

Press Release

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Fraunhofer ISE Develops Software Tool for Accelerated Heat Pump Installation

Researchers at Fraunhofer ISE have developed a prototype of a manufacturer-neutral app for heating, ventilation, air conditioning and plumbing contractors that enables the virtual planning of heating systems. Unlike software tools already available, the “Heat Pump PlanAR” app combines various steps of the planning and installation process into a single application. The software prototype is the result of the “WESPE” collaborative project led by the Zentralverband Sanitär Heizung Klima (Central Association for Plumbing, Heating, and Air Conditioning) ZVSHK and was designed in close collaboration with trades businesses. The application is now set to be further developed in collaboration with interested software companies and brought to market.

“Accelerating the installation of heat pumps is an important goal, but it is also an ongoing process that must be driven forward by regularly scrutinizing workflows and analyzing errors and difficulties,” said Annette Uhl, a research associate at Fraunhofer ISE. As part of the “WESPE” project, the research team first surveyed trades businesses throughout Germany about their requirements. A majority of the businesses wanted a single, integrated tool for the entire installation process to avoid the time-consuming transfer of data between different applications—such as for inventory tracking, technical design, or quote preparation.

Heat Pump Planning in Augmented Reality

“Our goal was therefore to create a cross-workflow tool to speed up the installation process and reduce the workload for these businesses,” says Annette Uhl. With the help of the newly developed “Heat Pump PlanAR” app, technicians can simulate various system, piping, and installation options for a heat pump during their very first customer visit. Contractors can create quotes more easily and automatically compare the costs of different system configurations. In addition, the app facilitates communication between employees at the office and on the job site.

Once the app, installed on a tablet, has captured the boiler room via a 3D scan, technicians can select a suitable system layout from the database. The system then automatically places the main components in the scanned room and calculates a cost-optimized piping layout. App users can view the configuration in the room using augmented reality and manually adjust it as needed; subsequent changes can also be made from their desks using a virtual reality view. Finally, both a bill of materials for the required components and details on the estimated installation time can be exported.

The newly developed app—or individual components of it—is now available to software providers, who can integrate it into their solutions, further develop it, and commercialize it. Individual functions, including component positioning optimization and automatic routing for piping, are available as licensable web services.

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WESPE – “Heat Pump Installation: Faster, More Productive, and More Efficient”

With a 40% increase in sales compared to the same period of the previous year, heat pumps are currently among the most in-demand types of heating systems. “Anyone who runs a heating, ventilation and air conditioning business knows: We’re not short on work. What’s in short supply, above all, is our skilled workers’ time,” says Frank Senger, Vice President of the Zentralverband Sanitär Heizung Klima (ZVSHK). The “Heat Pump PlanAR” app is now designed to help trades businesses and installers significantly speed up the installation of heat pumps in light of the growing shortage of skilled workers and increased cost pressures. In addition to the app developed by Fraunhofer ISE, the results achieved by the project partners include two online tools: the so-called “WESPE-Check” and a knowledge platform—available starting October 5, 2026—that enable heating, ventilation and air conditioning (HVAC) companies to conduct a free self-assessment of their own processes and help them identify opportunities for optimization.

At the “WESPE” closing event on September 17 in Berlin, the ZVSHK, together with the project partners, presented the results and discussed their practical application with representatives from the skilled trades, academia, and the industry.

The three-year “WESPE” research project was funded by the Federal Ministry for Economic Affairs and Energy (BMWE) and coordinated by the ZVSHK. Participants in the project included the Fraunhofer Institute for Building Physics IBP, the Fraunhofer Institute for Solar Energy Systems ISE, Hans Schramm GmbH, the Berlin HVAC Guild, and 15 skilled trade businesses.

Fact box

Further Information on the Research Project: <https://www.ise.fraunhofer.de/en/research-projects/wespe-shk.html>

“WESPE-Check” and Knowledge platform: www.shk-wespe.de



Fig. 1: The “Heat Pump PlanAR” app is being tested in the boiler room. The components of the heating system diagram are projected onto the background using augmented reality. © Fraunhofer ISE/ modified with AI support



Fig. 2: The layout of the components in the boiler room can be checked in the virtual reality view of the “Heat Pump PlanAR” app. © Fraunhofer ISE

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