	EUROPEAN COMMISSION RESEARCH AND INNOVATION DG	Review Report

Project No: 285158

Project Acronym: HEAT4U

Project Full Name: Gas Absorption Heat Pump solution for existing residential buildings

Review Report

Period covered: from 01/11/2011 **to** 30/04/2013

Start date of project: 01/11/2011

Duration: 36

Project coordinator name:
Mr. Luigi Tischer

Version: 1

Date of preparation: 26/07/2013

Date of submission (SESAM): 26/07/2013

Project coordinator organisation name:
ROBUR SPA

Review Report

General Information

Grant Agreement number:	285158
Project acronym:	HEAT4U
Project title:	Gas Absorption Heat Pump solution for existing residential buildings
Funding Scheme:	FP7-CP-IP
Project starting date:	01/11/2011
Project duration:	36
Name of the scientific representative of the project's coordinator and organisation:	Mr. Luigi Tischer ROBUR SPA
Project web site:	
Type of technical review:	Periodic regular/foreseen technical review
Period covered - from:	01/11/2011
Period covered - to:	30/04/2013
Date of review meeting (if applicable):	19/07/2013
Type of review report:	Individual
Name of expert drafting the report:	Paul LEMMENS
Name of the Project Officer:	Mr Alexandre D'ANGELO

1. Overall Assessment

a. Executive summary: Comments, in particular highlighting the scientific/technical achievements of the project, its contribution to the State of the Art and its impact:

Residential buildings represent 60% of the building stock and the area where most of the potential to drastically reduce energy use and CO2 emissions lies. New directives push for deep retrofitting efforts, in order to achieve energy efficiency and RES adoption targets for 2020 and beyond. These require acting both on building envelope and on energy use for space heating and warm water.
Replacing existing boilers in existing buildings by high efficient systems are not always suitable or cost effective (radiators, DHW, solar radiation in winter, ...). This project aims at replacing existing gasboilers and competing with electric heat pumps by high efficient gas absorption heat pumps, permitting to save 20% and more primary energy.
Gas absorption heat pumps is a known technology in industry, but a heatpump for the residential market (10...25kW) is actually not available on the market.
The work during this first period was mainly focused on market survey, technical specifications, noise abatement, health and safety aspects. The option was taken to develop a GAHP of 18kW, the most suitable "average" size for the EU market.
If test results confirm the expected efficiency (GUE), the roll out on the market can start immediately at the end of the project.
The market penetration can grow rapidly and as a consequence, the savings on primary energy.

Progress	Good progress (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations)

b. Overall recommendations (e.g. on overall modifications, corrective actions at WP level, or re-tuning the objectives to optimise the impact or keep up with the State of the Art, or for other reasons, like best use of resources, re-focusing...).

1. The performance tests in real life (5 demo sites) should confirm lab tests. This will be very important for the credibility of the product. The project duration permits a measuring campaign during one winter. It is not certain that this single test campaign will be sufficient for hard guarantees on the performance.
2. Lab performance tests and field tests will run partially in parallel. Analyses of both results need also parallel attention.
3. The option was taken to develop an outdoor version of the GAHP. An indoor version can be attractive for specific market segments.
4. The GAHP will replace existing boilers. System integration is important, not only mechanically but also for data communication with existing energy systems.
5. TCO (total cost of ownership) is important to attract customers. Need to be done as soon as sufficient reliable data are available.
6. Make sure the energy label "very high efficiency" is obtained.
7. The environmental impact can be increased further when the GAHP can be run on biogas. Technical tests are not planned, but could be considered.
8. The e-learning module can be "tested" by the members of the consortium. It will certainly give input for improvements of it.

2. Objectives and Workplan

a. Progress towards project objectives: Have the objectives for the period been achieved? In particular, has the project as a whole been making satisfactory progress in relation to the Description of Work (Annex I to the grant agreement)?	Yes

Comments

Progress was on schedule.

There was one month delay in the planning of the 18M review meeting.

b. Progress in individual work packages: Has each work package (WP) been making satisfactory progress in relation to the Description of Work (Annex I of the grant agreement)?	Yes

Comments

Obtaining the EU green light for the project took more time than expected. This caused a delay in start date.
In the original planning the lab performance tests were programmed before the start of the demo site tests.
Due to the delay, lab test and field tests will run partially in parallel.
It should not cause major problems for the rest of the planning, unless unexpected test-results arise.

c. Milestones and deliverables: Have planned milestones and deliverables been achieved for the reporting period?	Yes

Comments

There are no major deviations, but reports D1.1 and D1.2 still need to be uploaded in SESAM.

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
1	1	0.0	Report on Multi-local analysis for engineering parameters definition	No		waiting upload in Sesam
1	2	0.0	Report on survey about retrofitting value chain	No		
2	1	1.0	Test of conceptual prototype of heat pump	Yes	Accepted	
2	2	0.0	Prototype of “GAHP Appliance"	No		
3	1	0.0	Definition of system Architecture and set of Hydraulic configurations	No		
3	2	0.0	Prototype of GAHP System	No		
3	3	0.0	Plant Control system	No		
4	1	1.0	Test protocol for GAHP Appliance and System	Yes	Accepted	delay 1 month
4	2	0.0	Report on safety and environmental aspects of GAHP Appliance in residential application	No		
4	3	0.0	Report about Performance of GAHP Appliance and GAHP System during Lab Test	No		
5	1	1.0	Common protocol for field testing	Yes	Accepted	delayed 2.5 months
5	2	0.0	Report about installation of field test GAHP Systems	No		
5	3	0.0	Report about Performance of GAHP Systems during Field Test	No		
6	1	0.0	Decision Support System SW Module	No		
7	1	0.0	Risk Assessment Report	No		
7	2	0.0	Labelling and Certification of the GAHP	No		
7	3	0.0	Life Cycle Assessment and Life Cycle Cost Analysis	No		

Deliverables

WP no.	Del. no.	Version	Deliverable name	Reviewed Yes/No	Status	Remarks
8	1	1.0	Project web site	Yes	Accepted	
8	2	1.0	Dissemination Plan	Yes	Accepted	very detailed, even in this early stage
8	3	1.0	E-learning, Web seminars	Yes	Accepted	
8	4	0.0	Exploitation Plan	No		
8	5	0.0	E-learning, Web seminars	No		
9	1	0.0	Periodic Report	No		
9	2	0.0	Periodic Report	No		
9	3	0.0	Final report	No		

d. Relevance of the objectives in the coming periods: Are the objectives for the coming period(s) i) still relevant and ii) still achievable within the time and resources available to the project?	
d.i) still relevant?	Yes
d.ii) still achievable?	Yes
Comments	
Unless unexpected test result happen (see point 2.b)	

3. Resources

a. Assessment of the use of resources: To the best of your estimate, have resources used, i.e. personnel resources and other major cost items, been (i) utilised for achieving the progress, (ii) in a manner consistent with the principle of economy, efficiency and effectiveness. Note that both aspects (i) and (ii) have to be covered in the answer.	
a.i) utilised for achieving progress	Yes
a.ii) in a manner consistent with the principle of economy, efficiency and effectiveness	Yes
Comments	
no special comments	
b. Deviations: If applicable, please comment on large deviations with respect to the planned resources.	

4. Implementation of the Project

a. Management: Has the project management been performed as required?	Yes
Comments	
The project manager (and his team) is doing not only good coordinating and managing work, but is also very competent in the technical and business aspects of the project. This is very valuable for the progress, the quality of the work and product launch.	
b. Collaboration between beneficiaries: Has the collaboration between the beneficiaries been effective?	Yes
Comments	
Collaboration is efficient. WP leaders have regular technical meetings and conference calls with the participants of the WP. Information is shared with the other WP leaders and partners of the consortium.	
c. Beneficiaries' roles: Do you identify evidence of underperforming beneficiaries, lack of commitment or change of interest of any beneficiaries?	No
Comments	
all partners are cooperating well	

5. Use and Dissemination of Foreground

a. Impact: Is there evidence that the project has/will produce significant scientific, technical, commercial, social, or environmental impacts?	Yes

Comments

The gas-absorption heatpump technology is well known, but the residential application was lacking.
Residential GAHP can replace existing gas-condensing boiler and save 20% and more primary energy.
If the GAHP can be operated with biogas, the environmental impact will be even higher!
It is recommended to do the ESS seminar. It is a good help for the elaboration of the business plan as it will bring the most attractive exploitable results to the surface.

a.1. Is there an impact on participating Small and Medium Entreprises (SMEs)?	Yes

Comments

Potentially it is a huge market with huge business opportunities for installers and technical service companies.
The consortium however is mainly composed of big industrial groups and utilities

a.2. Is there an exploitation potential for the participating SMEs?	Yes

Comments

See comment a.1 up here

b. Use of results: Is the plan for the use of foreground, including any update, appropriate? Namely, please comment on the plan for the exploitation and use of foreground for the consortium as a whole, or for individual beneficiary or groups of beneficiaries and its progress to date.	Yes

Comments

The communication plan is very well elaborated.
The business development plan and product launch plan still need to be worked out.
The members of the consortium have their own network and sales channels. Business development will most probably be done by each partner individually.

c. Dissemination: Have the beneficiaries disseminated project results and information adequately (publications, conferences...)?	Yes

Comments

There is a very good and detailed communication and dissemination plan.
Many communication actions have already been completed.
Direct "live" actions like conferences, workshops, exhibitions, round tables... but also actions via the e-channels websites, youtube, facebook, newsletters, e-learning...
Additionally there are a lot of new actions on the programme.
One of the major concerns is the "awareness building" in almost all groups of the society.
Polticians, consumers, architects, installers, end users... they all need to know about the GAHP, its energy saving potential and its qualities as valid alternative for existing boilers (fuel and gas).

d. Please identify potential information that should be disseminated to
Policy makers:
Awareness building of the GAHP as valuable technology for energy savings and CO2 abatement.
The scientific community:
The general public:
Awareness building of the GAHP as valuable alternative for space heating and DHW production.
A specific group of end users:

e. Involvement of potential users and stakeholders: Are potential users and other stakeholders (outside the consortium) suitably involved (if applicable)?	Yes
Comments	
Electric grid operators can recommend the use of GAHP as a valid alternative for the electric heat pump. They will certainly welcome the GAHP as they do not have impact on the electric stability of the grid.	

f. Links with other projects and/or programmes: Is the consortium interacting in a satisfactory manner with other related Framework Programme projects or other Research and Development national/international programmes, standardisation bodies?	Partially
Comments	
Contact with the smart grid project RESILIENT can be valuable.	

6. Other Issues

a. Have policy-related and/or regulatory issues been properly handled (if applicable)?	Yes
Comments	

b. Have ethical issues been appropriately handled (if applicable)?	Not Applicable
Comments	

c. Have safety issues been properly handled (if applicable)?	Yes
Comments	
Health and safety aspect are major concerns in the development and are covered during test programmes and certification	

d. Has progress on Gender Equality Actions been satisfactory (if applicable for this	Not Applicable

reporting period)?	
Comments	

7. Flag the Project - Not related to the 'certified as correct'

Flag(s) for the project	Yes
Highlight as a success/case story	Yes
High visibility/media attractive project	No
Substantial R&D breakthrough character	No
Project linked to R&D national/international programmes	No
Project with an impact on EU policies	No
Project with an impact on pushing Joint Programming (especially for ERA-NET)	No
Outstanding Use/Exploitation of results	No
Significant R&D participation from outside EU	No
Involvement of non-RTD actors in the field (economic, policy makers, civil society, end-users, standardisation bodies…)	No
Good innovation potential	No
Other	No
Comments	
If the field test confirm the saving potential of the GAHP, this project can be classified as a success story in the view of CO2 reduction.	

Attachments	
Name	
Date	

This declaration was visaed electronically by Paul LEMMENS (ECAS user name nlemmepp) on 26/07/2013