FIRST REVIEW MEETING
HEAT4U PROJECT

July 19th 2013
Paris, GDF SUEZ

Gas Absorption Heat Pump solution for existing residential buildings

Under the EU's Seventh Framework Programme for Research

The Consortium

Project Coordinator

Project Partner

The Advisory Committee

First Review Meeting – 19th July 2013

WP 1: Value Chain

Speaker: Axel Albers

Achievement of WP 1

Target:	**Define the market requirements to reach the maximum benefit of GAHP technology**
Task Task 1.1:	**Conceptual design and value analysis of a GAHP system architecture for space heating and DHW in residential applications**
Task Task 1.2:	**Survey on building retrofitting value chain**

WP1 Task 1.1

Conceptual design and value analysis of a GAHP system architecture for space heating and DHW in residential applications

Objectives

Definition of the GAHP systems specific engineering requirements according to each individual “homogeneous area” within Europe. The requirements will aim to maximize the benefits resulting from an optimal integration of GAHP technology into building retrofitting industry:

- Create an overview and product specification of GAHP Systems for European market to identify the market requirements of each area.
- Define technical requirements of GAHP, characteristics of buildings and heating systems, identify subsidies and market potentials
- Result will be the basic information for WP2 (appliance development) and WP3 (system development)

WP1 Task 1.2

Survey on building retrofitting value chain

Objectives

Development of building retrofitting value-chain, investigating the roles and framework for the different suppliers, and integrating the added value associated to the implementation of the GAHP System:

- Development of a business model for GAHP with information of key factors
- Identification of key players for different house retrofits
- Definition of major cost items to retrofit heating system with GAHP system
- Establishment of comparable results to find a common methodology for the considered countries

WP1 Task 1.1 and 1.2

As a conclusion of surveys and interviews with internal and external counterparts the major advantage of GAHP is being compatible with existing distribution system and not implying a major retrofit.

This would disappear once the concept of the GAHP Module is introduced. This in general would is in contrast with the overall value proposition of the technology.

The activities and result of both tasks have been combined into one report!

WP1 Task 1.1 and 1.2

Value Chain

Summary of progress towards objectives

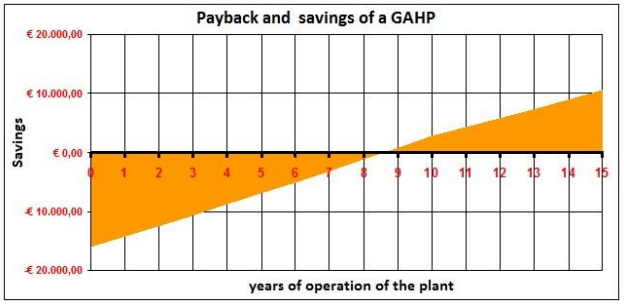
Survey completed with focus on characteristics of single regions representative of the highest market potentials: north and continental Europe regions defining:

- characteristics of the single regions;
- building types;
- retrofitting methodologies;
- heating system's typologies (generation, distribution, control);
- integration of renewable heating technologies;
- heat demand characteristics;
- tariff schemes

Major effort shared by all partners involved!

Robur, GDF SUEZ, GrDF, E.ON, ENEA, ZAG, DAPP and BTT

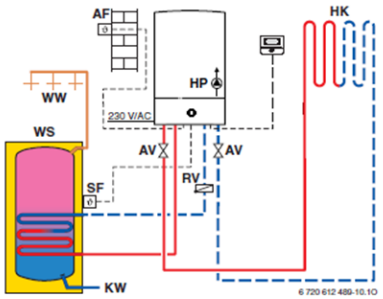
WP1 Task 1.1 and 1.2



Map of climate zones in Europe

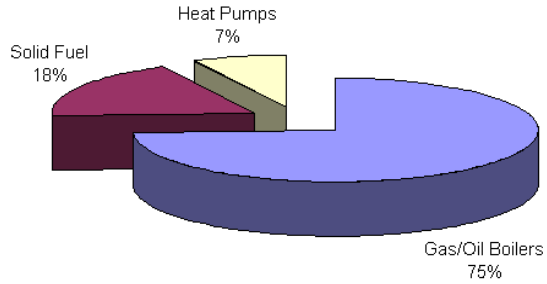
Market Specification List Project HEAT4U					
Specification ID	**Market specification**	**Remarks**	**Comments from the market**	**Proposed value Partners WP 1**	**Country XXX** Partner xxx
Section 1	**General key topics**				
Section 1.1.02	Type of heat pump			Air/Water	
Section 1.1.03	Type of heat supply			Central Heating and DHW	
Section 1.1.04	Installation situation			Outdoor with free circulation of air	
Section 1.1.05	Possible integration with new or existing boiler			no	
Section 1.1.06	Cascading of heat pump necessary up to xxx kW			no	
Section 1.1.07	Domestic hot water production			indirect	
Section 1.1.08	Typical installation position			on the floor/ground	
Section 1.1.09	Combination with buffer tank for space heating			not needed	
Section 1.1.11					
Section 1.2	**Desired date of introduction**				
Section 1.2.01	Date (mm/yy)			2014	
Section 2	**Installation**				
Section 2.1.01	Installation time (heat pump appliance only)	e.g. new houses - max. 1 hours for 2 installers (appliance) - system installation		same as a condensing boiler	
Section 2.1.02	Replacement time (heat pump appliance only)	e.g. existing houses - max. 1 hours for 2 installers (appliance) - system installation		same as a condensing boiler	

Hydraulic system Denmark



Weather depending controller with 1 HC and tank
Generally condensing gas boilers are used with tanks.
Preferred controllers are weather depending controllers

EU27 (2010) - Sales of Central Heating Systems [k units]



List price of a GAHP incl. HW heating and control, €						
Capacity range	**Heat source**	**System utilisation**				
		120%	**130%**	**140%**	**150%**	**160%**
Existing SFH (14 kW)	Air/solar	10,200	11,500	12,600	13,600	14,400
	Geoth.	8,400	9,200	9,800	10,400	10,900

WP1 Task 1.1 and 1.2

Value Chain

Summary of progress towards objectives

In summary, the main request of the markets and the key points of the multi-local analysis are as follows:

- Possibility to integrate the GAHP system without additional components. Target: plug and play system.
- Installers expect same installation time, maintenance and serviceability and handling as on conventional appliances.
- The necessary heat output was confirmed at 18 kW to meet demand of retrofit installation in residential buildings

WP1 Task 1.1 and 1.2

Value Chain

Summary of progress towards objectives

Since efficiencies of 1.3 to 1.5 are regarded as achievable for gas absorption heat pumps, GAHP technology will therefore be able to directly replace gas boilers in individual dwellings without imposing deep retrofit requests:

- GAHP can work with radiators – opening up the whole retrofit sector.
- Using air as a heat source (rather than solar or ground loops) reduces the costs and complexity of installation in an existing building.
- Significant advantages in terms of CO_2 emissions: GAHP technology could easily achieve the climate protection targets set for 2020 (18%) and 2030 (30%) in terms of the proportion of renewable energies set by Germany.

WP1 Task 1.1 and 1.2

Value Chain

Summary of progress towards objectives

The respective market information were presented and agreed. Additions and comments were received and considered in the respective reports. Open issues have been worked out by the team have been drawn up by the responsible partner again. All data from the partners was initially summarized in a document by the WP Leader. A further revised version was then coordinated after gathering feedback by all parties involved.

WP1 Task 1.1 and 1.2

Value Chain

Significant results:

- A multi-local parametric analysis aimed to identify the specific engineering requirements of GAHP Systems for most relevant European homogenous areas in line with the recommendations of the E2BA platform has been carried out.
- The defined parameters have been useful for the GAHP Appliance development phase (WP2) and the GAHP System development phase (WP3).
- The study identified market potential, product positioning and pricing levels for the GAHP technology applied in residential environment.
- The study has concluded that gas absorption heat pumps offer a range of major advantages over competing systems for the heat supply of existing building stocks.

Future plans

By July 2013 the report will be approved between the work package leader and project coordinator and submitted. The task will than considered to be closed.