CASCADE

ICT for energy-efficient airports

Airports consume as much energy as small cities. CASCADE project will help to reduce their energy needs by developing an ISO 50001 Energy Management Action System, supported by advanced Fault Detection and Diagnosis (FDD).

Overview

Airports are responsible for a considerable amount of energy consumption and CO_2 emissions: the typical electricity consumption of a major airport lies between 100-300 GWh/year which amounts to the consumption of 30,000 to 100,000 households. Airport managers have to cope with complex buildings and advanced ICT and energy systems.

At the same time, they are under pressure to save energy and reduce their CO_2 emissions. New ICT solutions capable of integrating with various existing systems are needed to improve the energy monitoring of airport buildings.

A significant part of the energy consumption results from poor performance of energy systems like chillers, air handling units and lightings. Currently operating Building Automation and Management Systems are often not designed to perform a detailed energy monitoring by detecting faults at an early stage, leading to energy losses. The CASCADE project develops a new ISO 50001 Energy Management System supported by FDD that can integrate with existing systems for the reduction of energy consumption and CO_2 emissions of energy systems at airports.

Malpensa Airport

Objectives

The objectives of the CASCADE project are:

· Engage the airports, determine their needs, collect data on their operation and equipment to characterise their energy operation and to identify savings potentials
· Develop and integrate ICT technologies with existing energy systems
· Apply FDD algorithms coupled to an ISO 50001 Energy Management System that links actors and actions
· Reach 20% energy savings on targeted systems and a three years ROI
· Develop, implement and validate the solution in two big airports: Roma Fiumicino and Milano Malpensa

Expected deliverables

The main deliverable of the CASCADE project is an ISO 50001-based Energy Action Management System supported by FDD algorithms. This tool will integrate existing ICT solutions as well as new features and will be tested and validated at both pilot airports.

A targeted review of airport energy operation at both macro and pilot levels will be delivered in the first year and will set the baseline for the implementation of the CASCADE solution. Methodology and replication plans will be delivered to achieve a high impact and leverage on the support from Airport Council International Europe which provides a direct exploitation channel to over 400 European airports.

PARTNERS

Coordinator: Fraunhofer ISE, Germany
Germany: PSE AG.
Ireland: Enerit Limited, National University of Ireland, Galway
Italy: Aeroporti di Roma Spa, D'Appolonia S.p.A, SEA, Sensus Mi Italia S.r.L
Serbia: Institut Mihajlo Pupin

KEY FACTS

Start date: October 2011
Duration: 36 months
Total budget: €3.8m

· Up to 20% energy savings can be achieved at airports through innovative ICT solution
· CASCADE technology is demonstrated at two major airports: Roma Fiumicino and Milano Malpensa
· Results can be replicated to other airports or buildings

www.cascade-eu.org