Deliverable D4.2

Guidelines for optimal selection of heat pumps

WP4

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Dissemination Level

PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	X
CI	Classified, as referred to in Commission Decision 2001/844/EC	

Publishable summary

The D4.2 "Guidelines for optimal selection" is a confidential document delivered in the context of WP4, Task 4.2: Guidelines for optimal selection of components of heat pump taking care of the performance of new refrigerants at low GWP with respect to traditional refrigerants.

The document presents the different technologies of heat pump currently used and summarizes the results of the selection tool that was implemented considering performance, economic and environmental aspects.

The main objective is the evaluation of the best composition of a heat pump (refrigerant, compressor, heat exchangers, operating mode) depending on the user's temperature and the power needed.

The NPV of the investment is also evaluated in two ways. The first one considers only the costs of installation and of the energy absorbed during the heat pump life cycle, the second one considering as cash flow, the difference between the cost of electricity absorbed by the heat pump and the cost of natural gas used by a standard heat generator (condensing boiler).

The refrigerant charge and the TEWI of the heat pump during the life cycle is calculated.

As a final result, for the most efficient solution, the evaluation of the SCOP for three different climates (Athens, Bruxelles and Helsinki) is estimated in order to give the idea of the performance of the heat pump in different sites of installation.

The work is based on the Tasks 1.3 (climatic data) and 1.4 (building energy demand). The results will be used in the DSS (WP5) for the optimal selection of the GSHP as well as in Task 4.1 for the definition of the data base for the default values for the heat pumps (COP and EER) to be used in the simulation model for sizing the GSHP. The results will be also used for the virtual cases (Task 6.7), as well as WP7 for the LCA. Moreover the material of the present deliverable will be used for the dissemination activity of WP9. Finally, the analysis carried out for the CO_2 cycles lead to the definition of the prototype of Task 4.4.