



Fraunhofer

ISE

Presseinformation

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Energy Efficient Airport Buildings

Fraunhofer ISE Heads Project to Reduce Building Energy Consumption for Airports

The Fraunhofer Institute for Solar Energy Systems ISE is working with eight European partners on a project to optimize the energy performance of building services at airports. Using clever ICT solutions, the energy consumption, and the CO₂ emissions, of the functional building services and technical systems shall be reduced by 20 percent. To achieve this aim, a new energy management software is to be developed, then subsequently tested and validated at the Italian airports of Milano-Malpensa and Roma-Fiumicino. Also, similar large buildings will profit from the results of this project in the future.

“For heating, air-conditioning, ventilation and lighting needs, big airports consume as much energy as a small town. The typical annual electricity consumption is several hundred gigawatt-hours (GWh) in addition to a high heat energy demand. The large energy savings potential here can be unlocked by using intelligent solutions,” says Nicolas Réhault, project coordinator at Fraunhofer ISE. The typical deficiencies in building services operations found in airports include, for example, heating and cooling systems that operate at the same time, pumps that run when they are not required, or insufficient controls and regulation. In most cases, these faults are not detected by the maintenance personnel, since the informational data that is found in the existing building control system is not used to its full potential. The goal of the project partners from research and industry is to identify the faults and weak points in the system and to eliminate them through an optimized building services management using intelligent software.

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The first phase of the project, which covered a year of intensive work, is now finished. The project partners carried out an energy audit and a technical characterization of the Milano-Malpensa and Roma-Fiumicino airports. The resulting data showed that the airports require new methods and tools both to support their demanding maintenance requirements and to help systematically and efficiently reduce the very high energy consumption through continual monitoring and optimization of their complex energy systems. This need for ICT solutions was also confirmed by an online survey for European airports, carried out in spring 2012 by the CASCADE consortium with the support of the Airport Council International Europe. The analysis of the online survey can be downloaded from the website www.cascade-eu.org.

In spring 2013, development work on a new type of energy management software based on ISO 50001 will begin. The software will specifically address the needs of the airports identified during the first preparatory phase of the project. Among other things, this system includes an interface to an automated fault detection and diagnostic software (FDD) for the heating, ventilation and air-conditioning services. The software will be implemented in selected areas and systems throughout the airports. Tests and validations will be carried out. The system shall support the energy management and maintenance at the airports and identify weak points in the building energy performance, ultimately unlocking the energy savings potential and simplifying the energy management. The initial investment costs for the optimization measures are expected to be fully compensated within three years by the resulting lower energy costs.

The European Union supports the international research project called "CASCADE – ICT for Energy Efficient Airports" within the framework of the 7th research program. In addition to Fraunhofer ISE, project partners are Projects in Solar Energy PSE AG (Germany), Enerit Limited (Ireland), National University of Ireland, Galway (Ireland), Aeroporti di Roma Spa (Italy),

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D'Appolonia S.p.A. (Italy), Societa per azioni Esercizi Aeroportuali SEA Spa, (Italy), Sensus Mi Italia S.r.L. (Italy), Institut Mihajlo Pupin (Serbia). After three years work, the project will be completed in 2014.

<http://www.cascade-eu.org/>

Informational Material

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

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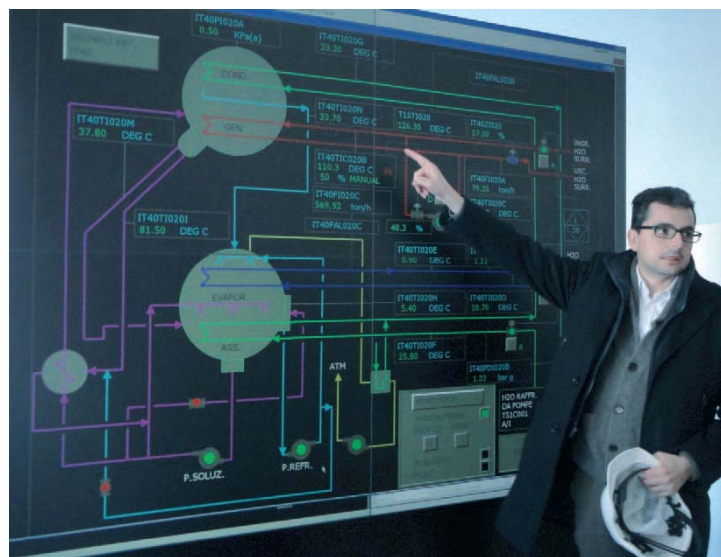
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An employee of the Milano-Malpensa airport explains the complex building energy system at the airport. Within a European research project, Fraunhofer ISE and eight partners are developing an energy management software to optimize the energy consumption of such complex buildings. ©Fraunhofer ISE

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