is supplied to the external load until one of the following conditions occurs: • The standby generator assumes the load • The utility power is available again • The flywheel runs out of energy The UPS can be used in a wide range of commercial power applications and provides voltage regulation, protection
Architects and engineering for energy management control:	The implementation of this technology for renewable energy allows energy management more efficient and consumes fewer resources. Currently, large amounts of resources are wasting by not being able to store unused energy at production time.
Power Distribution Companies:	The system provides voltage regulation and protection from power outages. This is done in order to provide well regulated power to cover critical loads, sags, surges or outages. Storing electricity during the night with night tariff prices and release during the day at peak times, to achieve a reduction in electricity consumption peaks that occur during the day and for energy at a lower price.
Developers and Installers of energy systems (wind, solar thermal, geothermal, ...):	In bioclimatic buildings that have their own renewable power generation systems, flywheels allow storage capacity of the energy generated when it is not consumed in order to take advantage, and also to provide the energy needed when there is not sufficient power generated.

Table 7: WP3 stakeholders (flywheels)

4.3.2.2 Redox flow batteries

Battery producers	The MESSIB project shows a possible application of redox flow batteries. The redox flow battery is charged by a photovoltaic generator. The battery is ready for the market. But there are a lot of improvements to do from the side of the battery producers.
Battery Components producers	The stack is the heart of the battery. In the manufacturing and material selection are many improvements possible. Also the energy efficiency and the reliability has to be increased.
Electrolyte producer	The electrolyte is the carrier of the energy in the battery. The electrolyte has to be long time stable and affects also the efficiency of the battery. To assure low investment cost, especially for long time applications, the specific costs of the electrolyte has to be low priced.
Building service engineering companies	The redox flow battery can be used as an USV system to assure an uninterrupted electrical power supply.
Equipment manufacturer	The redox flow battery is an electrochemical converter who stores the energy in chemical way in form of a fluid – the electrolyte. This means the battery consists of valves, pipes, pumps or process measuring and control technology devices. This is an opportunity for equipment manufactures to include into the redox flow development.
Energy consultant	The battery technology can be used for different applications. Applications are possible for off-grid, industrial or gird solution.
House installation companies	The redox flow battery can be used to decrease the grid supply. Also the battery can be used as a backup system, if the grid has a black out.
Energy companies	It can provide energy services like to compensate idle power or keep the voltage stable in the grid. Further the battery can be used in big Wind farm or in Photovoltaic parks for energy management.
Municipal energy supplier	Local energy supplier can use the battery to increase the installation of renewables. Also it can storage energy from the big energy companies when the energy prices are low. The redox flow battery is a possibility to keep the electrical price long time stable and to integrate a high share of renewables in the local grid.

Table 8: WP3 stakeholders (batteries)

4.3.3 WP4 Integration of the Multi-source Storage Technologies with conventional installations

stakeholders	key messages
Engineers	MESSIB project defines a clear methodology in the system sizing/designing/assessing of energy storage technologies coupled with HVAC, expanding the concept of dynamic engineering.
General contractors	MESSIB Project proposes a new vision of self-sustainable heating and cooling concepts, based on electric drivers, integrated in building.
ESCO	MESSIB Project introduces the concept of electricity storage as fundamental tool for RES firming and load shifting for increasing the energy efficiency in edification.
Installation companies	MESSIB project provides for new storage technologies, compatible with existing HVAC technologies, that in a future will be available in the energy technology market
Integrators	MESSIB project establish a knowledge about the methodology for the efficient implementation of storage systems into existing BMS, with efficient control strategies based on energy efficiency.
Consultancies	MESSIB project brings a new vision in the economic assessment of HVAC systems coupled with RES and traditional technologies by the use of storages.

Table 9: WP4 stakeholders

4.3.4 WP5 Smart energy management system

stakeholders	**key messages**
Architects, Installation planning engineers	Smart energy management system, developed in Messib is an tool and technology for the monitoring of local and remote energy production, storage and distribution on a user, building and district level. Smart energy management system, developed in Messib, connected with Smartgrids, advances knowledge and oportunities for plannings of Smart cities.
Urban managers, Grant managers, ESCOs & Building users	Smart energy management system, developed in Messib is an ideal tool and technology for the monitoring of local and remote energy production, storage and distribution on a user, complete building and district level.
Real estate managers	Understanding smart energy management system, developed in Messib, is a business advantage and oportunity.
Public funds for building of new and renovation of old buildings in low energy standards	Smart energy management system, developed in Messib is an ideal tool to control the results of low energy construction and refurbishment.

Table 10: WP5 stakeholders

4.3.5 WP7 Extension of the Multisource Energy Storage and Smart energy management system to a district level.

stakeholders	key messages
Engineers & Urban solution providers	MESSIB defines a methodology for the dimensioning of assessment of thermal and electrical storage systems at district level
Urban managers, Grant managers, ESCOs & Building users	MESSIB gives a business model to assess thew benefits of energy management at discrict level in comparison with building management or business as usual, without any global management
Energy agencies & Municipalities	MESSIB presents a successful case of ESCO for a residental district that counts with the participation of Municipality and Energy agency

Table 11: WP7 stakeholders

4.3.6 WP8 Adaptation of the developed technologies to Cultural Heritage applications

stakeholders	key messages
National/regional public bodies, local authorities	Project results should have an impact also on the standards, regulations and building codes in CH field.
Engineers' and architect's associations	MESSIB project gives a useful methodology to be followed by the professionals dealing system sizing/designing/assessing in order to evaluate the application of the new energy storage technology on CH buildings, compatibly with the existing technologies.
End users	Conservators, heritage managers and CH professionals can take profit of MESSIB results in adapting the solution developed in WP8 to their specific case study.
Educational organizations	MESSIB results concerning the adaptation of the developed technologies to CH applications can be exploit through the following specific lines of action to be performed by educational organizations:

	- Education; - Knowledge transfer and training; - Technical assistance, consulting, advice.
Related research institutions	The research on adaptation of the developed technologies to CH applications can continue within national and international research institutions, based on the results reached within the project

Table 12: WP8 stakeholders

4.3.7 WP9 Prenormative research

stakeholders	key messages
Industry related to MESSIB technologies	MESSIB gives an overview of relevant standards as well as input for future standardization work.
CEN standardisation (Product standards and EPBD)	MESSIB gives an overview of relevant standards as well as input for future standardization work on a product level and on EPBD level.
National authorities	MESSIB provides test methods for products as well as proposals for the implementation of calculation methods in national EPBD implementations.
National standardization bodies	MESSIB gives an overview of relevant standards as well as input for future standardization work on a product level and on EPBD level
Certifiocation bodies related to MESSIB technologies	

Table 13: WP9 stakeholders

4.4 Identified stakeholders and related disseminated activities

4.4.1 Main stakeholders at EU level – policy makers

At EU level, regarding the MESSIB project, the most important policy makers are:

Directorate-General for Energy

Environment Directorate-General

The Directorate-General for Research and Innovation

The Directorate-General for Climate Action

Directorate-General for Enterprise and Industry

Directorate-General for Energy	*http://ec.europa.eu/dgs/energy/index_en.htm* Energy policy directly affects everyone in Europe. Whatever age we are, and whatever activities we undertake, energy plays a fundamental role in today's world. The issues and challenges connected to this policy require action at European level; no single national government can address them successfully alone. By working in concert, European Union Member States and European industry can develop energy sectors which best meet the needs of citizens and our economy, whilst minimising damage to our environment. The European Commission's Directorate-General for Energy manages work in this area.
Environment Directorate-General	*http://ec.europa.eu/dgs/environment/index_en.htm* The Directorate-General for the Environment is one of the more than 40 Directorates-General and services that make up the European Commission. Commonly referred to as **DG Environment**, the objective of the Directorate-General is **to protect, preserve and improve the environment for present and future generations**. To achieve this it proposes policies that ensure a high level of environmental protection in the European Union and that preserve the quality of life of EU citizens. The DG makes sure that Member States correctly apply **EU environmental law**. In doing so it investigates complaints made by citizens and non-governmental organisations and

	can take legal action if it is deems that EU law has been infringed. In certain cases DG Environment represents the European Union in environmental matters at **international meetings** such as the United Nations Convention on Biodiversity.The DG also finances projects that contribute to environmental protection in the EU. Since 1992 some 2,600 projects have received some financing from **LIFE**, the EU's financial instrument for the environment.
The Directorate-General for Research and Innovation	*http://ec.europa.eu/research/index.cfm?pg=dg* The Directorate-General for Research and Innovation's mission is to develop and implement the European research and innovation policy with a view to achieving the goals of Europe 2020 and the Innovation Union. As such, the DG contributes to making Europe a better place to live and work, improving Europe's competitiveness, growth and job creation while tackling the main current and future societal challenges. To do so, the Directorate-General for Research and Innovation supports research and innovation through European Framework Programmes, coordinates and supports national and regional research and innovation programmes, contributes to the creation of the European Research Area by developing the conditions for researchers and knowledge to circulate freely, and supports European organisations and researchers in their cooperation at international level. *http://ec.europa.eu/research/infocentre/success_stories_en.cfm*
The Directorate-General for Climate Action	*http://ec.europa.eu/dgs/clima/mission/index_en.htm* The Directorate-General for Climate Action ("DG CLIMA") was established in February 2010, climate change being previously included in the remit of DG Environment of the European Commission. It leads international negotiations on climate, helps the EU to deal with the consequences of climate change and to meet its targets for 2020, as well as develops and implements the EU Emissions Trading System.
Directorate-General for Enterprise and Industry	*http://ec.europa.eu/enterprise/index_en.htm* *http://ec.europa.eu/enterprise/sectors/construction/index_en.htm*

	Strategy for the sustainable competitiveness of the construction sector and its enterprises *http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0433:FIN:EN:HTML*

Table 14: Most important policy makers at EU level, relevant for MESSIB project

4.4.1.1 DG Energy

4.4.1.1a Mission statement of DG Energy

Under the political guidance of Commissioner Günther H. Oettinger, the Directorate-General for Energy is responsible for developing and implementing a **European energy policy**. Through the development and implementation of innovative policies, the Directorate-General aims at:

Contributing to setting up an energy market providing citizens and business with affordable energy, competitive prices and technologically advanced energy services.

Promoting sustainable energy production, transport and consumption in line with the EU 2020 targets and with a view to the 2050 decarbonisation objective.

Enhancing the conditions for secure energy supply in a spirit of solidarity between Member States.

In developing a European energy policy, the Directorate-General aims to support the Europe 2020 programme which, for energy, is captured in the Energy 2020 strategy.

The Directorate-General carries out its tasks in many different ways. For example, it develops strategic analyses and policies for the energy sector; promotes the completion of the internal energy market encompassing electricity, gas, oil and oil products, solid fuels and nuclear energy; supports the reinforcement of energy infrastructure, ensures that indigenous energy sources are exploited in safe and competitive conditions; ensures that markets can deliver agreed objectives, notably in efficiency and renewable energies; promotes and conducts an EU external energy policy; facilitates energy technology innovation; develops the most advanced legal framework for nuclear energy, covering safety, security and non-proliferation safeguards; monitors the implementation of existing EU law and makes new legislative proposals; encourages the exchange of best practices and provides information to stakeholders.

All this work is aided by expert input from the Executive Agency for Competitiveness and Innovation (EACI), the Euratom Supply Agency (ESA) and the Agency for the Cooperation of Energy Regulators (ACER, operational from March 2011).

Source: *http://ec.europa.eu/dgs/energy/mission_en.htm*

4.4.1.1b Strategic Energy Technologies Information System

As well as publishing up-to-date, reliable information and analyses on energy technologies and innovation via its website, SETIS also helps define new priorities for the SET-Plan and monitors its progress. This includes identifying corrective policy measures if needed.

SETIS supports the SET-Plan Steering Group (governance), working with all relevant stakeholders, such as Member State authorities, European Technology Platforms, research organisations and the industrial and financial communities.

SETIS is continually developing its engagement with the full range of European stakeholders. This includes:

Organising dedicated workshops and hearings on specific technologies and capacities, bringing together European Technology Platforms, trade associations and industrial stakeholders;

Working jointly with the European Energy Research Alliance (EERA) and European Industrial Initiatives (EIIs);

Collaborating with key projects funded by the EC Framework Programme for research and development.

Source: *http://setis.ec.europa.eu/about-setis/overview*

4.4.1.1c Information of MESSIB project

The information of MESSIB project is included in the presentation "Power Storage options to integrate renewables: the case of large-scale applications"
Presentation outlines EU activities on storage development, large-scale applications in support of RES, and market and regulatory drivers and barriers. Presentation is available at:
http://setis.ec.europa.eu/publications/presentation-power-storage-options-integrate-renewables-case-of-large-scale.

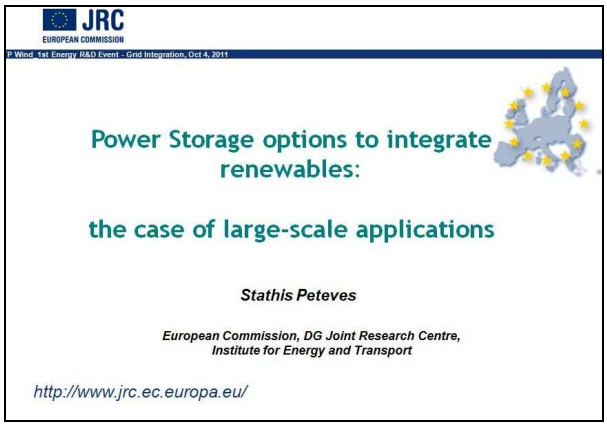


Figure 1: Introductory slide in the presentation

Figure 2: Slide with information of MESSIB project

4.4.1.1d Communication on energy technologies and innovation

The European Commission has foreseen a Communication on energy technologies and innovation for the first half of 2013. It intends to give a European energy technology policy perspective in the follow-up to the Energy Roadmap 2050.

In the frame of dissemination activities was ACCIONA participated in communication, with goal to make energy storage technologies more recognizable.

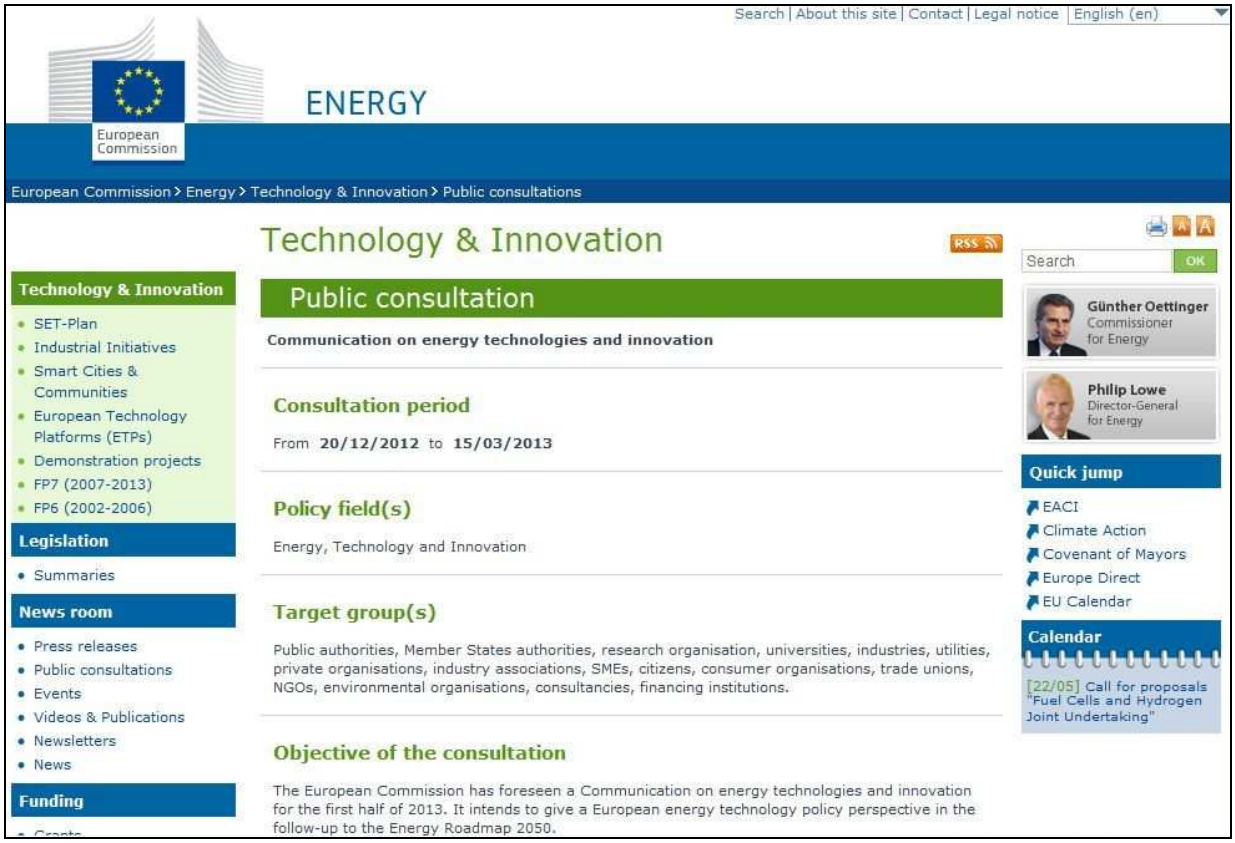


Figure 3: Information of Public consultation on DG Energy website

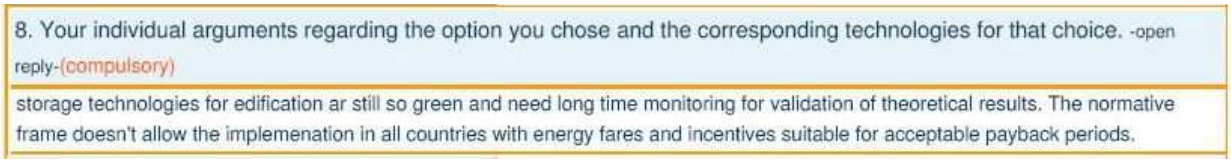


Figure 4: MESSIB arguments, related to energy storage technologies

4.4.2 Most important associations, organizations, technological platforms and initiatives, relevant for MESSIB project at EU level

(see also summary of activities on page 57)

4.4.2.1 General

4.4.2.1a The European Association of Energy Storage (EASE)

European platform for sharing information - for advancing RD&D on storage.

Contact:
Avenue Adolphe Lacomblé 59
B-1030 Brussels
Tel. +32.2.743.29.82
Fax. +32.2.743.29.90
info@ease-storage.eu
http://www.ease-storage.eu/

Figure 5: EASE website

4.4.2.1b Covenant of Mayors

The Covenant of Mayors is the mainstream European movement involving local and regional authorities, voluntarily committing to increasing energy efficiency and use of renewable energy sources on their territories. By their commitment, Covenant signatories aim to meet and exceed the European Union 20% CO_2 reduction objective by 2020

http://www.covenantofmayors.eu/index_en.html

contact:

http://www.covenantofmayors.eu/about/contact_en.html

Figure 6: Covenent of Mayors website

4.4.2.1c Smart Cities and Communities European Innovation Partnership

Due to the concentration of 70% of the European population in urban areas, cities consume 70% of energy and account for 75% of greenhouse gas emissions. 50% of the earth population lives in cities and the share is growing. Cities thus hold an essential key to reduce emissions.
There is a need to transform all cities into smart cities, i.e. cities that reduce their ecological imprint to a minimum by increasing their resource efficiency and energy is a fundamental element. Energy is essential in modern cities. It supports economic activities, allows transport and other infrastructure to function, and provides heat, cooling and electricity for people to live comfortably. Smart Cities distinguish themselves by using innovative solutions for supplying energy more effectively and efficiently, in terms of costs, environmental footprint and/or social impacts. The change to a Smart City should also bring large benefits to the population in terms of quality of life, better transport and a reduction of pollution related illnesses.
Urban energy solutions can be innovative in different ways. Cities can use and combine innovative (local) generation technologies for the production of energy, or develop network systems that distribute it more efficiently and manage supply and demand better (smart electricity grids). Innovative solutions also exist on the interfaces of energy supply with other urban systems, such as transport, waste processing and water supply.
The European Union has recognized the importance of cities and launched as part of the Innovation Union strategy the Smart Cities and Communities (SCC) European Innovation Partnership (EIP). This partnership focuses on the necessary integration of energy, transport and information and communication areas, a precondition for a smart city to develop.

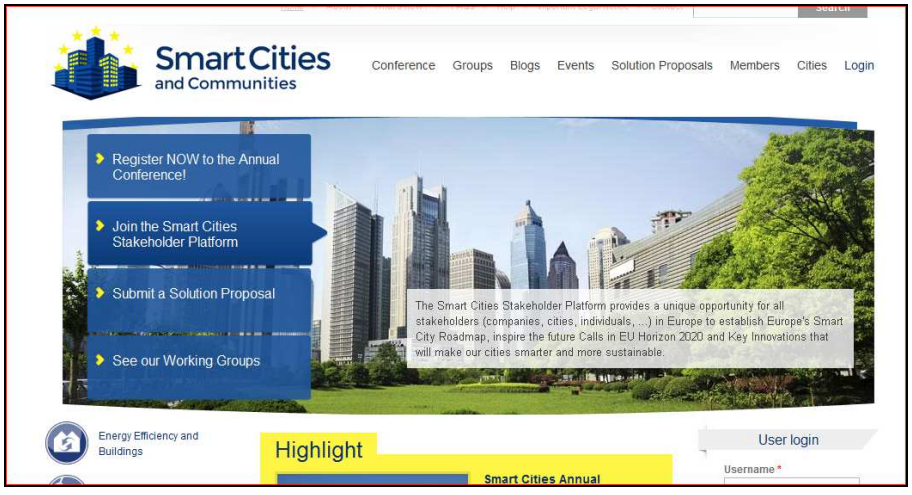


Figure 7: Smart Cities and Communities European Innovation Partnership website

http://eu-smartcities.eu/

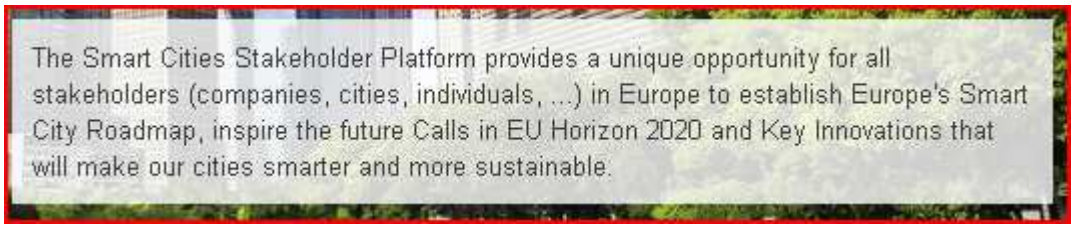


Figure 8: Information of Smart Cities Stakeholders Platform

About the Smart Cities Stakeholder Platform:

The Smart Cities and Communities European Innovation Partnership (EIP) consists of two governance bodies, a High Level Group advising the European Commission made up of senior representatives from industry, cities, civil society, and the Smart Cities Stakeholder Platform. While the High Level Group will focus on bottlenecks in the development of smart cities and societal needs, the Stakeholder Platform will focus on identifying solutions and needs by practitioners, i.e. developers of technologies and specialist in the implementation of technical solutions. It is a bottom-up platform designed to develop integrated technology approaches and to develop a technology roadmap for the European Commission based on identified needs on the ground.

The Smart Cities Stakeholder Platform is essentially about promoting innovation. It aims to accelerate the development and market deployment of energy efficiency and low-carbon technology applications in the urban environment. The Platform supports the EU towards its goal of an 80% reduction of greenhouse gas emissions by 2050 and the Europe's primary energy technology policy, the SET-Plan.

Emphasis will be on technology integration in the areas of energy, transport and ICT, which is a key challenge for all SET-Plan technologies, and particularly for Smart Cities' technologies

To achieve its goal, the Smart Cities Stakeholder Platform will set up five groups: three thematic expert (technical) Working Groups (energy supply networks; energy efficiency in buildings; mobility and transport) and two horizontal Working Groups (Finance and Roadmap).

The main stakeholders will be technical experts, allowing the platform to draw in expertise from those experts who are directly involved with developing, testing and demonstrating new technologies. Working Groups operate using a bottom-up approach and the overall themes will be fine-tuned by participants based on guidance and the framework provided by the Chairs.

It is not the Working Groups objective to focus directly on policy recommendations and general strategic issues such as funding envelopes, regulatory moves. This is done elsewhere, such as in the High Level Group or within the EU's decision-making machinery or the Covenant of Mayors' framework. The Platform can pinpoint identified bottlenecks and their causes to the Commission and the High Level Group during the process of developing the technology roadmap, but the work of the platform should remain grounded on practical solutions to technology integration and deployment.

The Platform is also an area of free exchange of information, where technology developers can post their solutions for cities and where cities can find information on where to find the expertise and the financial solutions to implement the solutions.

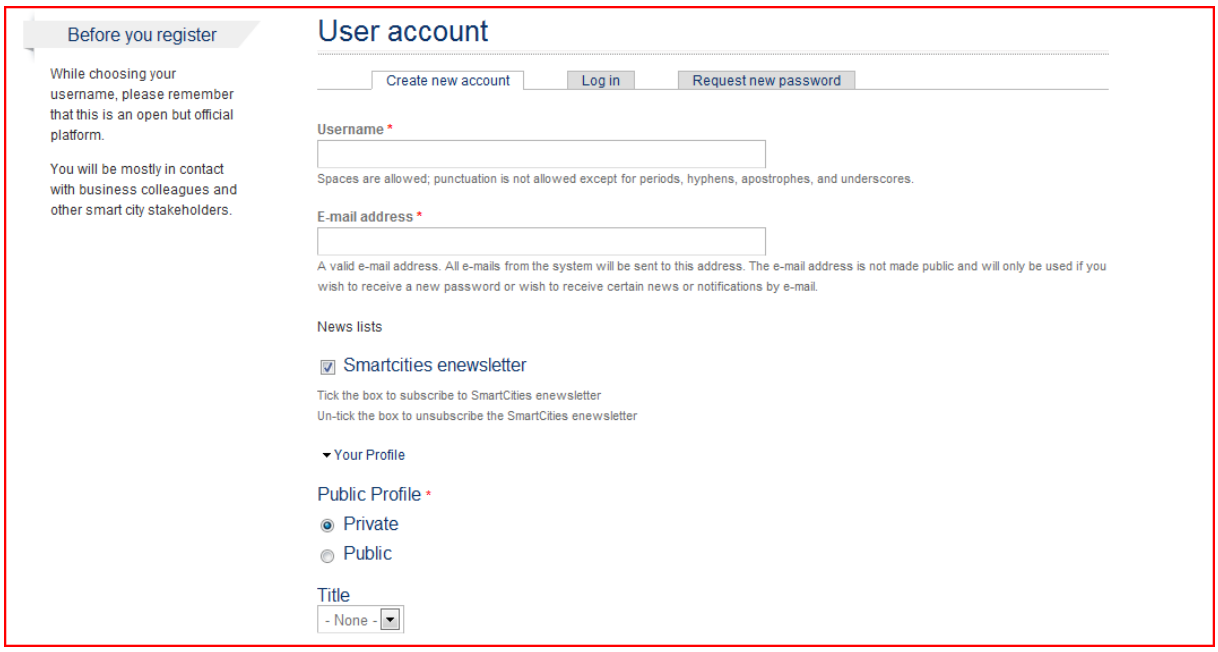


Figure 9: Smart Cities Stakeholders platform website

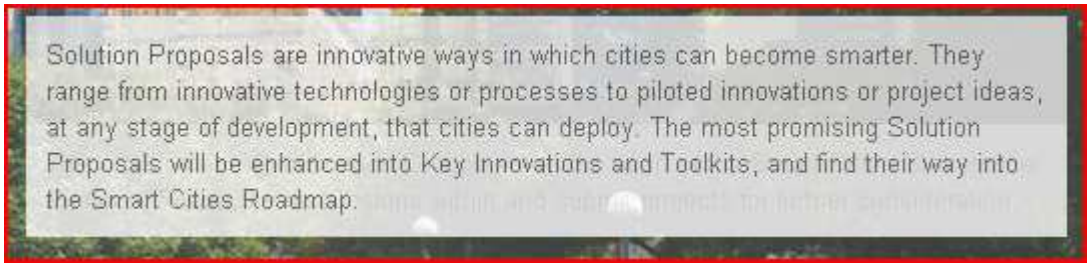


Figure 10: Smart Cities Stakeholders platform website – Solution Proposals

4.4.2.1d Energy Efficient Building European Initiative (E2B EI)

The construction industry is a large contributor to CO2 emissions, with buildings responsible for 40% of the total European energy consumption and a third of CO2 emissions. To help address climate change the European Commission has set specific targets to be achieved by 2020, known as the 20/20 targets. These targets are to reduce energy consumption by 20%, reduce CO2 emissions by 20% and provide 20% of the total energy share with renewable energy.

In order to help the construction industry reach the 20/20 targets and achieve energy neutral buildings and districts by 2050 **the European Construction Technology Platform has set up the Energy Efficient Building European Initiative (E2B EI), steered by the Energy Efficient Buildings Association (E2BA)** founded in November 2008.

This is a Europe wide industry driven research and demonstration programme for energy efficient buildings and districts, with the ambitious vision that all European buildings will be designed, built or renovated to high energy efficiency standards by 2050.

Figure 11: E2B website

http://www.e2b-ei.eu/default.php

4.4.2.2 WP2 Thermal Energy Storage Technologies for buildings

4.4.2.2a EGEC (European geothermal energy council)

EGEC, the European Geothermal Energy Council, was founded in 1998 as an international non-profit association in Brussels. Its office is based nearby the European Institutions in the Renewable Energy House.

EGEC has now more than 120 members from 27 European countries: private companies, national associations, consultants, research centers, geological surveys and other public authorities.

EGEC is a member of EREC, the European Renewable Energy Council, which groups together all of the main European renewable energy industry and research associations. EGEC is also a member of the International Geothermal Association (IGA).

The aim of our organisation is to promote the use of geothermal energy, as follows:

• In priority, By exercising appropriate actions among European institutions to implement a legal and institutional framework and financial instruments allowing geothermal sources to compete with conventional energy systems, and to secure economic support in consideration of the environmental benefits.

• By encouraging R&D in the field of geothermal utilisation of the existing resources in Europe and allowing the public at large to access to the R&D results and maximise the utilisation of this renewable energy.

• By conducting any activity which is intended to promote the market deployment of geothermal energy in Europe and the export of European geothermal technology, services and equipment to other parts of the world.

• By representing the interests of the European geothermal energy industry and users to governments and international organizations, with a view to improving business conditions for the industry.

• By co-operating with national and international geothermal associations, and with any other associations promoting research on and application of renewable energy sources, in order to join forces to achieve successful development and implementation in the field of geothermal energy use throughout Europe, and to foster Inter-European cooperation.

EGEC Renewable Energy House – rue d'Arlon 63-67, B-1040 Brussels, Belgium

T : +322 400 10 24, F : + 322 400 10 39, E : com@egec.org

STAFF

Manager:

Philippe Dumas

email: p.dumas@egec.org

Communication & Marketing Officer:

Alexandra Latham

email: a.latham@egec.org

Policy & Project Officer:

Luca Angelino

email: l.angelino@egec.org

http://egec.info/about/

4.4.2.3 WP3 Electrical energy storage

4.4.2.3a Smart Grids European technology platform for the electricity networks of the future

WG Energy Storage Economics and Regulations

The WG outcomes will be synthesis of findings and analysis, recommendations to EC on two aspects (recommendations for European policies and recommendations for research needs within EU research calls), and periodic reports to ETP Smartgrids Forum meetings. In addition, dedicated or joined workshops will be occasions to raise discussions with other stakeholders of the Energy Sector at EU level and the other initiatives like EIIs, EERA, EASE,.. Working Group meetings will be organized four times a year, with complementary calls or exchanges of information between members.

Figure 12: Smart grids website

http://www.smartgrids.eu/node/33

4.4.2.3b European Photovoltaic Technology Platform

The European Photovoltaic Technology Platform is an independent and objective body which aims to be the recognised point of reference for key decision and policy makers. The Platform's Mission is to develop a strategy and corresponding implementation plan for education, research & technology development, innovation and market deployment of photovoltaic solar energy, to realise its Vision.

Contact:
Tel: +32-2-465.38.84
Fax: +32-2-400.10.10
secretariat@eupvplatform.org
http://www.eupvplatform.org/

Figure 13: European Photovoltaic Technology Platform website

4.4.2.3c EPIA, European Photovoltaic Industry Association

The European Photovoltaic Industry Association (EPIA) is the world's largest industry association devoted to the solar photovoltaic (PV) electricity market. The association aims to promote PV at national, European and worldwide levels and to assist its members in their business development in both the European Union and export markets.

Contact:
info@epia.org
www.epia.org

Figure 14: European Photovoltaic Industry Association website

4.4.2.3d European Electricity Grid Initiative

The European Electricity Grid Initiative (EEGI) is one of the European Industrial Initiatives under the Strategic Energy Technologies Plan (SET-PLAN) and proposes a 9-year European research, development and demonstration (RD&D) programme to accelerate innovation and the development of the electricity networks of the future in Europe

Contact: (Coordinator contact data)
Via R. Rubattino 54,
Milan (Italy)
+39.335.7418087
michele.denigris@rse-web.it
http://www.gridplus.eu/eegi

Figure 15: European Electricity Grid Initiative website

4.4.2.3e EURELECTRIC

The Union of the Electricity Industry - EURELECTRIC is the sector association which represents the common interests of the whole electricity industry at pan-European level, plus its affiliates and associates on several other continents. We currently have over 30 full members which represent the electricity industry in 32 European countries.
EURELECTRIC's mission is to contribute to the development and competitiveness of the electricity industry, to provide effective representation for the industry in public affairs and to promote the role of a low-carbon electricity mix in the advancement of society. Currently, EURELECTRIC's three major objectives are:

- Delivering carbon-neutral electricity in Europe by 2050
- Ensuring a cost-efficient, reliable supply through an integrated market
- Developing energy efficiency and the electrification of the demand-side to mitigate climate change.

Our work covers all major issues affecting our sector, from markets to energy policy, environment & sustainable development, networks and many other issues.
Our members meet regularly in working groups in order to discuss specific issues and identify - through in-depth and specialised research into the marketplace, technologies and legislation - the common interests of our industry. On this basis, they prepare policy papers and reports. We then work to promote the views of our industry at European level and effectively engage in debates with EU officials and other energy stakeholders. Our activities also include organising conferences and events, contributing to press articles, collecting statistics and fostering debates on electricity issues via our blog.
Contact:

Boulevard de l'Impératrice,
66 B-1000 Brussels
+32 2 515 10 00
http://www.eurelectric.org/about-us/contact-us/
http://www.eurelectric.org/about-us/

Figure 16: EURELECTRIC website

4.4.2.3f The Council of European Energy Regulators (CEER)

The Council of European Energy Regulators (CEER) was established in 2000 for the cooperation of the independent energy regulators of Europe. It seeks to facilitate the creation of a single, competitive, efficient and sustainable EU internal energy market.
CEER is closely linked to the Agency for the Cooperation of Energy Regulators (ACER) and they share similar objectives. ACER is a formal EU Agency whereas CEER is a Belgian not-for-profit association set up by the regulators themselves.
The forerunner to ACER was the European Regulators Group for Electricity and Gas (ERGEG), a formal advisory group to the European Commisson and created by the Commission in 2003 (*Decision 2003/796/EC*). With ACER fully operational (since March 2011), ERGEG was dissolved (*Commission Decision of 16 May 2011 repealing Decision 2003/796/EC*) with effect from 1 July 2011. All past works relating to ERGEG activity (documents, reports, public consultations etc.) can be found on this website of the European Energy Regulators.
The Electricity Working Group (EWG) deals with issues related to European electricity grids and the EU electricity market. In 2013, the EWG will focus on the following areas of work:
Quality of supply - this has been a constant theme for regulatory exchange of good practices and knowledge since the start of European cooperation, and resulted in the 5th quality benchmarking report. In 2013, quality of supply benchmarking activity will continue with a "lighter" mid-term update to our previous full reports.
Smart grids - for several years this issue has been a top priority for the electricity sector. It is a cross-cutting issue for infrastructure development, the fight against climate change and network regulation which deserves European energy regulators' continued attention. In 2013, the EWG will review the various approaches to the regulation of smart technologies in different European countries.
Sustainable development - in the form of energy efficiency, renewable energy and emissions trading this area has an effect on electricity markets and networks, and consequently, has continuously been at the centre of European energy regulators' work. In 2013, this line of work will be continued through investigation into Demand Side Management and assessing the best ways to maximise the energy efficiency and wider services potential.
Security of supply - relates to a number of issues where CEER has had a high commitment. 2013 will see the continuation of the previous efforts to address the challenges of security of supply, focusing on the flexibility of electricity markets and a review of blackout prevention and restoration planning.
The EWG has three task forces:
Electricity Quality of Supply and Smart Grids (EQS) Task Force working on quality issues and the regulatory aspects of "smart grids".
Sustainable Development (SDE) Task Force, which is responsible for issues related to renewables and energy efficiency.

Electricity Security of Supply (ESS) Task Force addressing the challenges of security of supply from the viewpoint of generation adequacy.

Contact:
Rue le Titien 28
1000 Brussels
Belgium
Phone: +32 2 788 73 30
Fax: +32 2 788 73 50
Internet: http://www.energy-regulators.eu
Email: brussels@ceer.eu

Figure 17: Council of European Energy Regulators website

4.4.2.3g eu.ESCO - European Association of Energy Service Companies

eu.ESCO is the European Association of Energy Service Companies. It was founded in 2009 by eu.bac, the European Building Automation and Controls Association that has developed standard procedures to determine the EPC potentials. The intention of eu.ESCO is to accelerate and individualize the communication on EPC benefits. In this way the European Union and the EU member states are assisted in achieving their energy efficiency targets.

With particular emphasis on the modernization of building automation in existing public buildings eu.ESCO contributes to the practical implementation of the European Directives on energy performance in buildings, in particular the Energy Performance of Buildings Directive (EPBD) and the End-user Energy Efficiency & Energy Services Directive (EEES).

eu.ESCO cares for practical energy services solutions and especially supports the Energy Performance Contracting (EPC) for more energy efficiency in existing buildings.

While using the building standard procedures to determine the EPC potential – developed by the *European Building Automation Controls Association (eu.bac)* – EPC allows fulfilling national mandates and European directives on energy savings and enables public authorities to achieve sustainable development and environment goals.

Contact:
Boulevard A. Reyers 80
1030 Brussels
Belgium
Phone: +32 2 706 82 02
info@eu-esco.org
www.eu-esco.org
Chairman:
Stéphane Le Gentil
Stephane.LeGentil@jci.com
Office:
Frédéric Melchior
frederic.melchior@eubac.org
http://www.eu-esco.org/

Figure 18: eu.ESCO website

4.4.2.4 WP4 Integration of the Multi-source Storage Technologies with conventional installations

4.4.2.4a Association of the European Heating Industry

The Association of the European Heating Industry (EHI) represents and promotes the common interests of 35 market leaders producing thermal comfort equipment (heating systems, burners, boilers, components, radiators and renewable energy systems) and 13 national industrial associations from the EU Member States, Liechtenstein and Switzerland. The industry has total sales of more than 20 billion euro and employs 120.000 people. EHI deals with the needs of the heating market from the point of view of industry. Its scope includes: the European regulatory framework, its implementation, and global aspects relating to the industry.

EHI's mission:

- To represent its members' interests towards European, national and worldwide bodies relevant to the industry.
- To position EHI as key player to EU regulators, by advocating for a robust and workable legislative framework for the European heating industry.
- To encourage the exchange of information and experience amongst its members, as well as co-operation with associations in similar fields.
- To contribute to meeting the ambitious EU energy and climate goals, based on energy efficiency, sustainability, affordability and security.
- To promote efficient & environmentally friendly heating and hot water systems.

Contact:

Adress:
80 Auguste Reyerslaan
1030
Brussels
Belgium
Email:
info@ehi.eu
http://www.ehi.eu

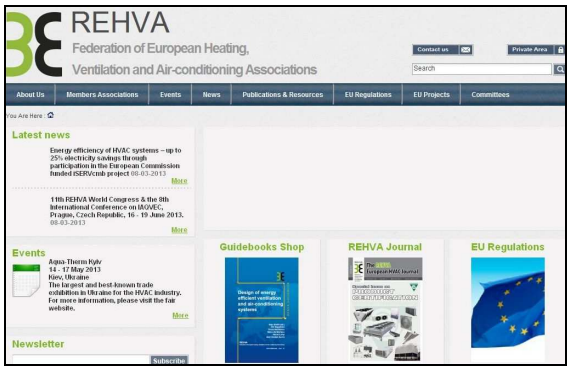
Figure 19: EHI website

4.4.2.4b REHVA, The Federation of European Heating, Ventilation and Air Conditioning Associations

Founded in 1963, REHVA, The Federation of European Heating, Ventilation and Air Conditioning Associations represents **a network of more than 100 000 engineers from 26 European countries.** REHVA is the leading European professional organisation whose main activity is to develop and disseminate technology and information for mechanical services of buildings. REHVA is dedicated to the improvement of health, comfort and energy efficiency in all buildings and communities. It encourages the development and application of both energy conservation and renewable energy sources. In these areas, REHVA has a significant impact on national and international strategic planning and research initiatives, as well as on the associated educational and training programmes. REHVA is committed to advancing its programs and services for young engineers, through helping them build their professional foundations.

With this in mind, REHVA provides networking and cooperation opportunities for both member associations and companies with European and International organisations, which have similar goals in the building sector. This is achieved through the exchange of technical information, practical experience and research results by REHVA's working groups, seminars, publications and journal.

Contact:
REHVA Office
40 Rue Washington
1050 Brussels
Belgium
Tel.: +32-2-5141171
Fax: +32-2-5129062
info@rehva.eu
www.**rehva**.eu/



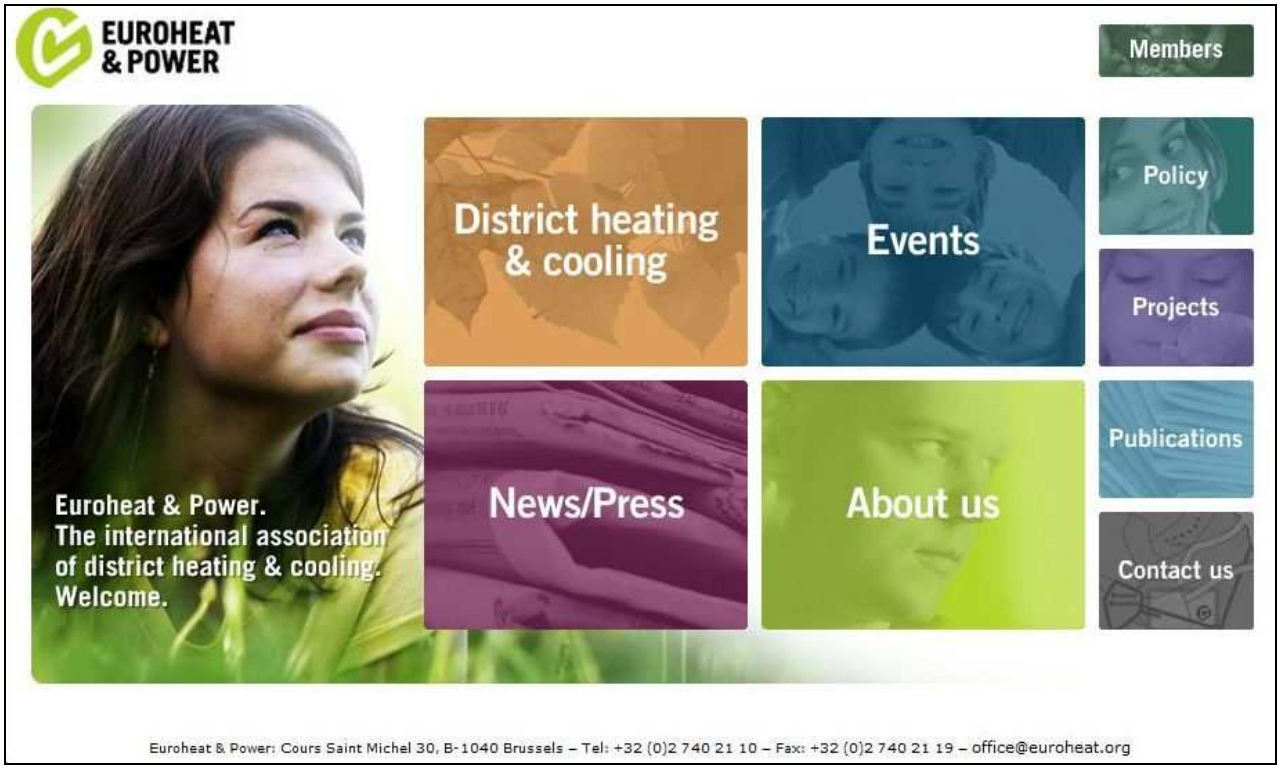
4.4.2.4c Figure 20: REHVA website

4.4.2.4d EUROHEAT&POWER

Euroheat & Power unites the combined heat and power, district heating and cooling sector throughout Europe and beyond, with members from over thirty countries: including all existing national district heating associations in EU countries and the majority of new EU Member States; utilities operating DHC systems; industrial associations and companies; manufacturers; research institutes; consultants and other organisations involved in the CHP/DHC business.

Contact:

Cours Saint Michel 30E,
B-1040 Brussels
Tel: +32 (0)2 740 21 10
Fax: +32 (0)2 740 21 19
office@euroheat.org -
http://www.euroheat.org/default.aspx?id=1



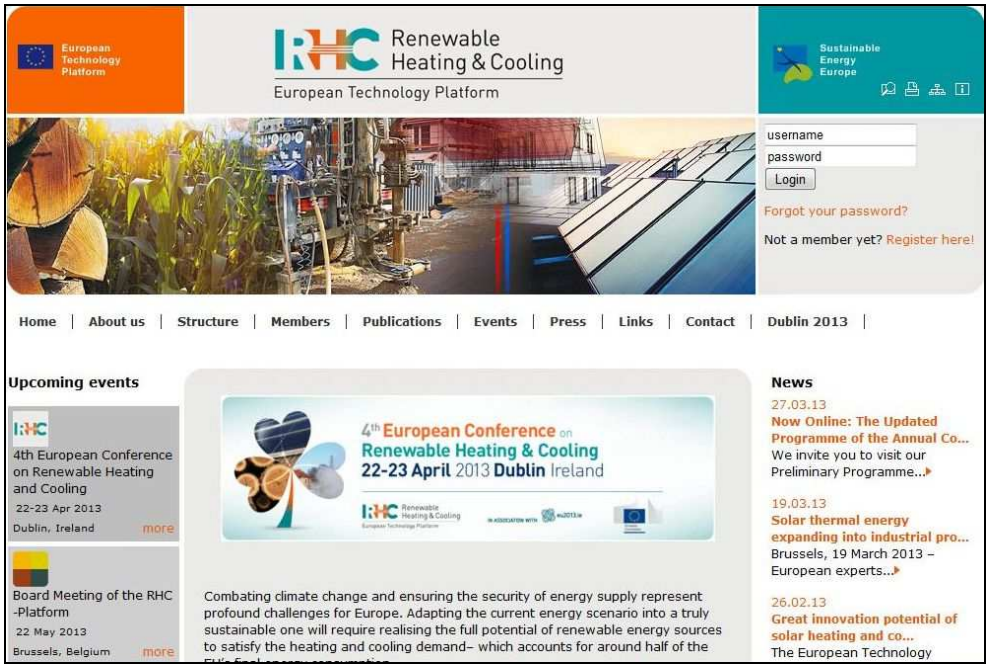
4.4.2.4e Figure 21: Euroheat & Power website

4.4.2.4f RHC, European Technology Platform on Renewable Heating & Cooling

Combating climate change and ensuring the security of energy supply represent profound challenges for Europe. Adapting the current energy scenario into a truly sustainable one will require realising the full potential of renewable energy sources to satisfy the heating and cooling demand– which accounts for around half of the EU's final energy consumption. The **European Technology Platform on Renewable Heating & Cooling (RHC-Platform)** brings together stakeholders from the biomass, geothermal and solar thermal sector - including the related industries - to define a common strategy for increasing the use of renewable energy technologies for heating and cooling.

The European Technology Platform on Renewable Heating and Cooling (RHC-Platform) is coordinated by:

EUREC Agency
Renewable Energy House
Rue d'Arlon 63-67
B-1040 Brussels Belgium
Tel: +32 2 546 1930
Fax : +32 2 546 1934
info@rhc-platform.or
http://www.rhc-platform.org/cms/



4.4.2.4g Figure 22: RHC-Platform website

4.4.2.5 WP7 Extension of the Multisource Energy Storage and Smart energy management system to a district level.

4.4.2.5a The European Joint Programme on Smart Cities

(See 4.4.2.1.c section)

4.4.2.5b Energie cities

Energy Cities is the **European Association of local authorities** inventing their energy future. From 2011 to 2013, Energy Cities is under the Presidency of the City of **Heidelberg (DE)** with a Board of Directors of 11 European cities.
The association created in 1990 represents now more than 1,000 towns and cities in 30 countries. Energy Cities' premises are located in Brussels (BE) and Besançon (FR).
Main objectives:

- To strengthen your role and skills in the field of sustainable energy.
- To represent your interests and influence the policies and proposals made by European Union institutions in the fields of energy, environmental protection and urban policy.

To develop and promote your initiatives through exchange of experiences, the transfer of know-how and the implementation of joint projects.

Contact: **Energy Cities** 2, chemin de Palente FR-25000 Besançon **Tel.** : +33 (0)3 81 65 36 80 **Fax** : +33 (0)3 81 50 73 51 **Energy Cities** 1, square de Meeûs BE-1000 Brussels **Tel.** : +32 (0)2 504 78 60 **Fax** : +32 (0)2 504 78 61 http://www.energy-cities.eu/cities/contact_en.php http://www.energy-cities.eu/	 *4.4.2.5c Figure 23: Energy Cities website*

SCI Network

The SCI-Network, Sustainable Construction and Innovation through Procurement is a European network of public authorities working together to:
explore European best practice in construction procurement, and
identify how best to encourage innovation and sustainability
The Network was established through a project co-funded by the European Commission's CIP programme under the **Lead Market Initiative**, running from September 2009 to December 2012. For information on the project partners click here.

The SCI-Network is co-ordinated by:

ICLEI-Local Governments for Sustainability
Leopoldring 3
79098 Freiburg i.Br.
Germany
Telephone: +49-79/36892-0
http://www.sci-network.eu/about/

Figure 24: SCI Network website

4.4.2.5d The Conference of Atlantic Arc Cities

The Conference of Atlantic Arc Cities, formed in 2000 at the initiative of Mr Edmond Hervé, then Mayor of Rennes, currently represents more than 100 local entities and 7 million inhabitants of the European Atlantic seaboard. This network works with different institutions, to promote the role of cities in Europe and to highlight the specificity of the Atlantic Arc. The presidency is currently held by Mr Philippe Duron, Mayor of Caen and MP for Calvados.

Structure of coordination and representation, CAAC provides a tangible mechanism that creates synergies between different actions at local and transnational level. To improve their attractiveness, networking offers the opportunity for cities to complete a critical mass that gradually increases their visibility and influence. CAAC intends to become the urban forum of reference for the Atlantic Arc through the promotion of a model for green, attractive and cohesive cities.

Figure 25: CAAC website

http://www.atlanticcities.eu/

4.4.2.5e European Federation of Local Energy Companies

Founded in 1992, the European Federation of Local Energy Companies, with seat in Brussels, unites the interests of local utilities in the energy sector at European level.

The CEDEC missions are to :

Represent the interest of the local distributors in electricity and gas and to defend their interest vis-à-vis the European institutions

Exchange experiences and informations concerning energy problems of local distribution in Europe

Cooperate in view of (inter)national support

Membership of CEDEC is open to all companies with an interest in the distribution of energy in Europe.

Contact:

Gert DE BLOCK
Secretary general
CEDEC
Phone : + 32 2 217.81.17
Fax : + 32 2 219.20.56
Email : gert.deblock@cedec.com

Catherine BIREN
Management assistant
CEDEC
Phone : + 32 2 210.94.55
Fax : + 32 2 219.20.56
Email : catherine.biren@cedec.com

CEDEC | Rue Royale 55 B 10 - 1000 Brussels - Belgium
http://www.cedec.com/

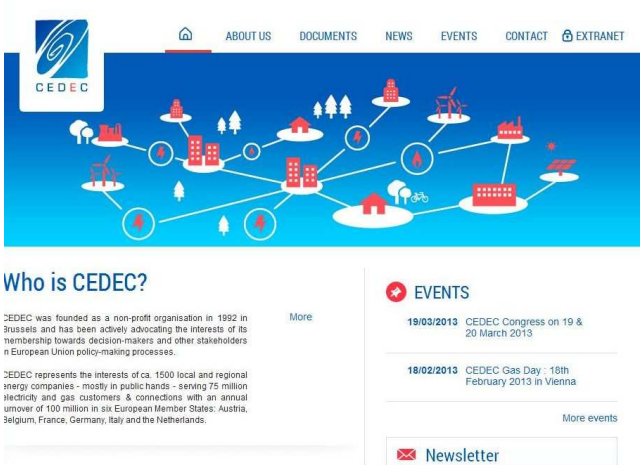


Figure 26: CEDEC website

4.4.3 Contact with stakeholders and their responses

Association	**response**
The European Association of Energy Storage (EASE)	not yet
Covenant of Mayors	
Smart Cities and Communities European Innovation Partnership	
Energy Efficient Building European Initiative (E2B EI)	not yet
EGEC (European geothermal energy council)	not yet
Smart Grids European technology platform for the electricity networks of the future	»Thanks a lot for your interest in the European Platform on Energy Storage. I have moved to new activities and I am now based in the U.S. Nevertheless I keep an interest in energy storage. I have just sent your project proposal to my colleagues at EDF R&D in France.«
European Photovoltaic Technology Platform	not yet
EPIA, European Photovoltaic Industry Association	not yet
EURELECTRIC	not yet
The Council of European Energy Regulators (CEER)	»CEER is a non-profit and independent organisation and therefore we are very sorry, but we cannot pursue your request. Many thanks for taking us into consideration and good luck with your business.«
eu.ESCO - European Association of Energy Service Companies	»I will circulate the information to my members.«
Association of the European Heating Industry	not yet
REHVA, The Federation of European Heating, Ventilation and Air Conditioning Associations	
EUROHEAT&POWER	not yet
RHC, European Technology Platform on Renewable Heating & Cooling	»Thank you for your email about the MESSIB project. We are pleased to inform you that we will be showcasing relevant and suitable projects at the conference in our exhibition

	area. On behalf of the European Technology Platform on Renewable Heating and Cooling, we are delighted to offer you the opportunity to present the MESSIB project by exhibiting a roll-up banner and displaying flyers at the Conference. Thanks to the support of the European Commission, we are able to offer this space free of charge. You are only requested to register as a Regular Participant and pay the registration fee. Our registration page can be found here."
Energie cities	"I have shared the information on our facebook page - http://www.facebook.com/pages/Energy-Cities/141817479191808 Your website has also been added on our links directory at this address : http://www.energy-cities.eu/-Links-directory- This year our annual Rendez-vous (24-26 April in Växjö) will talk about building and energy transition, if you can come, you will have the opportunity to meet our members and speak with them of your project. http://vaxjo2013.energy-cities.eu Best regards"
SCI Network	Information of MESSIB was uploaded in 2011.
The Conference of Atlantic Arc Cities	"Mrs Guirao has forwarded me your e-mail. Please allow me to introduce myself: Tristan Caresmel, EU Projects' Assistant at CAAC. We would be ready to help you disseminate your projects, however, we would need more concrete information, such as a press release, brochures... to send us, if possible in 2 of the 4 languages of the Atlantic Arc. Please do take into account these requirements. We remain at your disposal for further collaboration"
European Federation of Local Energy Companies	not yet

Table 15. Contact with stakeholders and their responses

5. Dissemination methods and their specific associated activities

Following dissemination methods and channels was and was and will be used:

	Dissemination method or channel
1	Face to face communication
2	Websites
3	Social networks
4	Electronic Newsletterc
5	Scientific dissemination: scientific publications
6	Participation in key conferences, congresses, symposia, workshops, exhibitions
7	Organisation a workshop and conference
8	Via Clustering activities
9	Via technology Transfer offers
10	Via direct communications
11	Media
12	Education and training

Table 16. Dissemination methods and channels

5.1 Face to face communication

Participants in MESSIB project can through their social networks inform interested people about the project.

MESSIB promotional brochure in printed or electronic version was prepared for this purpose at the beginning of the project. 6800 MESSIB promotional brochures were distributed among partners for further distribution to key stakeholders. The brochure was also uploaded on the MESSIB website and some other websites, intended to sharing the documents with interested internet community such as **ISSUU** and **doc stock**. Brochure was printed in English and translated in Italian language. At the end of the project, new MESSIB brochure was prepared, with information of project results.

Figure 27: MESSIB promotional brochure

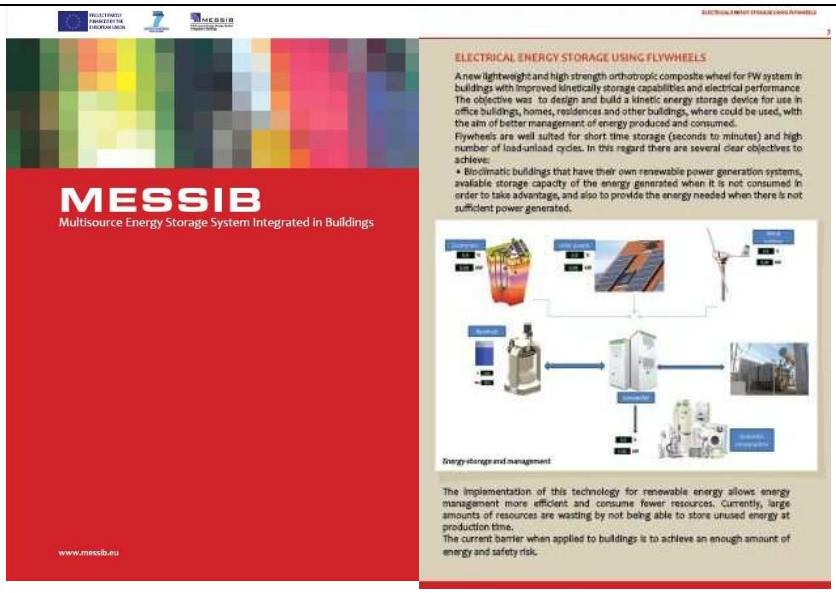


Figure 28: Final MESSIB brochure

Final brochure is in electronic version available at *http://www.messib.eu/assets/files/docs/BROSURA_MESSIB_2013_www.pdf*

5.2 MESSIB posters

MESSIB partners prepared 13 new posters in order to promote the technologies developed, as tool of continuos dissemination of the partners. Posters are also available on the MESSIB website.

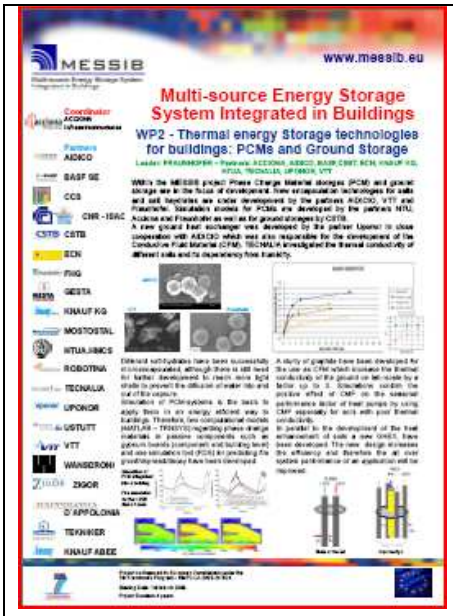


Figure 29: MESSIB WP2 poster

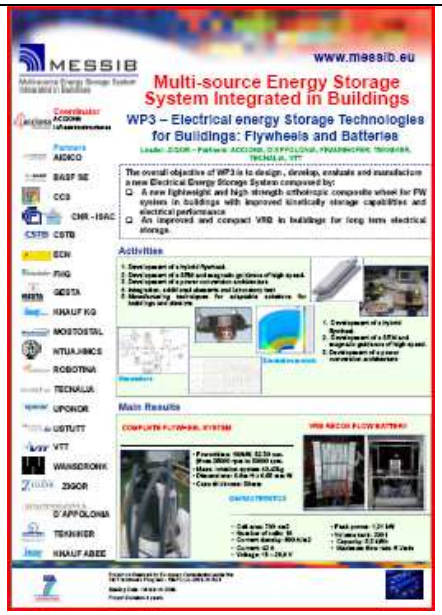


Figure 30: MESSIB WP3 poster

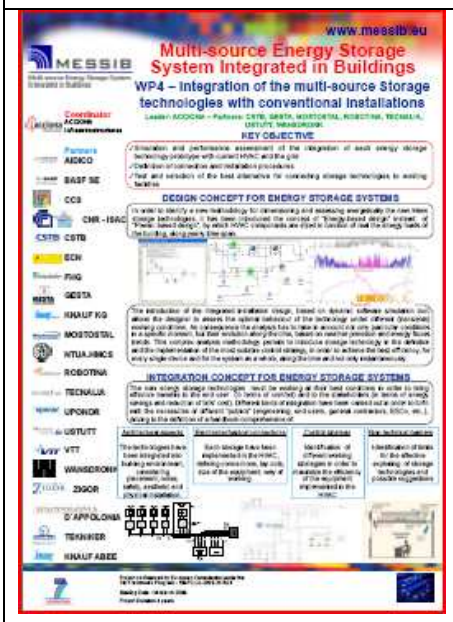


Figure 31: MESSIB WP4 poster

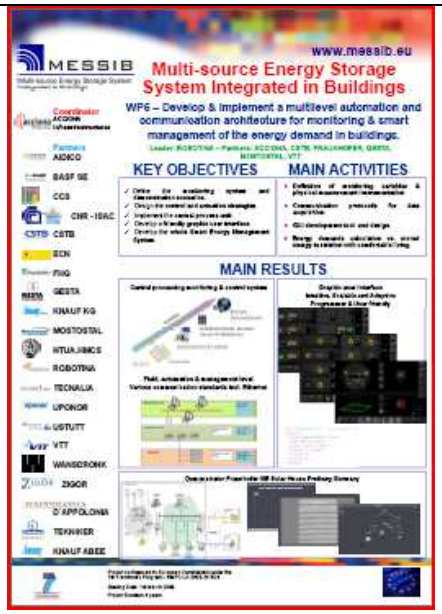


Figure 32: MESSIB WP5 poster

Figure 34: MESSIB WP6 poster

Figure 35: MESSIB WP7 poster

Figure 36: MESSIB WP8 poster

Figure 37: Ground storage technology poster

Figure 38: Uponor G12 technology poster

Figure 39: Knauf Smartboard poster

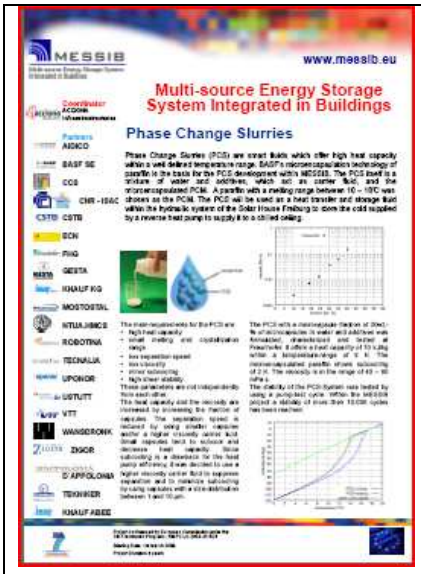


Figure 40: Phase Change Slurries poster

Figure 41: Vanadium Redox Flow Battery poster

Figure 42: Flywheel poster

5.3 Dissemination through websites

5.3.1 MESSIB project website

www.messib.eu

MESSIB website is detailed described in D11.1.

Figure 43: MESSIB website

9704 visits (6162 visitors) were recorded on the MESSIB website since 01. 05. 2009 to 28. 02. 2013.

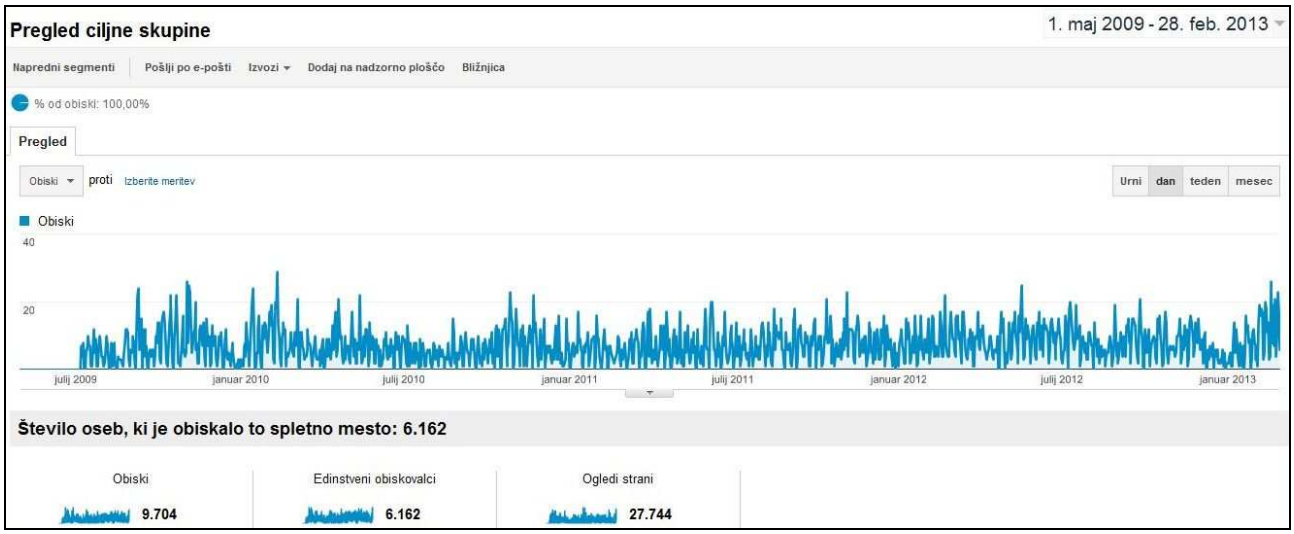


Figure 44: Google Analytics - Visitors Overview for the MESSIB website

5.3.2 Dissemination via project partners websites

Information of the MESSIB project was published on the following project partners websites: ACCIONA, AIDICO, CCS, CNR-ISAC, CSTB, FHG, GESTA, MOSTOSTAL, ROBOTINA, TECNALIA, USTUTT, VTT, ZIGOR, KNAUF ABEE

Participant nº	Participant organisation name	url
1	ACCIONA	*http://www.acciona-infrastructure.com/innovation/the-eco-efficiency-and-sustainability-area/messib.aspx?pag=&desde=8794* *http://www.acciona-infraestructuras.es/innovacion/area-ecoeficiencia-y-sostenibilidad/messib.aspx* *http://www.acciona-infraestructuras.es/sala-de-prensa/noticias/2013/genera.aspx*
2	AIDICO	*http://www.aidico.es/aidico-participa-en-un-proyecto-europeo-de-implantacion-de-energia-geotermica-com-74-50-0-715/* *http://www.publicservice.co.uk/article.asp?publication=European%20Union&id=556&content_name=Environment,%20Energy%20and%20Agriculture&article=19386*
3	BASF	-
4	CCS	*http://www.sgg.si/index.php*
6	CNR-ISAC	*http://www.isac.cnr.it/~microcl/staff/bernardi.php* *http://www.isac.cnr.it/~microcl/staff/becherini.php*
7	CSTB	*http://enr.cstb.fr/webzine/preview.asp?id_une=226*
		-
9	FHG	*http://samssa.eu/consortium/fhg/*

		http://www.harwin-fp7.eu/project/partners/fhg-isc-fraunhofer-gesellschaft-fraunhofer-institute-for-silicate-research-isc-germany
10	GESTA	http://www.gesta.re.it/Apps/WebObjects/Gesta.woa/1/wa/viewNews?id=2346&lang=eng http://www.gesta.re.it/Apps/WebObjects/Gesta.woa/wa/viewNews?id=2346&lang=ita
11	KNAUF KG	
12	MOSTOSTAL	http://www.mostostal.waw.pl/page/80/Projekty%20europejskie/mapa-strony/mapa-strony/setLang/en/ http://www.mostostal.waw.pl/page/80/Projekty-europejskie/
13	NTUA.HMCS	http://demohouse.hmcs.mech.ntua.gr/demohouse_site/?page_id=71
14	ROBOTINA	http://www.robotina.si/?s=MESSIB&x=13&y=12
16	TECNALIA	http://www.energiaenedificacion.com/en/proyectos/proyectos-de-barrio/ http://www.amire.net/labeinweb/Sectores.nsf/vwCAVerProyectos/F23412073E342C58C12575C10038ADC5?OpenDocument
17	UPONOR	-
18	USTUTT	http://www.uni-stuttgart.de/search?q=MESSIB
19	VTT	http://www.vtt.fi/vtt_search.jsp?form=lsf&search=(cw%3Denergy+management)&target=tutk
20	WANSDRONK	-

21	ZIGOR	http://www.zigor.com/eu/index.php?option=com_content&view=article&id=137%3Amessib&catid=12%3Aempresa&Itemid=31&lang=en
22	D'APPOLONIA	-
23	TEKNIKER	-
24	KNAUF ABEE	http://www.knauf.gr/www/el/etaireia/researchanddevelopment/messib/messib.html

Table 16. Information of MESSIB project on partners websites

5.3.3 Dissemination via other websites

Information of the MESSIB project was also published on the other websites, such as:

5.3.3.1 BUILD UP

BUILD UP, the European web portal for energy efficiency in buildings, is a new environment for building professionals, local authorities and building occupants willing to share their experience on how to cut energy consumption in buildings. Diversity is a major strength of the EU and BUILD UP will promote the exchange of all the best practices, tools and technologies available across Europe for an effective implementation of energy-saving measures in buildings. When it comes to climate change and security of energy supply, there is no easy fix. It is only by working together that we will achieve a real impact. The website address is http://www.buildup.eu/. First information of MESSIB was posted in August 2009. The article has 2760 visits since 28. 08. 2009 to 20. 03. 2013.

Figure 45: Presentation of the MESSIB project on BUILD UP website

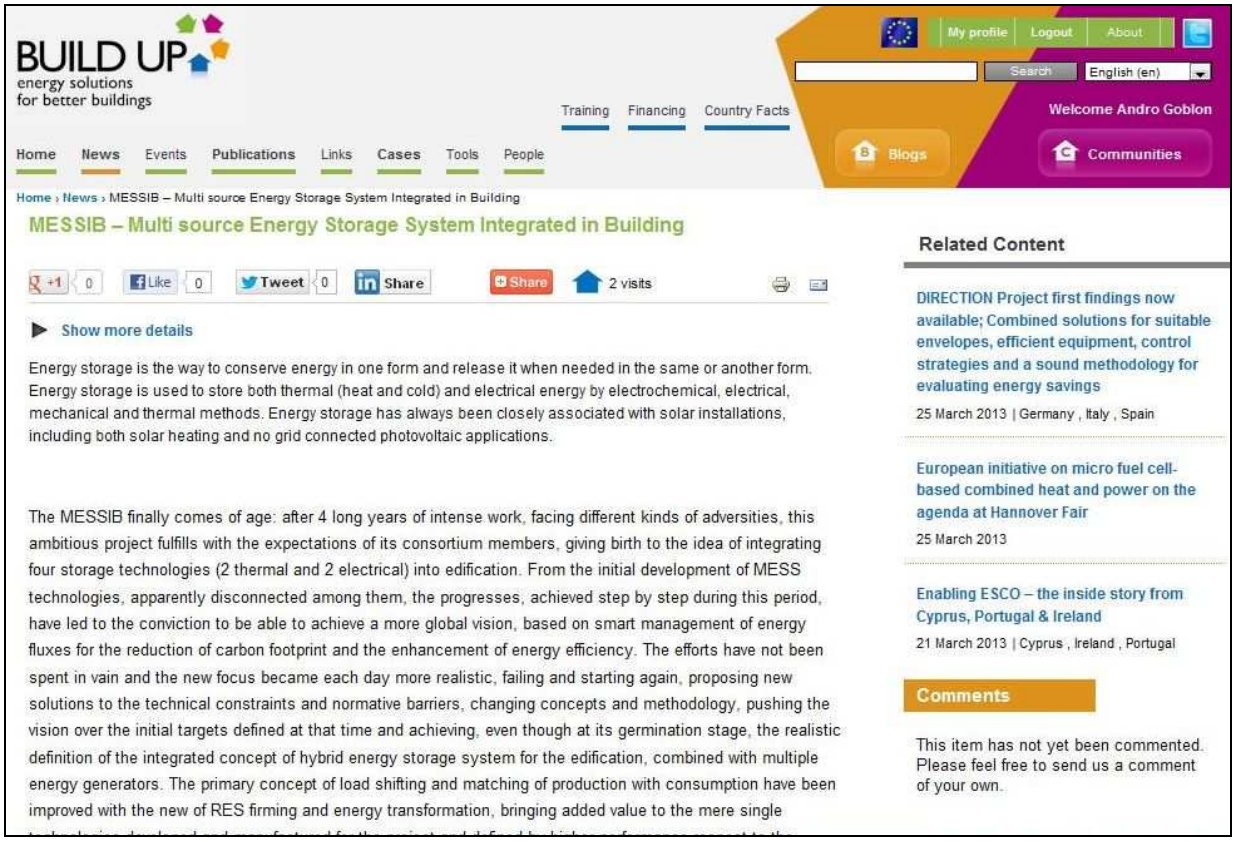


Figure 46: Final presentation of the MESSIB project on BUILD UP website

At the end of the project, renewed information was published.

5.3.3.2 NMPTeam

NMPTeam: The core objective of the 'Nanosciences, Nanotechnologies, Materials and new Production Technologies (NMP)' theme is to improve the competitiveness of European industry and generate the knowledge needed to transform it from a resource-intensive to a knowledge-intensive industry. NMP research also aims to strengthen the competitiveness of European industry by generating 'step changes' in a wide range of sectors and implementing decisive knowledge for new applications between different technologies and disciplines. Funding the NMP research theme will benefit new, high tech industries and higher-value, knowledge-based traditional industries, with a special focus to the appropriate dissemination of research results to SMEs. The transformation of European industry into a knowledge-intensive one is essential in order to produce high added value products, which in turn is crucial to create new industries, and meet customer requirements as well as growth, environmental, health and other societal expectations. The website sddress is *http://www.nmpteam.com/* .

Figure 47: Presentation of the MESSIB project on NMPTeam website

5.3.3.3 SCI Network website

The Network for Sustainable Construction and Innovation through Procurement is a growing European network of public authorities working together to find new, sustainable construction solutions, and encourage innovation in construction procurement.

Participants in the network are mainly public authority professionals working directly on construction. They come from various countries and climates across Europe, from small communities to large government agencies.
Any public authority committed to sustainable construction is welcome to join the network, take part in one or more of the working groups, and have access to the SCI-Network Forum. Participation is free of charge.
Other experts and stakeholders are also welcome to join the network, and contribute to the European exchange. The website address is http://www.sci-network.eu/ .

Figure 48: SCI Network subpage Resources/Innovative Technologies

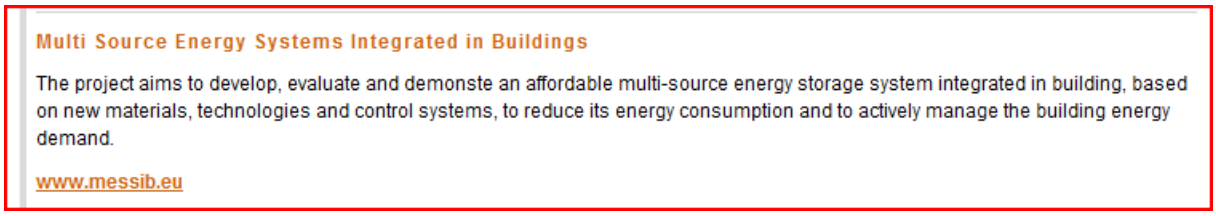


Figure 49: Presentation of the MESSIB project on SCI Network website

MESSIB project is presented on the subpage »Useful links«:
http://www.sci-network.eu/resources/links/

5.3.3.4 ECTP website

The European Construction Technology Platform (ECTP) will raise the sector to a higher worldbeating level of performance and competitiveness. This will be achieved by analysing the major challenges that the sector faces in terms of society, sustainability and technological development. Research and innovation strategies will be developed to meet these challenges engaging with and mobilising the wide range of leading skills, expertise and talent available to us within our industry over the coming decades, in order to meet the needs of the Society.

The platform is open to all who wish to participate and indeed a broad active involvement is encouraged.

Figure 50: Presentation of the MESSIB project on ECTP website

5.3.3.5 Energy Cities website

Figure 51: Presentation of the MESSIB project on Energie Cities website

Figure 52: Presentation of the MESSIB project on Energie Cities website

5.4 Dissemination through Social networks on internet

Internet technologies, especially societal networks, are another possibility for dissemination of the project and project results. From that reason the LinkedIn societal network was chosen. As special dissemination channel the MESSIB group on LinkedIn societal network was established. The group has 98 members and membership slowly rising. It is supposed that membership will increase according to obtain and disseminate the results of work packages.

Figure 53: MESSIB group on LinkedIn

Figure 54: New discussion about MESSIB on LinkedIN

LinkedIn offers more opportunity for dissemination through groups with similar interest.

	LinkedIn group	Members
1	Linked:Energy (Energy Industry Expertise)	163757
2	Green	158302
3	Advanced Energy Economy: the business voice of advanced energy	38466
4	Sustainable construction and planning	13433
5	Smart Grid, AMI, HAN	8546
6	Energy Storage Forum	3232

Table 17. Groups with similar interest on LinkedIn

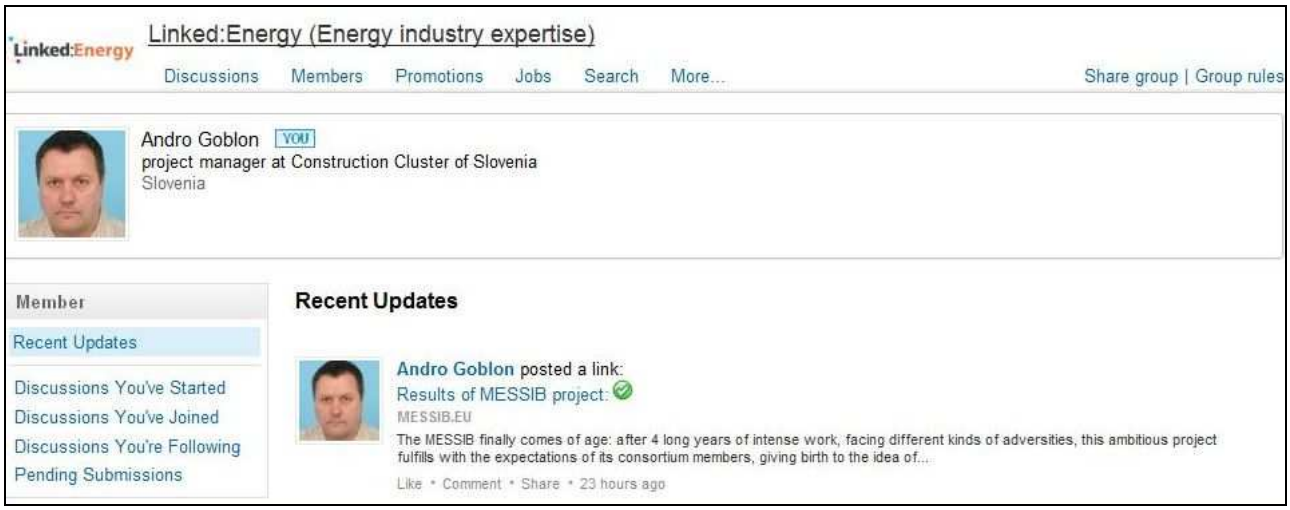


Figure 55: New discussion about MESSIB on LinkedIN, Linked:Energy group

Figure 56: New discussion about MESSIB on LinkedIN, Green group

Figure 57: New discussion about MESSIB on LinkedIN, Advanced Energy Economy group

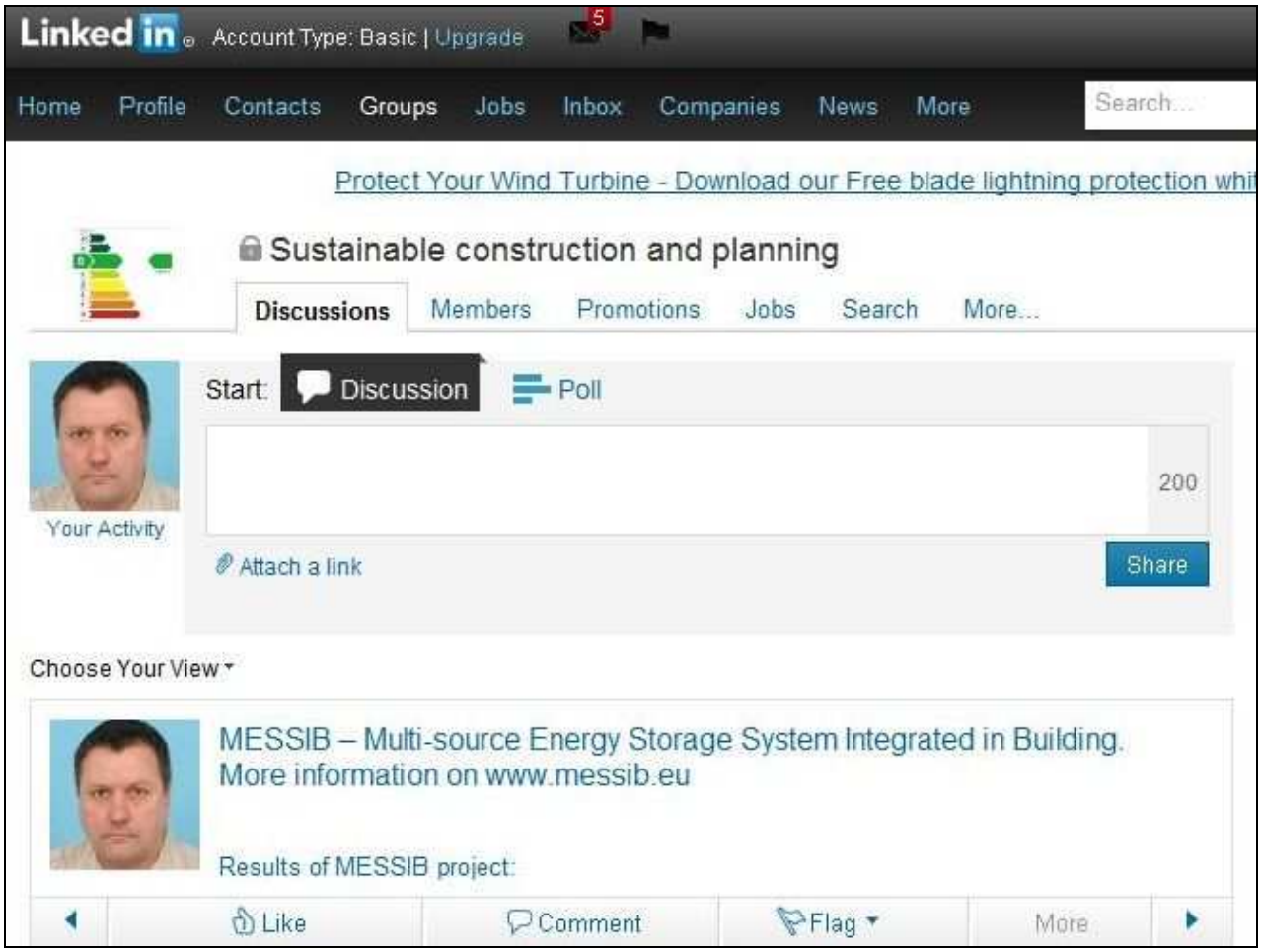


Figure 58: New discussion about MESSIB on LinkedIN, Sustainable construction and planning group

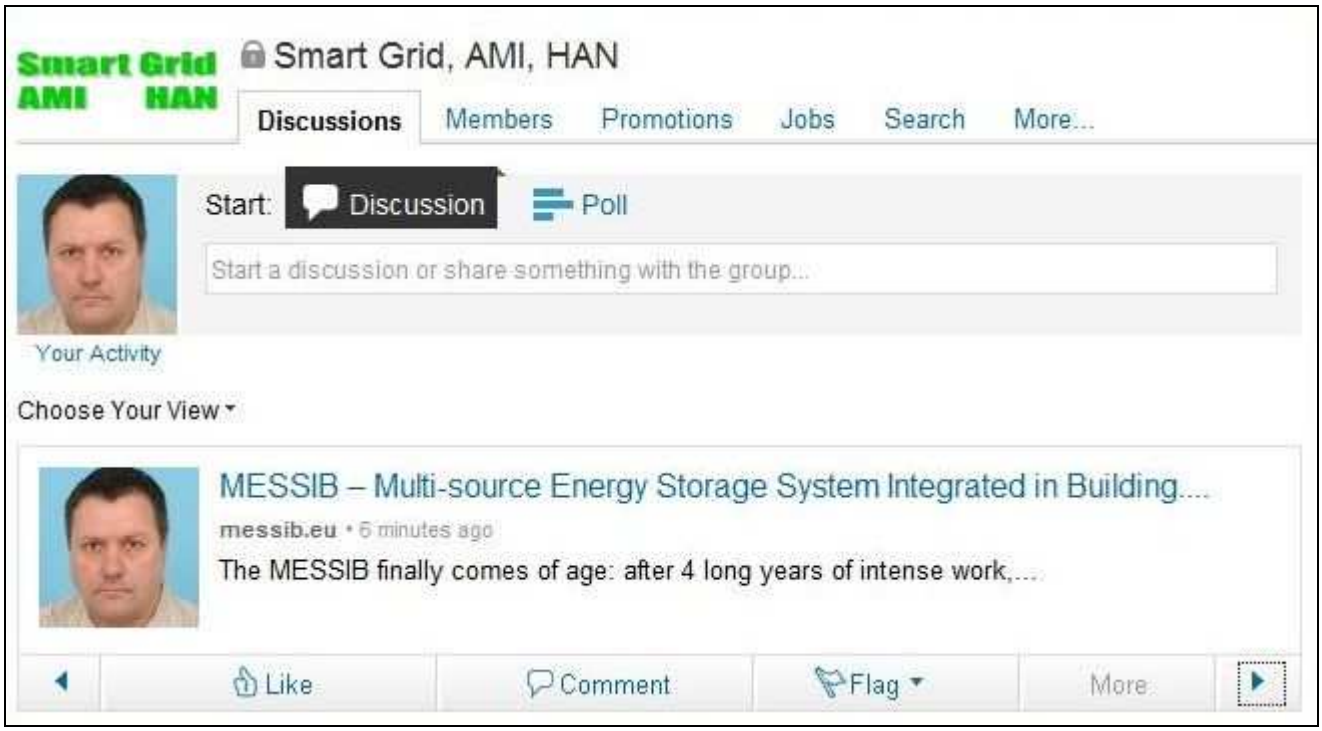


Figure 59: New discussion about MESSIB on LinkedIN, Smart Grid, AMI, HAN group

Figure 60: New discussion about MESSIB on LinkedIN, Energy Storage Forum group

5.5 Electronic Newsletters

5.5.1 MESSIB News

For the interested public electronic newsletter was published on the MESSIB project website. Newsletter was planned to be delivered after the end of each WP (previously in the 1st Awareness and dissemination plan was planned two times a year (approximately in May and November)). Due to objective reasons of delays in technical work packages, only two newsletters were published.


MESSIB News

www.messib.eu

Welcome

Welcome to the first issue of MESSIB News, a newsletter for all interested in energy storage technologies.

Energy storage is the way to conserve energy in one form and release it when needed in the same or another form. Energy storage is used to store both thermal (heat and cold) and electrical energy by electrochemical, mechanical and thermal methods. Energy storage has always been closely associated with solar installations, including solar heating and no grid connected photovoltaic applications.

One of the problem of the energy systems is the way to match the demand and the supply of the energy. When we have focus on buildings and other industrial sectors, a variation on the demand occurs by different cycles, as well, the utilities must produce an amount of energy greater than the demand at every moment in order to guarantee the energy supply and to have sufficient safety margin.

MESSIB will introduce a new energy storage capacity in buildings.

The principal benefit of MESSIB thermal storage capacity is the increase of the energy efficiency and indoor comfort in buildings by the reduction of the energy demand and the decrease of thermal gradients and temperature variations. Thermal energy will be moved within the building through space and time to take advantage of this energy that otherwise would be wasted.

The new use of electrical storage capacity in buildings of MESSIB will permit to fit the energy demand with the generation, optimizing the power use from the grid. Furthermore, this will favor the penetration of RES in buildings, microgrids and distributed energy concepts.

MESSIB ... at a glance
- fourtyear EU project, begun in January 2009
- pan-European consortium
- drawn from 8 EU countries
- eleven work packages
- MESSIB run under FP7 program
- influences EU member country policies
- see www.messib.eu

Join MESSIB group on LinkedIn!

On the next pages:
- Overview and progress report of WP 1 (page 2)
- "How it works" (page 5)
- First model of the Flywheel developed in MESSIB (page 5)
- The importance of energy storage (page 6)

Figure 61: MESSIB News 1


MESSIB News

www.messib.eu

Welcome

Welcome to the second issue of MESSIB News, a newsletter for all interested in energy storage technologies.

On the next pages: First results of MESSIB project
- Thermal energy Storage technologies for buildings: PCMs and Ground Storage. (page 2)
- Phase Change Slurries (page 3)
- Microencapsulation of salt hydrates (page 4)
- Simulation of PCM-construction materials, phase change slurries and ground storages (page 5)
- Advances in ground storage (page 7)
- BTES (Borehole Thermal Energy Storage) (page 8)
- Electrical energy Storage Technologies for Buildings: Flywheels and Batteries. (page 9)
- Redox flow batteries (page 10)
- Flywheel (page 15)
- Integration of the multy-source Storage technologies with conventional installations (page 16)

MESSIB ... at a glance
- fourtyear EU project, begun in January 2009
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- eleven work packages
- MESSIB run under FP7 program
- influences EU member country policies
- see www.messib.eu

Join MESSIB group on LinkedIn!

Leadership in technological innovation

Technological innovation will be pivotal for Europe to achieve its 20-20-20 climate action targets and for Europe to complete its 2020 Agenda for smart, sustainable and inclusive growth.

Innovation will be needed to develop efficient technologies and low carbon technologies (renewable energy, energy storage, energy efficiency including digital technologies, CCS, and research on new generation nuclear production and safe disposal of nuclear waste).

The level of public and private spending on research and development in energy technology innovation must be drastically increased.

Source: Stock taking document
Towards a new Energy Strategy for Europe 2011-2020
page 14
http://ec.europa.eu/energy/strategies/consultations/doc/2010_07_02/2010_07_02_energy_strategy.pdf

Figure 62: MESSIB News 2

5.6 Dissemination in scientific publications

MESSIB partners are accustomed to publish their research in the scientific literature and dedicated journals and reviews in the field of energy, energy storage systems, engineering and processes, architecture and construction trends, etc.

5.6.1 Presentation in EeB PPP Project Review

MESSIB was presented in publication EeB PPP Project Review 2011 and EeB PPP Project Review 2012, prepared by Energy-efficient Buildings (EeB) Public Private Partnership (PPP) and European Construction Technology Platform (ECTP). The publication is available at *http://www.ectp.org/cws/params/ectp/download_files/36D1813v1_EeB_Project_Review_1.pdf* .

Figure 63:

EeB PPP Project Review 2011

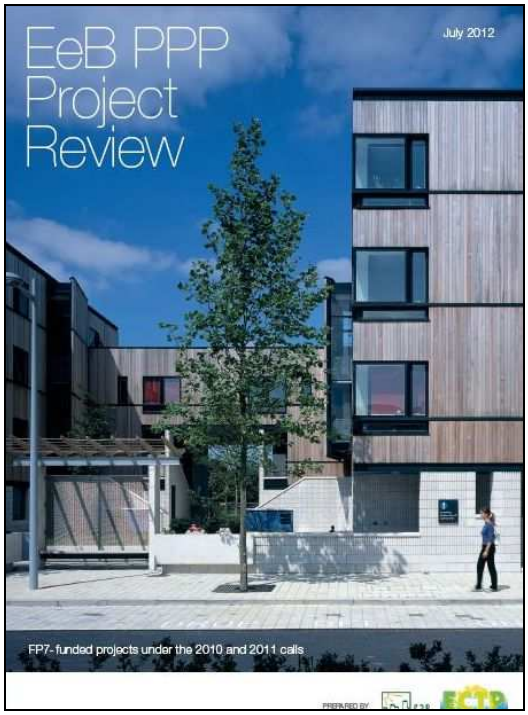

Figure 64:

EeB PPP Project Review 2012

The EeB PPP Project Review 2012 is available at this link: *http://www.e2b-ei.eu/documents/36D2270v1_EeB_Project_Review_2.pdf*, MESSIB is presented on the page 44 and 45.

5.6.2 Applied Thermal Engineering Journal

MESSIB partners from AIDICO and NTUA.HMCS published the article in Applied Thermal Engineering Journal (Applied Thermal Engineering 48 (2012) 136-143).
Treatment of natural stones with Phase Change Materials: Experiments and computational approaches

M.D. Romero-Sánchez a, C. Guillem-López a, A.M. López-Buendía a, M. Stamatiadou b, I. Mandilaras b, D. Katsourinis b,*, M. Founti b

a AIDICO, Technological Institute of Construction, Camí de Castella, 4, 03660 Novelda, Spain

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Applied Thermal Engineering 48 (2012) 136–143

Contents lists available at SciVerse ScienceDirect

Applied Thermal Engineering

journal homepage: www.elsevier.com/locate/apthermeng

Treatment of natural stones with Phase Change Materials: Experiments and computational approaches

M.D. Romero-Sánchez [a], C. Guillem-López [a], A.M. López-Buendía [a], M. Stamatiadou [b], I. Mandilaras [b], D. Katsourinis [b,*], M. Founti [b]

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HIGHLIGHTS

- The treatment of natural stones with Phase Change Materials is investigated.
- Thermal properties of natural stone are modified when treated with PCMs.
- Experimental pilot houses are monitored with and without PCM in the façade.
- Reduced indoor air temperature variations due to PCM integration.
- Computational parametric studies highlight the potential of the concept.

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Thermal energy storage
Energy efficiency
Buildings

ABSTRACT

The treatment of natural stones with Phase Change Materials (PCMs) is experimentally and computationally investigated with respect to developing innovative products with thermal energy storage properties. The objective is to improve the thermal properties of natural stone by exploiting associated latent heat storage phenomena. As a consequence, natural stone treated with PCMs could be used as a construction material with the ability to store thermal energy leading to reduction of the overall buildings' energy consumption. In order to demonstrate the effectiveness of this concept, a series of experiments has been performed. At first, measurements were focused on the PCM influence at the natural stone thermal properties at sample scale. At product scale, a number of "model" concrete pilot houses have been constructed. The pilot houses were covered with a ventilated façade design using the Spanish "Bateig azul" natural stone. Two cases have been examined, with and without PCM integrated in the natural stone façade. Variations of indoor temperatures have been monitored for several day–night cycles showing that a smoother indoor temperature profile is obtained when PCMs are implemented. An improvement in human comfort and a reduction of energy consumption can thus be anticipated. Furthermore, a comprehensive computational model based on the linking of TRNSYS platform to a MATLAB subroutine is introduced. The performance of the tool is evaluated with respect to the aforementioned measurements. It is shown that a good agreement between computational results and experimental data can be achieved. Parametric studies focused on the PCM influence, highlighting the advantages of the combined experimental and computational approaches.

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1. Introduction

Improvements in standards of living are directly linked with better indoor comfort expectations, which are usually satisfied with the implementation of appropriate heating/cooling systems, leading to increased energy demands in buildings. Given the fact that 40% of the total EU energy is consumed in the building sector [1], it is necessary to develop technologies and materials that could significantly reduce energy consumption in buildings while maintaining high indoor comfort conditions.

To achieve that and lead to the establishment of a sustainable built environment, efforts are currently being made, among others to promote the introduction of new technologies, associated with materials depicting enhanced – improved thermal properties (for example insulation, glazing and thermal energy storage through phase change). These materials are developed with the aim to be easily incorporated in building elements and thus be included in a variety of new and retrofitted "energy efficient buildings".

The use of Phase Change Materials (PCMs) for energy storage and increase of thermal mass has been studied since the 1940s [2,3]. However, their usage in buildings has gained interest during the last three decades, due to reductions in their cost [4]. PCMs are characterized by a specific phase change (melting and solidifying) occurring at a temperature value or range due to latent heat. When these materials are implemented in building components (e.g. walls), they attain an improved ability to effectively store the solar energy that enters a room in the daytime, leading to the establishment of cooler conditions in internal spaces. Conversely, when temperatures decrease and become lower than the PCM's characteristic melting point (usually at night), the material solidifies and the previously absorbed heat (latent heat) is released, supporting the maintenance of higher indoor temperatures. Numerous review papers can be found in the literature, providing a detailed analysis of the main characteristics of PCMs and assessing their applications and possible benefits on material properties [5–8]. The addition of PCMs in construction materials such as concrete, gypsum or plasterboard panels is currently widely promoted, as an energy storage solution to reduce energy demands (associated with heating/cooling loads) in buildings [8–13].

The potential of utilizing natural stone for thermal energy storage purposes is a matter of interest, since natural stone is a commonly used high added value material in the construction sector. Natural stones stand as one of the most accessible and abundant natural resources of the earth [14]. More than 90% of the international stone quarrying activity is concentrated in nine countries, namely China, Italy, India, Iran, Spain, Turkey, Brazil, Greece and Portugal, each producing more than 2 million tonnes of natural – ornamental stones per annum [15]. It should be noted also that especially in Europe, buildings with façades or internal walls and floors made of stone are considered to contribute to the overall aesthetics, as well as to issues associated with the cultural heritage preservation [16]. In terms of embedded energy and environment, stones are considered to be low impact building materials, especially if locally quarried (or found in situ), minimally processed and appropriately used [14,17].

In this work, the incorporation of PCMs in natural stones is experimentally and computationally evaluated. At first, the porosity and thermal properties of natural stone treated with PCMs were measured. The effect of PCM integration in natural stone thermal behaviour was experimentally investigated in a simple cylinder set-up and in a number of pilot houses built in Alicante, Spain. In the latter case two similar pilot houses were compared with and without PCM in the natural stone façade. An integrated computational model based on the linking of heat transfer analysis software TRNSYS with a MATLAB subroutine, was introduced and implemented for the prediction of the pilot houses indoor temperatures. The models validity was initially assessed by comparing computational results with the available pilot house experimental data. Subsequent parametric studies scrutinized the PCM influence on the pilot houses thermal behaviour.

2. Experiments investigating the treatment of natural stone with PCMs

2.1. Materials

Natural stone treated with PCMs (confortstone®) has obtained a national patent in Spain, (Reference Number: 200900298,Sept 2011). International patent is under evaluation (Reference number: PCT/ES2010/000022). Samples of Bateig azul (BA) marble have been selected for the current studies. Bateig azul corresponds geologically to a siliciclastic rich bioclastic calcarenite of the upper Miocene and is extracted in Novelda, Alicante in SE Spain. It is blue and composed of calcite and quartz, with an average porosity of 14%. The PCM utilized for the treatment of Bateig azul was the Micronal® DS 5000x (provided by BASF). It is a water-based solution with the following characteristics: viscosity = 30–100 mPa s, solid content = 43% and melting temperature of approximately 26 °C. This phase change temperature is expected to contribute to indoors human comfort in Mediterranean climate conditions. Bateig azul was impregnated with the PCMs, by immersion in PCM water-based solutions.

2.2. Experimental techniques

Different experimental techniques have been used for the characterization of Bateig azul with and without PCM treatment. The porosity of Bateig azul of untreated and after PCM treatment has been measured using subsamples with a mercury porosimeter (model Micromeritics Autopore IV). Thermal behaviour of PCMs, temperature and enthalpy for the phase change have been evaluated with Differential Scanning Calorimetry (DSC) (Star® SW 8.10, Mettler Toledo), using standard aluminium 40 μl crucibles. Thermal conductivity and heat capacity have been determined by using a CT METRE (SA TELEPH, France). The presence of PCM in the pore distribution and shape of Bateig azul, has been evaluated using (Hitachi S-3000N) Scanning Electron Microscope system (SEM) with 15 kV energy of the electron beam.

2.3. Incorporation of PCMs into the natural stone porosity for building façade application – properties

The impregnation of Bateig azul with PCM (BA-PCM) has been carried out by immersion in the PCM water solution, which was selected due to the high porosity levels (14%) of Bateig azul. The PCM content was calculated by weight difference over the plain natural stone sample (BA-control), showing that samples increased by 0.5% weight after treatment, which corresponds to 0.011 g PCM/cm³ Bateig azul. Higher percentages of PCM incorporation to Bateig azul were not considered in order not to affect the aesthetical aspect of the natural stone.

In order to experimentally determine the effective specific heat curve of the PCM, DSC experiments have been conducted with a heating rate of 01 °C/min. Fig. 1 shows the specific heat capacity curve which was also used for the computations presented in

Fig. 1. Experimentally determined (using DSC) effective specific heat capacity of PCM.

Figure 65: Article published in Applied Thermal Engineering Journal (page 1 and 2)

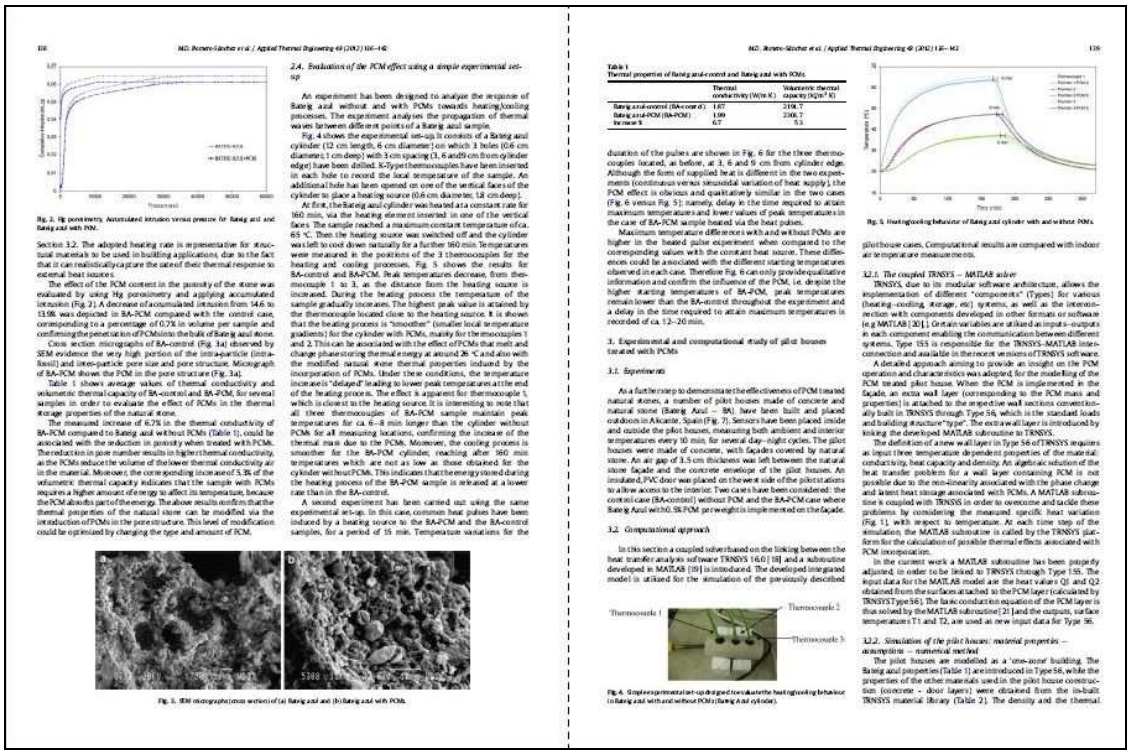


Figure 66: Article published in Applied Thermal Engineering Journal (page 3 and 4)

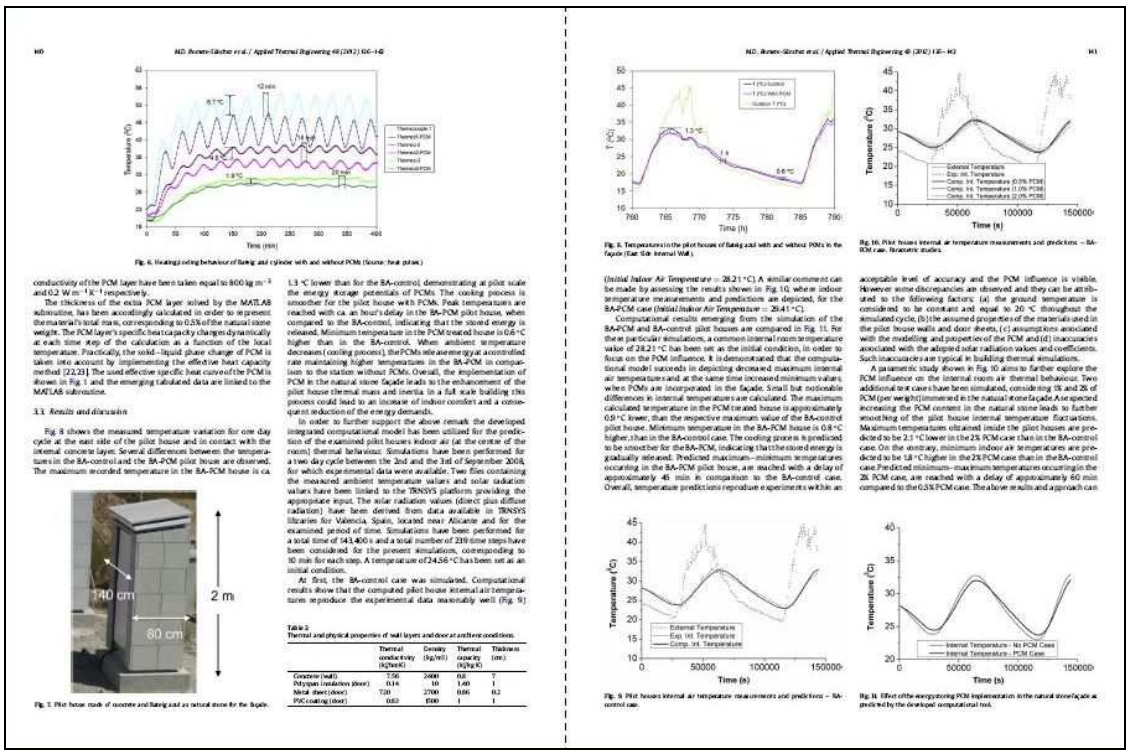


Figure 67: Article published in Applied Thermal Engineering Journal (page 5 and 6)

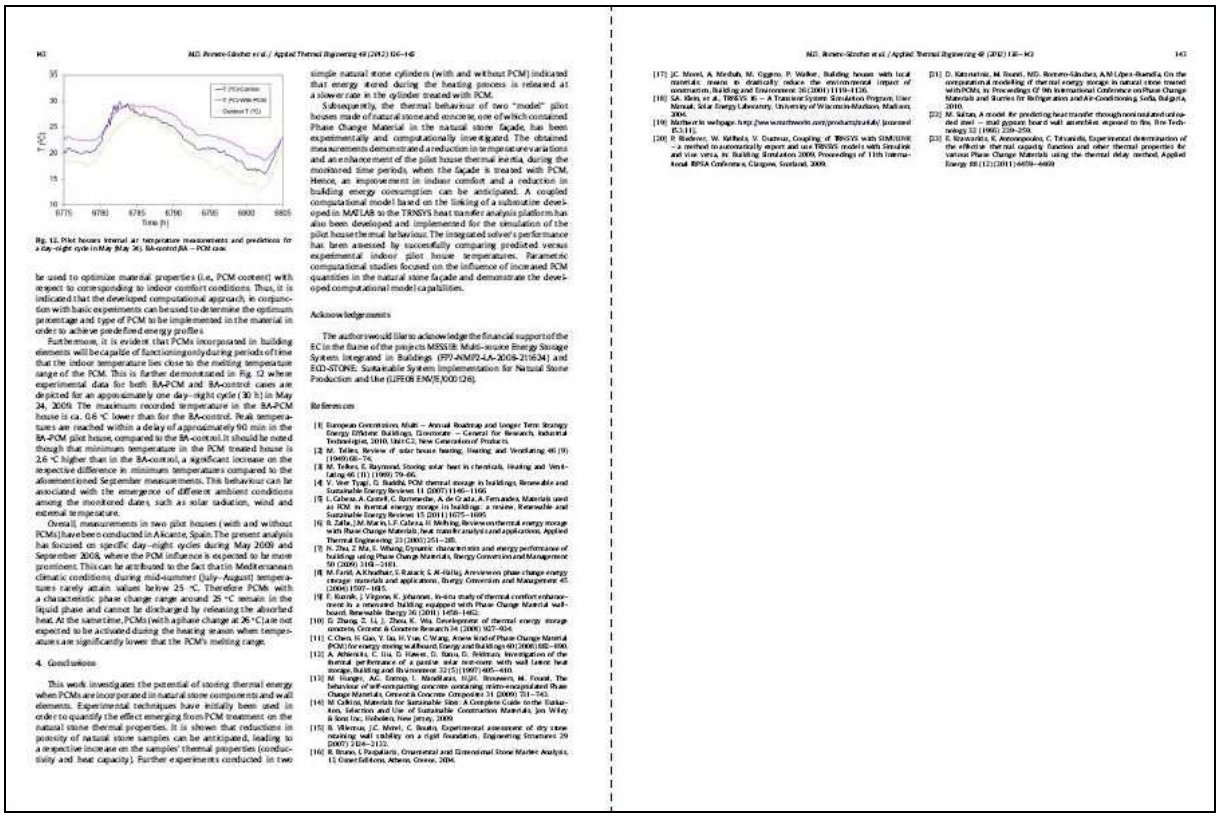
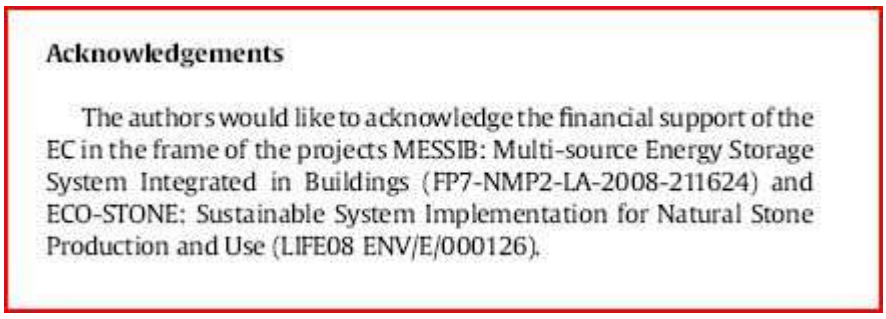


Figure 68: Article published in Applied Thermal Engineering Journal (page 7 and 8)



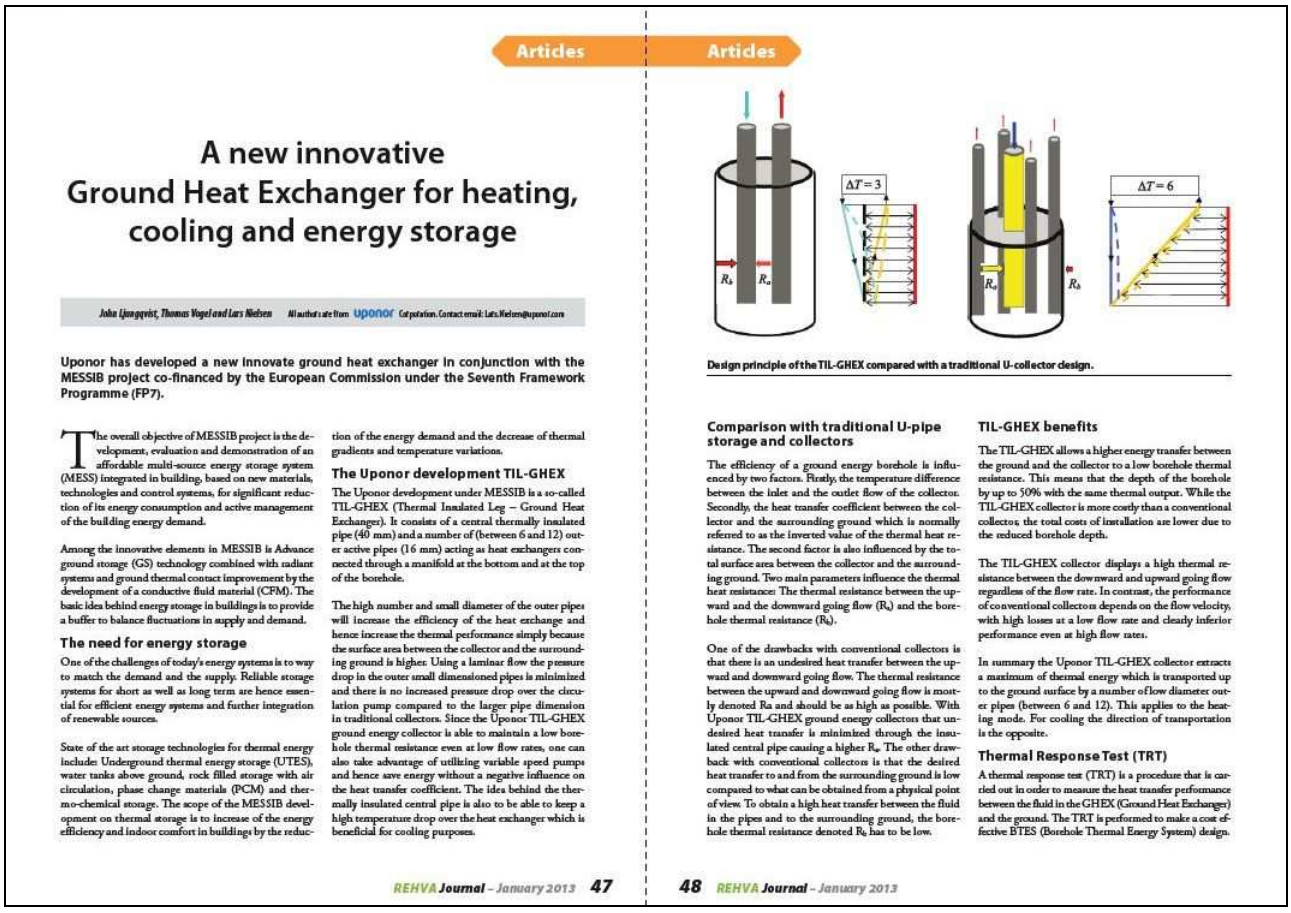
Acknowledgements

The authors would like to acknowledge the financial support of the EC in the frame of the projects MESSIB: Multi-source Energy Storage System Integrated in Buildings (FP7-NMP2-LA-2008-211624) and ECO-STONE: Sustainable System Implementation for Natural Stone Production and Use (LIFE08 ENV/E/000126).

Figure 69: Acknowledgements of the authors

5.6.3 REHVA Journal

MESSIB partner UPONOR published the article about new heat exchanger, developed in the frame of MESSIB project, in the journal of REHVA, Federation of European Heating, Ventilation and Air-conditioning Associations.



Articles

A new innovative Ground Heat Exchanger for heating, cooling and energy storage

John Ljungqvist, Thomas Vogel and Lars Nielsen All authors are from Uponor Corporation. Contact email: Lars.Nielsen@uponor.com

Uponor has developed a new innovate ground heat exchanger in conjunction with the MESSIB project co-financed by the European Commission under the Seventh Framework Programme (FP7).

The overall objective of MESSIB project is the development, evaluation and demonstration of an affordable multi-source energy storage system (MESS) integrated in building, based on new materials, technologies and control systems, for significant reduction of its energy consumption and active management of the building energy demand.

Among the innovative elements in MESSIB is Advance ground storage (GS) technology combined with radiant systems and ground thermal contact improvement by the development of a conductive fluid material (CFM). The basic idea behind energy storage in buildings is to provide a buffer to balance fluctuations in supply and demand.

The need for energy storage

One of the challenges of today's energy systems is to way to match the demand and the supply. Reliable storage systems for short as well as long term are hence essential for efficient energy systems and further integration of renewable sources.

State of the art storage technologies for thermal energy include: Underground thermal energy storage (UTES), water tanks above ground, rock filled storage with air circulation, phase change materials (PCM) and thermo-chemical storage. The scope of the MESSIB development on thermal storage is to increase of the energy efficiency and indoor comfort in buildings by the reduction of the energy demand and the decrease of thermal gradients and temperature variations.

The Uponor development TIL-GHEX

The Uponor development under MESSIB is a so-called TIL-GHEX (Thermal Insulated Leg – Ground Heat Exchanger). It consists of a central thermally insulated pipe (40 mm) and a number of (between 6 and 12) outer active pipes (16 mm) acting as heat exchangers connected through a manifold at the bottom and at the top of the borehole.

The high number and small diameter of the outer pipes will increase the efficiency of the heat exchange and hence increase the thermal performance simply because the surface area between the collector and the surrounding ground is higher. Using a laminar flow the pressure drop in the outer small dimensioned pipes is minimized and there is no increased pressure drop over the circulation pump compared to the larger pipe dimension in traditional collectors. Since the Uponor TIL-GHEX ground energy collector is able to maintain a low borehole thermal resistance even at low flow rates, one can also take advantage of utilizing variable speed pumps and hence save energy without a negative influence on the heat transfer coefficient. The idea behind the thermally insulated central pipe is also to be able to keep a high temperature drop over the heat exchanger which is beneficial for cooling purposes.

Design principle of the TIL-GHEX compared with a traditional U-collector design.

Comparison with traditional U-pipe storage and collectors

The efficiency of a ground energy borehole is influenced by two factors. Firstly, the temperature difference between the inlet and the outlet flow of the collector. Secondly, the heat transfer coefficient between the collector and the surrounding ground which is normally referred to as the inverted value of the thermal heat resistance. The second factor is also influenced by the total surface area between the collector and the surrounding ground. Two main parameters influence the thermal heat resistance: The thermal resistance between the upward and the downward going flow (R_a) and the borehole thermal resistance (R_b).

One of the drawbacks with conventional collectors is that there is an undesired heat transfer between the upward and downward going flow. The thermal resistance between the upward and downward going flow is mostly denoted R_a and should be as high as possible. With Uponor TIL-GHEX ground energy collectors that undesired heat transfer is minimized through the insulated central pipe causing a higher R_a. The other drawback with conventional collectors is that the desired heat transfer to and from the surrounding ground is low compared to what can be obtained from a physical point of view. To obtain a high heat transfer between the fluid in the pipes and to the surrounding ground, the borehole thermal resistance denoted R_b has to be low.

TIL-GHEX benefits

The TIL-GHEX allows a higher energy transfer between the ground and the collector to a low borehole thermal resistance. This means that the depth of the borehole by up to 50% with the same thermal output. While the TIL-GHEX collector is more costly than a conventional collector, the total costs of installation are lower due to the reduced borehole depth.

The TIL-GHEX collector displays a high thermal resistance between the downward and upward going flow regardless of the flow rate. In contrast, the performance of conventional collectors depends on the flow velocity, with high losses at a low flow rate and clearly inferior performance even at high flow rates.

In summary the Uponor TIL-GHEX collector extracts a maximum of thermal energy which is transported up to the ground surface by a number of low diameter outer pipes (between 6 and 12). This applies to the heating mode. For cooling the direction of transportation is the opposite.

Thermal Response Test (TRT)

A thermal response test (TRT) is a procedure that is carried out in order to measure the heat transfer performance between the fluid in the GHEX (Ground Heat Exchanger) and the ground. The TRT is performed to make a cost effective BTES (Borehole Thermal Energy System) design.

Figure 70: Article about new heat exchanger, developed in the frame of MESSIB project, published in REHVA Journal, January 2013

5.6.4 International magazine on Energy

Dissemination Activity report: Article

Participant number/short name	ACC
Date of publication	Not yet published, estimated after the 13th of March

Type of publication:	International magazine on Energy
Title of the publication	Energetica International
Target group (s) of the publication	*policy makers*, *architects*, *public and private promoters*, *construction companies*, *technology suppliers*, *services companies*, *societal organizations*, *public and private owners*, *energy advisers*, *energy auditors*, *educational organizations*, *economic interest organizations, technology providers*, *real citizens*
Number of copies in edition	10.000 in paper 36.000 in digital

Title of the article	
File name (attachment; pdf)	
Purpose of the dissemination activity	Aw (dissemination for Awareness) AC (dissemination for Action)

5.7 Participation in key conferences, congresses, symposia, workshops, exhibitions

Results and breakthroughts were presented in several European and Worldwide congresses. At least dissemination for awareness with MESSIB brochure and person to person communication was achieved on many conferences, workshops, trade fairs and similar events, listed below.

Date	Number of part.	Participants name	Dissemination activity
2009 03 19	1	ACCIONA	high level event
2009 03 24	6	CNR-ISAC	exhibition fair
2009 03 31	4	CCS	exhibition fair
2009 04 20	20	WANSDRONK	conference, workshop
2009 05 07	20	WANSDRONK	conference, workshop
2009 05 11	6	CNR-ISAC	conference
2009 05 12	6	CNR-ISAC	conference
2009 05 19	14	ROBOTINA	conference
2009 06 03	1	ACCIONA	conference
2009 06 04	20	WANSDRONK	conference, workshop
2009 06 14	13	NTUA.HMCS	conference
2009 06 14	13	NTUA.HMCS	conference
2009 06 16	6	CNR-ISAC	workshop
2009 06 29	6	CNR-ISAC	conference
2009 07 09	20	WANSDRONK	conference, workshop
2009 08 23	6	CNR-ISAC	conference
2009 09 01	20	WANSDRONK	conference, workshop

2009 09 17	20	WANSDRONK	conference, workshop
2009 10 19	20	WANSDRONK	conference, workshop
2009 10 23	6	CNR-ISAC	workshop
2009 10 28	22	D APPOLONIA	exhibition fair
2009 11 09	12	MOSTOSTAL	conference
2009 11 24	9	FHG	conference
2009 11 24	16	LABEIN	conference poster
2009 11 24	2	AIDICO	conference
2009 22 30	20	WANSDRONK	conference, workshop
2010 02 03	22	D APPOLONIA	exhibition fair
2010 02 23	22	D APPOLONIA	High Level event
2010 03 04	22	D APPOLONIA	conference
2010 03 10	2	AIDICO	conference
2010 03 16	21	ZIGOR	conference
2010 04 13	20	WANSDRONK	exhibition fair
2010 04 15	20	WANSDRONK	conference, workshop
2010 05 09	7	CSTB	conference
2010 05 10	13	NTUA.HMCS	conference
2010 05 10	13	NTUA.HMCS	conference
2010 05 10	13	NTUA.HMCS	workshop
2010 05 10	2	AIDICO	congress
2010 05 11	14	ROBOTINA	conference
2010 05 13	20	WANSDRONK	conference, workshop

2010 05 19	20	WANSDRONK	exhibition fair
2010 05 21	14	ROBOTINA	conference
2010 06 02	20	WANSDRONK	conference
2010 06 10	16	LABEIN	workshop
2010 06 29	18	USTUTT	exhibition fair
2010 05 21	14	ROBOTINA	conference
2010 06 02	20	WANSDRONK	conference
2010 06 010-11	16	TECNALIA	workshop
2010 06 29-30	18	USTUTT	Trade fair
2010 09 14	14	ROBOTINA	event
2010-09-29	10	NTUA.HMCS	conference
2010-09-29	10	NTUA.HMCS	conference
2010-09-30	24	KNAUF ABEE	training event
2010-10-13	24	KNAUF ABEE	training event
2010 10 12-14	20	WANSDRONK	conference
2010 10 18	20	WANSDRONK	workshop
2010 10 19	20	WANSDRONK	conference
2010 10 27-30	10	GESTA	exhibition fair
2010 11 3-6	10	GESTA	exhibition fair
2010 11 04-05	20	WANSDRONK	workshop
2010 11 09-10	20	WANSDRONK	conference
2010 11 22-24	20	WANSDRONK	conference
2010-12-03	24	KNAUF ABEE	training event

2011 02 8-10	13	NTUA.HMCS	conference
2011 02 21-24	20	WANSDRONK	conference
2011 02 23-24	20	WANSDRONK	conference
2011 04 6-8	6	CNR-ISAC	conference
2011 04 14-16	20	WANSDRONK	fair
2011 05 26-27	20	WANSDRONK	conference, workshop
2011 05 31- 2011 06 03	6	CNR-ISAC	conference
2011 06 19-21	20	WANSDRONK	conference, workshop
2011 06 28- 2011 07 01	13	NTUA.HMCS	conference
2011 06 30- 2011 07 02	13	NTUA.HMCS	conference
2011-07- 4-7	13	NTUA.HMCS	conference
2011 11 16-18	2	AIDICO	conference
2011 11 16-18	13	NTUA.HMCS	conference
2012 01 26	20	WANSDRONK	conference
2012 02 07-08	20	WANSDRONK	conference
2012 02 09-10	20	WANSDRONK	conference
2012 02 29 - 03 02	1	ACCIONA	Trade fair
2012 02 29 - 03 01	20	WANSDRONK	conference
2012 03 21-22	20	WANSDRONK	conference
2012 03 29-31	20	WANSDRONK	conference
2012 04 13	20	WANSDRONK	conference
2012 04 14	14	ROBOTINA	exibition fair
2012 04 16	14	ROBOTINA	workshop

2012 04 16	14	ROBOTINA	exibition fair
2012 04 26-27	20	WANSDRONK	conference
2012 05 02-03	20	WANSDRONK	workshop
2012 05 15	14	ROBOTINA	exibition fair
2012 05 16-18	20	WANSDRONK	conference
2012 05 16-18	16	TECNALIA	conference
2012 05 16-18	2	AIDICO	conference
2012 05 23	16	TECNALIA	conference
2012 05 24-27	6	CNR-ISAC	Poster, exibition fair
2012 05 30	20	WANSDRONK	conference
2012 06 05	20	WANSDRONK	conference
2012 06 06	14	ROBOTINA	workshop
2012 06 06-07	10	GESTA	conference
2012 06 12	14	ROBOTINA	exibition fair
2012 06 17-20	6	CNR-ISAC	Poster, exibition fair
2012 06 19-20	18	USTUTT	exhibition fair
2012 06 25-26	20	WANSDRONK	conference
2012 08 17	14	ROBOTINA	workshop
2012 08 20	14	ROBOTINA	conference
2012 09 02-03	20	WANSDRONK	workshop
2012 09 19-20	20	WANSDRONK	conference
2012 10 02-04	6	CNR-ISAC	workshop
2012 10 09	14	ROBOTINA	conference

2012 10 09-11	20	WANSDRONK	exhibition fair
2012 10 09-11	22	D APPOLONIA	exhibition fair
2012 10 18-21	10	GESTA	exhibition fair
2012 10 23-24	20	WANSDRONK	conference
2012 11 06	20	WANSDRONK	conference
2012 11 07	14	ROBOTINA	exhibition fair
2012 11 07-10	10	GESTA	exhibition fair
2012 11 22-23	20	WANSDRONK	conference
2012 11 30	6	CNR-ISAC	conference
2012 12 04	14	ROBOTINA	workshop
2012 12 05	14	ROBOTINA	workshop, conference
2012 12 12	14	ROBOTINA	workshop, conference
2013 01 14-19		USTUTT	Trade fair
2013 01 25	14	ROBOTINA	conference
2013 01 29-30	20	WANSDRONK	workshop
2013 02 04	20	WANSDRONK	workshop
2013 02 07-09	20	WANSDRONK	workshop
2013 02 07-09		USTUTT	Trade fair
2013 02 07-10	10	GESTA	exhibition fair
2013 02 21	20	WANSDRONK	workshop
2013 02 21-23	13	NTUA.HMCS	meeting
2013 02 21-24	13	NTUA.HMCS	exhibition fair
2013 02 22	9	FHG	conference

2013 02 26-28	1	ACCIONA	exhibition fair
2013 02 27	9	FHG	exhibition fair
2013 02 27	23	IK4-TEKNIKER	exhibition fair
2013 02 26-28	6	CNR-ISAC	exhibition fair

Table 18: List of events where MESSIB dissemination activities have been done

2013 04 24-26	18	USTUTT	planned
2013 09 25-28	18	USTUTT	planned
2013 11 18-20	6	CNR-ISAC	planned

Table 19: List of planned events where MESSIB dissemination activities will be done

5.8 Final conference at GENERA 2013 fair

From the 26th to 28th February, pavilion 8 of the FERIA DE MADRID complex hosted the GENERA 2013 International Energy and Environment Trade Fair, with excellent results and attracting 20.014 professional visitors from 78 countries. Organized by IFEMA and with the support of the Institute for Diversification and the Energy Saving (IDAE), GENERA was inaugurated by Spain's Minister of Industry, José Manuel Soria, and brought together 900 exhibiting companies, shoring up its position as Spain's leading international renewable energies and energy efficiency trade fair.

ACCIONA was organized the final conference, 27th February. Target groups were:

- Trade visitors from consulting, engineering, construction and commercial companies
- Industrial consumers
- Equipment manufacturers and distributors
- Installation and maintenance companies
- Energy project promoters
- Universities, labs and research centres
- Architects
- Specifiers and real estate developers
- Public administration
- And all other professionals involved with energy efficiency and environmental management
- Citizens

acciona Infraestructuras

genera2013 FERIA INTERNACIONAL DE ENERGIA Y MEDIO AMBIENTE

DÍA 26 FEBRERO ACCIONA. INNOVACIÓN ENERGÉTICA EN ENTORNOS URBANOS			
HORA	Título	Ponente	Organismo
10:30	Inauguración y presentación de las jornadas	Javier Grávalos	ACCIONA Infraestructuras S.A. Dirección de Innovación Tecnológica
10:45	ACCIONA y la Innovación Tecnológica	Ignacio Calvo	
11:30	ACCIONA y el Almacenamiento Energético	Javier Grávalos	
12:00	Proyecto MESSIB (Multi-source Energy Storage System Integrated in Buildings) 2009-2013	Silvio Vitali-Nari	
13:00	Modelos de negocio innovadores entorno al almacenamiento energético	Elena Méndez	
13:30	MESSIB, explotación internacional. Estudio de caso: MESSIB en el mercado Chino.	Javier Fernández-Lasquetty y Marcos García	ELZABURU & The Beijing Axis (Abogados y Consultores P. Industrial e Intelectual)
14:00	DESCANSO COMIDA		
16:00	Presentación de experiencias piloto y casos reales de éxito	Javier Grávalos, Gonzalo Pinto e Íñigo Berazaluce	ACCIONA Energía S.A. & ACCIONA Infraestructuras S.A.
17:00	CONCLUSIONES Y PRESENTACIÓN JORNADAS DÍAS 27 y 28	Javier Grávalos	
17:45	CIERRE		

Figure 71: MESSIB sessions on "ACCIONA. Energy innovation in urban environment" conference on GENERA 2013

DÍA 27 FEBRERO MESSIB - Multi-source Energy Storage System Integrated in Buildings			
HORA	Título	Ponente	Organismo
10:30	Introduction to MESSIB Project	Silvio Vitali-Nari	ACCIONA Infraestructuras S.A. Technology & Innovation Direction (Project coordinator)
11:00	Thermal storage in construction components (PCMs)	José Cubillo	
11:45	Enhancements for ground storage systems developed in the framework of the MESSIB project	José Manuel Cuevas	AIDICO - Asociación de Industrias de la Construcción
12:30	Desing and manufacturing of flywheels for buildings applications	Íñigo Etxaniz	TEKNIKER-IK4 RESEARCH ALLIANCE
13:15	LUNCH BREAK		
15:00	Redox flow batteries for house and stationary applications	Martin Dennenmoser	FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS - ISE
15:45	Applicability and barriers of new MESSIB technologies in Cultural Heritage Buildings	Adriana Bernardi Luc Pockelé	CNR-ISAC (National Research Council-Institute of Atmospheric Sciences and Climate)
16:15	Energy Efficiency of Dry-Wall Construction with Thermal Storage in Amfilochia Demo House, Greece	M.Stamatiadou Dr. D.Katsourinis	NTUA.HMCS (National Technical University of Athens)
16:45	The solar house in Freiburg. Demo House, Germany	Peter Schossig	FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS - ISE
17:15	Salburúa planning of a smart energy district	Nagore Tellado	TECNALIA
17:45	CONCLUSIONS	Silvio Vitali Nari	ACCIONA Infraestructuras S.A. Technology & Innovation Direction (Project coordinator)
17:45	END OF THE PRESENTATION SESSION		

Figure 72: Agenda for final MESSIB conference on GENERA 2013

Figure 73: Exibition space of ACCIONA on GENERA 2013

Figure 74: participants at the Final MESSIB conference on GENERA 2013

Figure 75: Exibition space on GENERA 2013

Figure 76: Information of MESSIB conference on GENERA 2013

http://www.estrategiasdeinversion.com/comunicados/20130206/genera-2013-presentara-resultados-proyecto-messib-acciona

Figure 77: Information of MESSIB conference on GENERA 2013

http://www.solarnews.es/2013/02/06/genera-2013-presentar%C3%A1-los-resultados-del-proyecto-messib-de-acciona-infraestructuras/

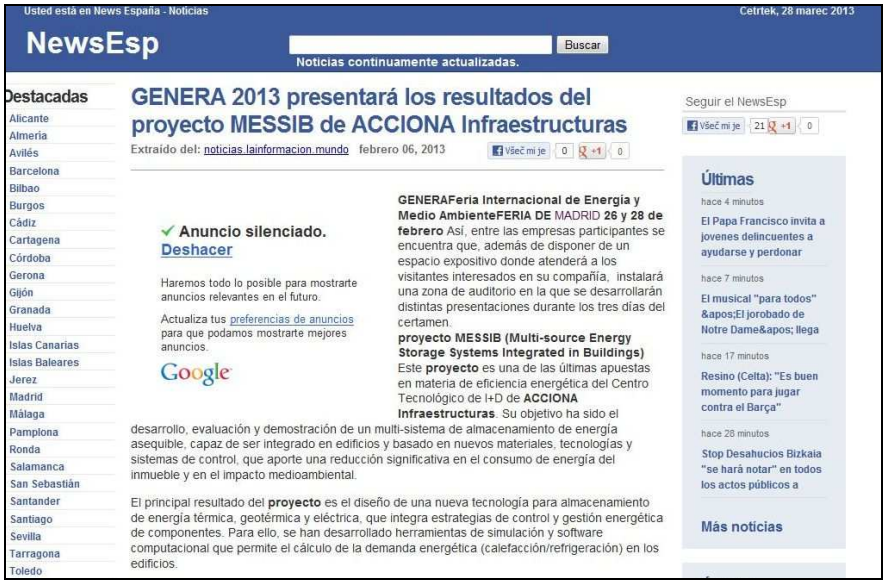


Figure 78: Information of MESSIB conference on GENERA 2013

http://www.newsesp.com/noticias/genera-2013-presentara-los-resultados-del-proyecto-messib-acciona-infraestructuras

Figure 79: Information of MESSIB conference on GENERA 2013

http://www.iberoamerica.net/espana/prensa-generalista/lainformacion.com/20130206/noticia.html?id=yfDEKv3

Figure 80: Information of MESSIB conference on GENERA http://blobic.com/entry/genera-2013-presentara-los-resultados-del-proyecto-messib-de-acciona-infraestructuras

Figure 81: Information of MESSIB conference on GENERA 2013

http://actualidades.es/noticias/genera-2013-presentara-los-resultados-del-proyecto-messib-de-acciona-infraestructuras

Figure 82: Information of MESSIB conference on GENERA 2013

http://noticias.lainformacion.com/ciencia-y-tecnologia/tecnologia-general/genera-2013-presentara-los-resultados-del-proyecto-messib-de-acciona-infraestructuras_sDlVE74XLty2ZOsGx1NzQ5/

Figure 83: Information of MESSIB conference on GENERA 2013

http://www.interempresas.net/Energies/Articles/105432-Genera-2013-presentara-resultats-projecte-Messib-dAcciona.html

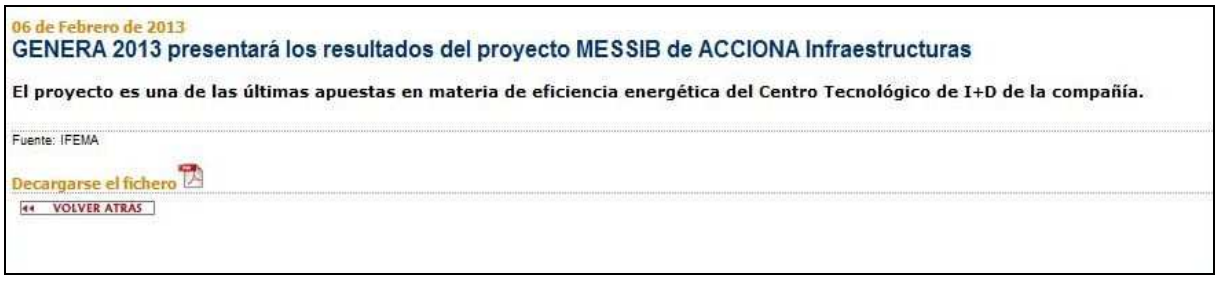


Figure 84: Information of MESSIB conference on GENERA 2013

http://www.seopan.es/verlink.php?id=35727&PHPSESSID=bl7qf4iradpit86vf91kuaqku0

Figure 85: Information of MESSIB conference on GENERA 2013

http://www.plataformaptec.es/ver-noticia.php?id=832

Figure 86: Information of MESSIB conference on GENERA 2013

http://www.caloryfrio.com/genera/noticias-genera/

Figure 87: Information of MESSIB conference on GENERA 2013

https://twitter.com/rubenesteller/status/299185435404562432

Figure 88: Information of MESSIB conference on GENERA 2013

http://www.construible.es/videoteca.aspx?id=1636&c=214&idm=214&tipo=15

5.9 Clustering activities with related projects

5.9.1 The EU Sustainable Building Workforce Initiative

The large contribution expected from the building sector to the 2020 objectives is a major challenge to the construction sector and to industry as a whole, which needs to be ready to deliver renovations offering a high energy performance as well as new (nearly zero-energy) buildings. This calls for a major effort to increase the number of qualified workers on the market along with measures that facilitate decision-making for building-owners. With BUILD UP Skills, the Intelligent Energy Europe (IEE) programme is offering funding opportunities to unite forces and increase the number of qualified workers in Europe's building workforce.

The Build Up Skills initiative helps train craftsmen, on-site construction workers and systems installers to work with sustainable energy solutions in buildings. In 2011 funds were made available to set up national qualification platforms and roadmaps to 2020 in all EU countries.

Construction Cluster of Slovenia is the member of Slovenian national consortium and have contats with other consortiums.

Dissemination opportunity with great potential is to disseminate training materials to national consortiums.

PROJECT ACRONYM	PROJECT SHORT DESCRIPTION	PROJECT COORDINATOR	COUNTRY
ASBWI	Austrian Sustainable Building Workforce Initiative	Austrian Energy Agency	Austria
PROTEUS	Project on the Training of Efficient Energy Use Skills	fvb-ffc Constructiv	Belgium
SkillROAD BG2020	Roadmap for Skills and Trainings on Intelligent Energy Solutions in Buildings for Bulgaria until 2020	Eneffect Consult SP Ltd	Bulgaria
ENESKILLS	Detailed analysis and roadmap for the improvement of the workforce in the building sector with respect to energy efficiency of buildings and integration of renewable energy sources	Cyprus Institute of Energy	Cyprus
BUSDKP1	BUILD UP Skills in Denmark Pillar 1	Danish Energy Agency	Denmark
BUILDEST	Development of the Estonian Continuing Education and Training Roadmap and Action Plan for the Building Sector to 2020	Foundation KredEx	Estonia
BEST-FINN	Building Energy Skills and Training - Finnish Approach	Motiva Services Oy	Finland
Qualergy2020	Qualification Needs- and StatusQuo-Analysis of Blue-Collar-Workers in the Building Sector and Endorsement of a Roadmap for Overcoming Gaps in Germany till 2020	German Confederation of Skilled Crafts e.V.	Germany
BWI_HU	Building Workforce Initiative Hungary	Energy Centre Hungary	Hungary
BUSI	Build Up Skills for Ireland	Tipperary Rural and Business Development Institute	Ireland
WISE roadmap	Workforce for the Italian Sustainable Energy roadmap	Italian national agency for new technologies, energy and sustainable economic development	Italy
EEBR-LV	Efficient Energy Building Roadmap for Latvia	Riga Planning Region	Latvia
NBUP	Norwegian Build Up Proposal	The National Office of Building Technology and Administration	Norway

Figure 89: BUILD UP Skills national projects, part 1

PROJECT ACRONYM	PROJECT SHORT DESCRIPTION	PROJECT COORDINATOR	COUNTRY
BupS Poland	Polish National Building Workforce Training and Qualification Initiative in the field of energy efficiency and renewable energy	The Polish National Energy Conservation Energy	Poland
FORESEE	Training FOr REnewableS and Energy Efficiency in building sector	National Laboratory of Energy and Geology, I.P.	Portugal
ROBUST	ROmanian Build-Up Skills: Qualification platform and roadmap for the building workforce on energy-efficiency and renewable energy to meet 2020 Targets	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development	Romania
Skills4SB.Si	Building Skills for Sustainable Building in Slovenia	Building and Civil Engineering Institute ZRMK	Slovenia
BUILD.GREEN	Build a greener and a more sustainable future	Labour Foundation for Construction	Spain
BUSS	Build up skills – Swedish construction workers	Swedish Energy Agency	Sweden
DuBUS	Dutch National Platform Build Up Skills	OTIB, Eduation and development fund	The Netherlands
BUS	Build Up Skills	Asset Skills	United Kingdom

Figure 90: BUILD UP Skills national projects, part 2

5.10 Dissemination via media

Apart from that, all partners can send out press releases on their own markets, with mention to the MESSIB project and that it is co-financed by the European Commission. Example:

"The result presented in this paper is part of the MESSIB project (www.messib.eu) co-financed by the European Commission in 7tf FP, NMP2-LA-2008-211624"

Press releases should be done to cover all major deliverables of the project. As DM, CCS will coordinate to press releases for the deliverables. (Contact Vladimir Gumilar, CCS and PC if you want to publish something to check if something is already available on the subject.) For all other public project related communication, use the MESSIB logo and design (visual identity). When you are planning a press release, it is required to notify the DM first.

Useful dissemination channels for mass media communication:

Radio,

News papers,

Magazines,

TV...at local and regional level

5.11 Dissemination via Education and training

Due to unexpected, objective (technical) reasons, planned training courses could not been prepared, but anyway, this activities will be done on other way, which could be even more successful. This will be done through the distribution of Design guide to integration of MESSIB energy storage technologies and videolectures on the MESSIB website.

5.11.1 MESSIB design guide

Purpose of this document is the definition of a methodology for the integration of the developed storage technologies into building environment, getting the maximum performance of the conventional installations together with the MESSIB system (intended as technology, + control system + actuation strategy + electromechanical auxiliaries), giving an overview of different themes necessary for stakeholders' acceptance, from the basic knowledge, about the way of working of the technologies, to more advanced concepts for the integration. The process covers different aspects, passing through different steps that can be analysed as a block diagram, where each stage opens different possibilities, forward or backward, for the definition of economic viability in the implementation of the storage systems into constructions. For each stage, a working process has been defined, applied and standardized, in order to provide a holistic knowledge for different kinds of professionals interested in exploiting the storage systems, and their results, into a future (for the maturity of the technologies) market of constructions. The entire process of integration can be split in smaller task, which represent the pillars of the integration concept:

Architectural – take into account relationships between the developed technology prototypes and the architectural conditions of the building, from the envelope to the machinery room.
Electromechanical - interaction between the developed technology prototypes and the electrical and conducts installations, from power services to systems layout and plumbing connections
Energetic - Integrated installation Design approach for the complex facilitybuilding, with appropriate consideration given to the different loads, through dynamic simulation software.
Control - generation of control strategies, for the implementation into BMS, in order to optimize the efficiency of the complex HVAC-storage system during normal operation, on annual base calculation.

This "guide" would like to be a reference for different profiles which would get in touch with MESSIB storage technologies, explaining difference and achieved enhancements respect to current state of art for storage. With this document enduser, construction promoter and project manager should find necessary information for the correct application of the technology into new and existing constructions.

This document wants to give a general overview of the functionality of the different technologies and their implementation, pointing out different kind of application in function of the HVAC, with their advantages and disadvantages, but without entering in excessive details for the installation/implementation, due to the "experimental" phase of development of the MESS storages.

A Design guide to integration of MESSIB energy storage technologies was prepared and will be distributed to ACE and BUILD UP consortiums.

Figure 91: MESSIB design guide

5.11.1.1 Build Up Skills national consortiums

The Build Up Skills, Intelligent Energy Europe (IEE) programme initiative, helps train craftsmen, on-site construction workers and systems installers to work with sustainable energy solutions in buildings. In 2011 funds were made available to set up national qualification platforms and roadmaps to 2020 in all EU countries.
The BUILD UP Skills Initiative has two main pillars:
I. National qualification platforms and roadmaps to 2020, and
II. Qualification and training schemes and is complemented by targeted European exchange activities.
The initiative focuses on the continuing or further education and training6 of on-site / 'blue collar' workers in the field of buildings, strengthening the qualifications of craftsmen, construction workers, systems installers, etc. after their initial, compulsory education and training or after they have entered working life. It may also include training and qualifications for currently unemployed workers.

Objective of the 1st pillar "National qualification platforms and roadmaps to 2020"
The first pillar — 'National qualification platforms and roadmaps to 2020' — should trigger processes to gather all relevant stakeholders in a country and should result in a strategy and roadmap, e.g. on quantified needs, measures, priorities, accreditation, etc.

Excerpt from Work Programme 2011: National qualification platforms and roadmaps to 2020.

The objective of national roadmaps is to embed training on intelligent energy solutions for buildings in the mainstream curricula and practice of building professionals, taking into account the expected contribution of the building sector to the national 2020 targets and the requirements for 'nearly zeroenergy buildings'. They should focus primarily on training the existing workforce as craftsmen (continuing education) but could also address initial education. The roadmaps could focus on a selected number of crafts and professions. However, they should be based on a complete analysis of the national situation and be designed in a way that will facilitate replication of the schemes and processes to other crafts.
To benefit from the initiative, national platforms will need to establish a convincing and inclusive process for consultation of and participation by the relevant recognised stakeholders in both the building and the education/training sectors (representatives of the relevant crafts, industry associations, educational and vocational training institutes and relevant public authorities). As a result, national roadmaps should be endorsed by relevant authorities and stakeholders with a commitment to carry out and implement the proposed strategy.

What results are expected from actions under the first pillar "National qualification platforms and roadmaps to 2020"?

• Initiation of the national qualification **platforms** that bring together all relevant stakeholders;
• **Analysis of the national status quo**: frame and quantify the need for qualified workers in the building sector in each Member State by 2020 (and beyond);

• **Set up and endorsement** of **national** qualification **roadmaps** for achievement of the 2020 energy targets as regards the continuing education and training of the workforce in the building sector;

• Active participation in the **European exchange activities.**
Construction Cluster of Slovenia is the member of Slovenian national consortium and have contats with other consortiums.

5.11.2 MESSIB training videos

ACCIONA has organized the final MESSIB conference on GENERA 2013 fair. CCS has played an active role on this conference. CCS task was to video record of the oral presentations of the conference and interviews with the WP leaders, where those explained the most important points, related to each WP. Videos will be uploaded on the MESSIB website and will serve as training material.

Figure 92: Example of the video

5.11.3 Let's Speak Sustainable Construction - Multilingual Sustainable Construction Glossary

Due to importance of energy storage in the future, the aim is to include term "energy storage" in the dictionary. Contacts were established with responsible person for this issue.

"Dear Mrs Jessica Johnson

I'm getting in contact with you as Project Coordinator of the FP7 European Project named MESSIB (multi energy storage systems integrated in buildings), coordinated by Acciona Infraestructuras SA, former and founding member of E2B (Energy Efficient Building) platform.

In vision of future updates of the glossary for "Let's Speak Sustainable Construction" we would suggest the inclusion of the "energy storage" concept. We consider this concept very important in the future vision of energy efficiency for the buildings, especially because of the new concepts of distributed generation and smart grids will take more relevance with new technological development.

Would you be interested in discussing with us this possibility? We'll be pleasant to provide to you all information for the development of this concept

Best regards"

Silvio Vitali Nari

Energy Efficiency Installation ***Group***
Eco Efficiency ***Area***
Technology & Innovation ***Division***

ACCIONA

5.11.4 Other training activities

Some partners, like for example ACCIONA and MOSTOSTAL, prepared internal training courses and conferences.

Participant number/short name	**ACC**
Date of event	**30/9/2012** **29/10/2012**

Event	Company internal workshop about MESSIB
Acronym of event	Workshop on storage technologies
Weblink	
Organizer	Acciona Infraestructuras
Location	Seville
Number and profile of the attendance/target group(s)	20 persons, between architects, engineering, stakeholders, public entities, founds, promoters
Description	Informative session about the applications of Messib technologies into business models, future commercialization, exploitation plan for storage systems, non technical barriers, end user acceptance.
Relevance for MESSIB	Possible future customers in technology implementation.

Feedback from the presentation	 
Potential outcome of contacts	Public entities, esco, construction promoters, local governament
Purpose of the dissemination activity	**U** (dissemination for **U**nderstanding) **A** (dissemination for **Awareness**)

Participant number/short name	**ACC**
Date of event	**5/12/2012**

Event	Company internal workshop about MESSIB
Acronym of event	Technical workshop on storage technologies
Weblink	
Organizer	Acciona Infraestructuras
Location	Madrid, ACCIONA R&D headquarter
Number and profile of the attendance/target group(s)	20 persons (in 2 days), between architects, engineering, geologists, construction technicians, installers (customers, employees, sub-contractors and providers of Acciona).
Description	Technical session about the integration of the technology into edification; technical barriers, experience from installation, computational tools, implementation lay-outs, control strategies, integration with conventional systems.
Relevance for MESSIB	Diffusion about Messib range of implementability. Possible future partners in technology integrations and installation.
Feedback from the presentation	

	 
Potential outcome of contacts	Installer, technician, engineering companies
Purpose of the dissemination activity	**U** (dissemination for **U**nderstanding) **Ac** (dissemination for **Action**)

MOSTOSTAL, National workshop devoted to presentation of MESSIB project results.

Conference and Trip report	
Participant number/short name	12 Mostostal Warszawa SA
Date of event	2013-02-22

Event	National workshop devoted to presentation of MESSIB project results.
Acronym of event	Konferencja poświęcona omówieniu rezultatów projektu MESSIB
Weblink	
Organizer	Mostostal Warszawa SA
Location	Warsaw, Poland
Number and profile of the attendance	16 – scientists, designers, university
Description	The aim of event was to disseminate MESSIB project results.
Relevance for MESSIB	National workshop. Dissemination activity.
Feedback from the presentation	Main questions from participants of conference. How the injection of CFM is carried out. How the groundwater influence on that materials? Economic efficiency of using of CFM, availability on the market, cost? Effects and efficiency of demonstration installation with PCS. Time of demonstration? Pressure drop in installation filled PCS, overall analysis of efficiency of PCS installation was done? Did an overgrowing in PCS installation exist? How to integrate PCM in buildings components? How much energy is needed to assure the stand-by of flywheel in case of grid failure? What is the application of flywheel taking into account the capacity of prototype (1 kWh is enough for ten minutes for one family buildings). Grafton as VRB electrode material?
Potential outcome of	Aw (dissemination for Awarness)

contacts	

6. Awareness & Dissemination Plan for the next period

6.1 ACCIONA, Article, planned

Dissemination Activity report: Article	
Participant number/short name	ACC
Date of publication	Not yet published, estimated after the 13th of March

Type of publication:	International magazine on Energy
Title of the publication	Energetica International
Target group (s) of the publication	*policy makers*, *architects*, *public and private promoters*, *construction companies*, *technology suppliers*, *services companies*, *societal organizations*, *public and private owners*, *energy advisers*, *energy auditors*, *educational organizations*, *economic interest organizations, technology providers*, *real citizens*
Number of copies in edition	10.000 in paper 36.000 in digital

Title of the article	
File name (attachment; pdf)	
Purpose of the dissemination activity	Aw (dissemination for Awareness) AC (dissemination for Action)

6.2 USTUTT, Sb13 munich, planned

Regional sustainable buildings conference	
Participant number/short name	USTUTT
Date of event	2013 04 24-26

Event	conference
Acronym of event	Sb13 munich
Weblink	http://www.sb13-munich.com/
Organizer	Institute of Building Physics of the Technische Universität München (TUM) in cooperation with the Fraunhofer Institute for Building Physics (IBP) and the Karlsruhe Institute of Technology (KIT)
Location	Munich, Germany
Number and profile of the attendance/target group(s)	Around 500 to 600 visitors from more than 20 countries are being expected. Intended target audience of the conference is: Architects Engineers Urban planners Scientists and representatives of the construction industry and politics.
Description	Oral presentation of the topic "Life Cycle Costing of energy storage technologies for building integration"
Relevance for MESSIB	Presentation of the Life Cycle Costing approach within the context of the conference topic: "Methods for planning and evaluating sustainable buildings in compliance with the life cycle concept"
Feedback from the presentation	Presentation not held yet
Potential outcome of contacts	

Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

6.3 NTUA, Article, planned

Dissemination Activity report: Article	
Participant number/short name	13/ NTUA.HMCS
Date of publication	2013

Type of publication:	Journal Publication
Title of the publication	I. Mandilaras, M. Stamatiadou , D. Katsourinis , G.Zannis, M. Founti, "Experimental thermal characterization of a Mediterranean residential building with PCM gypsum board walls"
Target group (s) of the publication	educational organizations
Number of copies in edition	N/A

Title of the article	"Experimental thermal characterization of a Mediterranean residential building with PCM gypsum board walls"
File name (attachment; pdf)	BAE_ntua_2013.pdf
Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

6.4 NTUA, Article, planned, Abstract Submitted and accepted for the 2nd International Conference on Energy Storage, Dublin 2013

Dissemination Activity report: Article	
Participant number/short name	13/ NTUA.HMCS
Date of publication	2013 06 19-21

Type of publication:	Abstract Submitted and accepted for the 2nd International Conference on Energy Storage, Dublin 2013
Title of the publication	Malliotakis E., Stamatiadou M., Mandilaras I., Katsourinis D., Zannis G., Founti, M. "Experimental and computational investigation of the thermal performance of a large scale residential building located in Greece combining PCM plasterboards with underfloor / active-ceiling heating operation"
Target group (s) of the publication	University/company researchers.
Number of copies in edition	N/A

Title of the article	Experimental and computational investigation of the thermal performance of a large scale residential building located in Greece combining PCM plasterboards with underfloor / active-ceiling heating operation
File name (attachment; pdf)	Dublin_Malliotakis_abs.pdf
Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

Dissemination Activity report: Article	
Participant number/short name	13/ NTUA.HMCS
Date of publication	2013 06 19-21

Type of publication:	Abstract Submitted and accepted for the 2nd International Conference on Energy Storage, Dublin 2013
Title of the publication	Marianna Stamatiadou, Dimitris Katsourinis, Maria Founti, Kimon Antonopoulos "Investigation of natural ventilation impact on the effectiveness of PCM boards installed in a Mediterranean Residential Building"

Target group (s) of the publication	University/company researchers.
Number of copies in edition	N/A

Title of the article	Investigation of natural ventilation impact on the effectiveness of PCM boards installed in a Mediterranean Residential Building
File name (attachment; pdf)	Dublin_Stamatiadou_abs.pdf
Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

Dissemination Activity report: Article	MESSIB_DAR_article.doc
Participant number/short name	13/ NTUA.HMCS
Date of publication	2013 06 19-21

Type of publication:	Abstract Submitted and accepted for the 2nd International Conference on Energy Storage, Dublin 2013
Title of the publication	D. Katsourinis, I. Mandilaras, M. Stamatiadou, G. Zannis, M. Founti "Experimental investigation of PCM activation on a Greek residential building with PCM gypsum board walls"
Target group (s) of the publication	University/company researchers.
Number of copies in edition	N/A

Title of the article	Experimental investigation of PCM activation on a Greek residential building with PCM gypsum board walls
File name (attachment; pdf)	Dublin_Katsourinis_abs.pdf
Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

6.5 USTUTT, SB13 Graz, planned

Sustainable Building Conference 2013	
Participant number/short name	USTUTT
Date of event	2013 09 25-28

Event	conference
Acronym of event	SB13 Graz
Weblink	http://www.sb13.org/index.php/en/
Organizer	University of Technology Graz (TU Graz), Institute of Building Technology and Testing of Building Materials in cooperation with AEE - Institute for sustainable Technologies a non-university research facility
Location	Graz, Austria
Number and profile of the attendance/target group(s)	The SB13 Graz target groups are participants from the construction industry, engineering services, planner architects as well as project developers and facility managers.
Description	Oral presentation of the topic "Life Cycle Costing of innovative energy storage systems in buildings"
Relevance for MESSIB	Presentation of the Life Cycle Costing approach within the context of the conference topic: "sustainable buildings, construction products and technologies"
Feedback from the presentation	Presentation not held yet
Potential outcome of contacts	
Purpose of the dissemination activity	Aw (dissemination for Awareness) U (dissemination for Understanding)

6.6 CNR-ISAC, BuiltHeritage, planned

Conference and Trip report	
Participant number/short name	6_CNR-ISAC
Date of event	2013 November 18-20

Event	International Conference
Acronym of event	BuiltHeritage
Weblink	http://www.bh2013.polimi.it/
Organizer	Center for the Conservation and Promotion of Cultural Heritage
Location	Milan, Italy
Number and profile of the attendance/target group(s)	200 persons International public focused on cultural heritage conservation (scientists, restorers, architects..)
Description	Application of innovative technologies for energy storage to Cultural Heritage buildings
Relevance for MESSIB	Presentation of the project, in particular its relevance for CH
Feedback from the presentation	
Potential outcome of contacts	
Purpose of the dissemination activity	Aw (dissemination for Awareness)

7. Conclusion

The main conclusion of Awareness & Dissemination plan is to make aware the project partners of all kinds of dissemination:

- dissemination for **awareness,**
- dissemination for **understanding,**
- dissemination for **action.**

First of all, the key stakeholders must be aware of the MESSIB project. This could be easily done by person to person contacts with business partners and networking. Usual methods for dissemination for awareness are e-mailing, face to face meetings, MESSIB website, promotional brochure, project partners newsletters and websites and similar.

Next steps include the dissemination for understanding and action. From this point of view, only scientific dissemination on conferences is not enough.

Project partners also have the great internal dissemination potential and great networking potential which must be taken into account on the dissemination workshops and in the Final version of the Awareness & Dissemination plan.

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References

[1] Harmsworth, Sally, Turpin, Sarah. Creating an Effective Dissemination Strategy. TQEF National Coordination team, July 2000, *http://www.innovations.ac.uk/btg/resources/publications/dissemination.pdf*

[2] Suurla, Rita; Markkula, Markku. Effective Dissemination, A guide on the Dissemination of the Results of International Educational projects, Finish leonardo Centre, Helsinki, 1999

[3] Grávalos, Javier. D0.1 - Governance structure, communication flow and methods. Quality Plan, ACCIONA

[4] Gumilar, Vladimir; Golob, Andrej, D 11.4 – 3th version of the Awareness and Dissemination plan

[5] SAVE Dissemination Guide:"How to ensure impact at a wider scale", developed for the SAVE II Programme, the predecessor of Intelligent Energy – Europe, and available at: http://ec.europa.eu/energy/intelligent/files/implementation/doc/save_dissemination_guide_en.pdf

[6] Communicating EU Research & Innovation, A guide for projects participants, available at http://ec.europa.eu/research/social-sciences/pdf/communicating-research_en.pdf