



ENERGY IN TIME

**Simulation based control
for Energy Efficiency
building operation
and maintenance**

PROJECT INFORMATION

Project reference number

608981

Project acronym

Energy IN TIME

Project title

Simulation based control for Energy Efficiency building operation and maintenance

Starting date

1 October 2013

Duration

48 Months

Call identifier

FP7-2013-NMP-ENV-EeB

Funding scheme

Collaborative Project

Description

Energy IN TIME is a **Large-scale integrating project** within the 7th Framework Programme **FP7-NMP**, Sub-programme **EeB**.

NMP.2013-4: Integrated control systems and methodologies to monitor and improve building energy performance



With the financial support of



PROJECT SUMMARY

The operational stage of a building represents 80% of its life-cycle cost, of which 50% is due to energy use. Energy and cost saving strategies addressing this building operation phase will therefore have a major impact on the building life cycle cost.

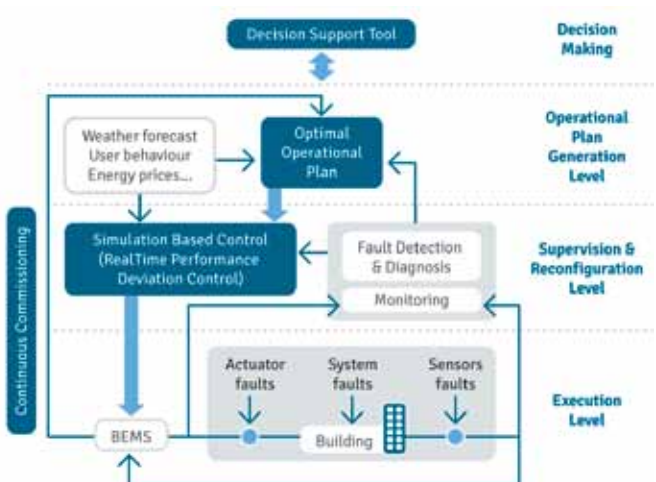
Energy IN TIME will develop a Smart Energy Simulation Based Control method which will reduce the energy consumption in the operational stage of existing non-residential buildings. New techniques will be developed based on the prediction of indoor comfort conditions and user behaviour performance to improve the lifetime and efficiency of energy equipment and installations through continuous commissioning and predictive maintenance, while centralizing the remote control of different buildings in a single automated process.

The use of these control methods to operate existing building energy systems will result in a **20% saving over previous energy consumption**.

TECHNIQUES USED

Energy IN TIME will combine several techniques to develop the Smart Energy Simulation-Based Centralized Control method:

- Advanced Simulation models
- Simulation-Based Control
- Continuous Commissioning
- Medium-long term Decision Support Tool



The **Energy IN TIME** approach



TECHNICAL WORK PLAN

- Definition of the Requirements and System Architecture
- Development of a Simulation Reference Model
- Development of a Whole building Intelligent Control System
- Development of a Fault Diagnosis and Continuous Commissioning system
- Design of an Energy Decision Support Tool
- System Integration and Pilot-Scale Validation
- System Implementation and Demonstration at Pilot Sites

INNOVATIVE ASPECTS

- Predictive simulation techniques for the design and updating of operational plans
- Adaptive algorithms for real-time control of energy system performance deviations
- Integration of the building monitoring and measurement system
- Real-time adjustment of the operational plan execution
- Automatic generation of optimal operational plans for the HVAC systems
- Remote and automatic operation of the HVAC systems



PILOT SITES

Energy IN TIME will be tested and validated at four non-residential demo sites, with different uses, properties, ages, geographical locations and climatic conditions.

Airport - FARO (PORTUGAL)

- Area: 41.000 m²; Built: 1989 (refurbished in 2001)
- Open spaces, large flow of people at certain times

Offices and Test Labs - BUCAREST (ROMANIA)

- Area: 17.384 m²; Built: 1982
- Closed and distributed spaces, constant flow of people, scheduled occupancy

Commercial and Office Building - HELSINKI (FINLAND)

- Area: 38.190 m²; Built: 1999
- Open and distributed spaces, varied flow of people, scheduled occupancy

Hotel - LEVI-LAPLAND (FINLAND)

- Area: 42.500 m²; Built: 2010
- 3 distinct spaces, seasonal and high variable occupation.

PROJECT PARTNERS



CONTACT INFORMATION

info@energyintime.eu

<http://www.energyintime.eu/>