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IEA HPP Annex 28
«Test procedure and seasonal performance calculation of residential heat pumps with combined space and domestic hot water production»

Participants

Due to misunderstandings concerning the funding of the participation in IEA HPP Annex 28, the UK had to withdraw its participation from the IEA HPP Annex 28 by the end of 2004. Thus, in 2005 only the nine countries AT, CA, CH, DE, FR, JP, NO, SE, US are participating in the Annex 28.

Fourth working meeting in Vienna, Austria

The fourth working meeting of the Annex 28 was held in Vienna, Austria on March 7-8, 2005. Focus of the working meeting was the presentation, discussion and harmonisation of the final results as well as a discussion of comments on the draft final report. On the meeting, decision on the calculation method and the test procedure have been taken, so recommendation to the respective standardisation committees will be given. Moreover, the schedule of the workshop for the presentation of the final results on the 8th heat pump conference in Las Vegas has been decided. In accordance with the Chair of the ExCo S. Hosatte, the deadline for the final report of the IEA HPP Annex 28 has been postponed for six month in order to integrate results of field measurements which are still in progress. Subsequently, the following time schedule has been agreed on among the participants.

20 May 2005	Workshop presentations (e.g. power point) to Operation Agent
30 May 2005	Workshop for the presentation of final results IEA HPP Annex 28 on 8 th Heat Pump Conference in Las Vegas
31 August 2005	Updated country reports to Operating Agent (e.g. including additional evaluation of field measurements)
12 September 2005	Complete draft final report to participants for comments
23 September 2005	Deadline for comments on draft final report to Operating Agent
October 2005	Final report IEA HPP Annex 28 to ExCo

In connection with the meeting in Vienna, a technical tour to a ground-coupled heat pump heated and cooled office building (STRABAC building) in the North of Vienna and the RTA wind tunnel, the largest wind tunnel in Europe took place on March 9, 2005.

Presentation of the final results of IEA HPP Annex 28 on 8th IEA Heat pump conference

Apart from the ongoing evaluation of field measurements, the final results of the IEA HPP Annex 28, i.e the recommendations for the test procedure and the seasonal performance calculation of combined operating heat pump systems as well as an evaluation of existing and proposed standards will be

presented on a workshop in the framework of the 8th International Heat Pump Conference in Las Vegas on May 30, 2005, 8.30 a.m. – 12.30 p.m.

Overview of the final results

Test procedure

The testing shall be carried out as black-box testing, i.e. only values accessible from outside the system shall be measured and used. Thus, the internal system configuration will only be taken into account with regard to the energy input and output. The testing shall be based on existing standards, since single heating and domestic hot water operation are already covered by testing standards. Thus, the existing standards are extended to cover the combined operation by performing the DHW tapping profile during the heating operation. Due to the black-box testing an allocation of the electrical energy input is hardly possible. Therefore, the results are evaluated as an own heat pump characteristic for the combined operation, so the total heat pump testing will deliver three characteristics, the single space heating, the single DHW and the combined characteristic.

Calculation method

Calculation is carried out based on a bin method, which is already established in standardisation. To cover the combined operation, the existing standards have been extended to three operation modes, the single space heating and DHW operation and the combined heating and domestic hot water mode. To evaluate the fraction of the respective operation modes, the running time of the heat pump is evaluated by the respective energy requirement and the output capacity of the heat pump. The overall seasonal performance is evaluated by a summation of all bins and by a weighting of the different operation modes with the respective amount of energy delivered in the operation mode.

Evaluation of existing and proposed standards

Existing and proposed standards have been evaluated as basis for the extension to combined testing. Results of this evaluation are recommendations to the standardisation committees to be taken into account in the course of the next revision.

Annex related developments in standardisation, implementation of results

prEN 14335 send out for preparation of public enquiry

The European calculation standard prEN 14335 has been sent out to CEN management centre for the preparation of the public enquiry. After a certain time for preparatory work, e.g. editorial approval of format and translation, the standard will be send out to public enquiry. The calculation method of IEA HPP Annex 28 has been implemented in the heat pump part of the standard.

CEN/TC 113/WG 10

The Working Group 10 of the Technical Committee 113 of the European standardisation committee CEN, which deals with test procedures of heat pumps and should cover the work item of a revision of the EN 255-3 on testing of heat pumps for domestic hot water production, has been postponed due to the lack of a Convenor. Meanwhile, the head of the Swiss national heat pump test centre WPZ Töss has been nominated as Convenor. The working group will soon start working.

The CEN/TC 113/WG 10 will be the working group to implement the results on the test procedure for domestic hot water operation worked out by IEA HPP Annex 28 on the level of European standardisation.

National standardisation Germany

Germany has introduced the bin calculation approach of the IEA HPP Annex 28 in its revised national standards for the calculation of heat pump systems. The calculation in the German standard is carried out on a monthly basis. However, since the space heating and the domestic hot water operation is treated in different standards, the simultaneous combined operation is not included in the calculation up to now.