

Press Release

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Electric Heat Pump Passes Long-Time Field Tests

Fraunhofer ISE Presents Final Reports and Commences New Long-Time Tests

Researchers at the Fraunhofer Institute for Solar Energy Systems ISE in Freiburg present the results of two field tests demonstrating the use of electric heat pumps for heat supply of single family houses. Conclusions show that systems which are carefully planned evidence economical and ecological advantages. Ground source heat pumps were found to be especially efficient. In a recently started project involving 100 heating systems, a new idea was to make the acquired measurement results available to the public. At <http://wp-monitor.ise.fraunhofer.de> the measurement data from selected houses is presented visually.

Fraunhofer Institute for Solar Energy Systems ISE

Heidenhofstr. 2
79110 Freiburg
Germany
Press and Public Relations
Karin Schneider
Phone +49 761 4588-5150
Fax +49 761 4588-9342
info@ise.fraunhofer.de

www.ise.fraunhofer.de

Text:
Solar Consulting GmbH, Freiburg
Phone +49 761 380968-0
info@solar-consulting.de

Results of the Heat Pump Field Tests

“Electric heat pump systems are gaining an increasingly larger market share for space heating and hot water heating. In the meanwhile, about 380 000 systems are installed in Germany,” says Marek Miara, leader of team “Heat Pumps” at Fraunhofer ISE. “As an independent research institute, we determine the efficiency of heat pump systems and evaluate the performance results through a comprehensive system analysis.” In the project “WP-Effizienz” (Heat Pump Efficiency) the researchers investigated the use of heat pumps in newly built family homes. The final report has just been compiled. In the project “WP in Gebäudebestand” (Heat Pumps in the Existing Building Stock), the systems were primarily installed in non-renovated houses.

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From the 200 systems investigated, results show that very good efficiency can be reached if careful planning and installation is carried out. The best systems achieved a seasonal performance factor (SPF) of 4 and higher. SPF 4 indicates that four units of heat are produced for every unit of electricity consumed. The best yield is achieved for ground source heat pumps in combination with heating systems having a low supply temperature, e.g. underfloor radiant heating. The final reports include tips for useful service applications and efficient operation and can be found at <http://wp-effizienz.ise.fraunhofer.de> and <http://www.wp-im-gebaeudebestand.de>.

In order to continually have data on the newest generation of heat pumps, Fraunhofer ISE is investigating around 100 systems throughout Germany in the recently initiated project "WP Monitor." Forty of these systems are equipped with new heat pumps. The data is measured every minute and available in a high temporal resolution. Twelve manufacturers from Germany and Austria as well as the energy supplier EnBW Energie Baden-Württemberg are participating in the present project.

Real Operating Data Available Online

In order to make the measurement data and project results available to the public, the researchers at Fraunhofer ISE took an unusual step. They found eight home owners who agreed to anonymously publish their measured data in the internet. Now experts in the field as well as interested consumers can view this real operating data located at <http://wp-monitor.ise.fraunhofer.de> under the category "Evaluation and Measurement Data." Many graphs and detailed explanations about the heat pump systems are shown here.

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79110 Freiburg
Germany
Press and Public Relations
Karin Schneider
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Fax +49 761 4588-9342
info@ise.fraunhofer.de

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Information material:

Fraunhofer ISE, Press and Public Relations
Phone +49 761 4588-5150
Fax +49 761 4588-9342
info@ise.fraunhofer.de

Text of the PR and photos can be downloaded from our web page: www.ise.fraunhofer.de

Contact Person for further information:

Marek Miara, Fraunhofer ISE
Phone +49 761 4588-5529
Fax +49 761 4588-9000
marek.miara@ise.fraunhofer.de

Fraunhofer Institute for Solar Energy Systems ISE

Heidenhofstr. 2
79110 Freiburg
Germany
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Karin Schneider
Phone +49 761 4588-5150
Fax +49 761 4588-9342
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Service in web: For some of the heat pump systems selected from the tests, Fraunhofer ISE provides background information and measurement data from real-time operation on the Internet: <http://wp-monitor.ise.fraunhofer.de>
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