

GAS HEAT PUMP (GHP) WORKSHOP (28.03.2014)

Barriers for the development of GHP

Main conclusions from the workshop and proposal for an action plan for a Danish GHP integration campaign

The GHP technology may very well be the next technology that will help to efficiently replace central heating (CH) boilers and that can compete with electric heat pumps (EHP). Today we have a robust and validated technology available for the commercial sector. We are in a situation where we may take the decision to push the technology on the market to help its penetration. This will also facilitate the later introduction of the domestic version (18 kW and below) and bring a new opportunity for gas on the declining heating market.

The 6 main conclusions from the workshop

1) Design and sizing of GHP

Following the early bad experience with wrong sizing, the manufacturers/importers will develop their detailed guidelines (see existing documents from Bosch, etc.) to help installers design the installation correctly. One of the best ways to avoid mistake is to adopt packages

(GHP+tank+boiler+control) created or acknowledged by the manufacturers.

- DGC and the stakeholders could write a very general guideline (= GHP are to be used as base load etc., and installations where ground source Heat Pump (HP) can be envisaged); but manufacturers will develop the detailed and practical guidelines to guarantee optimum efficiency of the GHP.
- We would suggest that during the introduction period installers or installation designers seek “acknowledgement” of installation plans at manufacturers’ to avoid poor press due to wrong installation design or sizing.

2) Efficiency and energy saving evaluation at the design phase

A neutral evaluation of energy savings is often missing to convince the client to buy a GHP. DGC GASPRO SA, or another calculation tool, could be extended to cover GHP in order to calculate the annual efficiency of GHP. The validity of the calculation would also depend on the correctness of the installation design and sizing. A simple model for Robur HP can be made based on available testing data in laboratory (e.g. EON Ruhrgas test data)

and will give information on maximum achievable efficiency. DGC will consider to develop such a model.

3) Noise from GHP

The noise from GHP may pose a problem in urban areas, and if the appliances are not installed on a roof. However, generally, noise is not an issue, but it must be considered carefully for each installation, and information sharing on possible cheap noise reduction solutions can be organised. For the small GHP (18 kW), noise may be a tougher issue, as the heat pump will not be installed on high roofs, but typically outside the house and sometimes rather close to next house.

4) Positive case studies, visibility of GHP

Gas heat pumps are neither known by the public nor by authorities (and sometimes not even by our own industry); therefore we need to increase the visibility of the GHP technology and bring the positive examples and case studies into the light! This means:

- More publications for the non-expert public
- More publications that will reach the commercial sector (hospitals, schools, shops etc.)
- More publications/actions for our branch of industry (installers/designers/energy consultants)
- Presentations at conferences
- Specific workshops
- Etc.

5) Financing

A correct design and sizing of a GHP will lead to a payback time of 5 years and below. Even though this payback time is very acceptable, the users are hesitant as the investment is more significant compared to that of a gas boiler. However, specific examples are known to show, for example, an overall positive balance of 500,000 DKK over the lifetime of a GHP installation, and financing is often available from the gas distribution companies.

Why, then, is the customer still reluctant to make the GHP choice?

This important issue is to be investigated, and leasing models can be envisaged for example, sharing the benefit of the savings between the leasing company and the user.

6) The qualification of installers

In Denmark installers are required to have a certificate for installing appliances using refrigerants, if they are to install GHPs with the Robur technology. This requirement seems to be unnecessary as the refrigerant is in a closed loop in the Robur technology. Other EU countries do not lay down this requirement. DEBRA and the industry will lobby with the authorities to clarify on this point and, hopefully, achieve a modification of the regulation.

Presentations from the workshop are available at:

<http://gasnow.dgc.eu/>

Please download the documents as soon as possible as they will be removed within a few days.

PRACTICAL ACTIONS AND COLLABORATIONS (DGC only - no external dissemination) FOR DISCUSSION

The development of the GHP market will benefit several stakeholders, and therefore those stakeholders must be active in developing the market:

- The gas industry
- The manufacturers
- The authorities
- Etc.

Also most of the issues are not related to Denmark, and the efforts can be shared between actors in the different countries. Therefore, we suggest the following:

NETWORKING

- 1) **Establishment of an EU exchange group**, mainly with the gas industry (MARCOGAZ/GERG members), discussing and sharing information on installation issues of GHP. The cheapest way to organise this is to create a LinkedIn group on gas absorption heat pumps. The group will typically cover questions related to 1, 3, 4, 6 above.
- 2) **The creation of a Danish physical exchange group**. This would be the same group as the workshop that can meet once a year to discuss pro-

gress on the Danish market. The group can also use the LinkedIn group to achieve progress between meetings.

- 3) Publication at <http://gasnow.dgc.eu/>.

PROJECT & ACTIONS

- 1) **DGC**: Preparation of a very general guideline. To be discussed with the manufacturers and with the two networks. **About 1 week's work.**
- 2) **DGC**: Development of a method for the calculation of annual efficiency – similar to BOILSIM. **About 1 week's work.**
- 3) **Noise issues**: Discussion in the network. **No DGC action** apart from dissemination.
- 4) **DGC** gathers positive case studies: Ask EU network & Danish positive experiences (eff. > 135%). **Publications where by whom?** (Who can help?)
- 5) **Financing**. Discussion with HMN?
- 6) **Installers' training**: DEBRA.

Danish Gas Technology Centre
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