

SmartCoDe

Smart Control of Demand for Consumption and Supply to enable balanced, energy-positive buildings and neighbourhoods

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SmartCoDe Consortium / 8 partners

Infineon Technologies Austria AG (IC Development, Austria) Vienna University of Technology (System Level IC Design, Austria) ennovatis GmbH (energy management, Germany) TridonicAtco GmbH & Co KG (EuP, Lighting, Austria) Ardaco, a.s. (Transmitting Security, Slovakia) Quiet Revolution Ltd. (Local Energy Generation / Forecasting, UK) **University Novi Sad** (Software Development, Serbia) edacentrum GmbH (Dissemination, Web-Portal,

Coordination, Germany)





TRIDONIC.ATCO











SmartCoDe: Objectives

- Raise energy awareness, enable the end user to minimize energy consumption
- Reduce energy consumption in small buildings via intelligent and secure Energy Management
- Reduce peaks in end-user energy consumption / supply curve
- Enable an increasing share of renewable energy sources
- Enable user-oriented trading facilities
- Developing an inexpensive hardware/software solution to implement in existing energy consuming components with the ability to communicate and remotely control



Part 1, the chip: monitoring, reporting, executing

High integrated solution in a single package (low-cost SiP):

- High voltage / low voltage
- analogue / Mixed-Signal
- Open interfaces



SiP(System in Package) tasks:

- energy metering & reporting
- energy time shifting
 energy reduction (e.g. dimming)
- energy switching
- future: integration of sensors / sensor interfaces



Part 2, communication

Communication:

- wireless communication of all components
- Communication between private and local grid
- reduced / optimized ZigBee protocol
- ZigBee adaptations will be open to public community

Highest Grade Security:

 integrated SmartCard technology (e.g. SIM cards in cellular phones)





Part 3, Management of Demand and Supply

Energy Management

- integration of local consumers and local suppliers into management strategy
- integration of energy forecasting (local) based on
 - > sophisticated models that understand the physics
 - > recent historical measurements
 - > real-time measurements
- management unit initiates actions in chip-driven appliances
 - > on the basis of the profile of the appliance and
 - > on the basis of the analysis of overall received data
- display of management data, energy data analysis, forecasting data etc. to end user
- future:
 - > interface to global energy provider
 - > energy consumption driven by the global availability of energy



 ≤ 10

 ≤ 50

 ≤ 100

 ≤ 150

Demonstrator building



heat consumption of 24,41 kWh/m2/a electricity consumption of 10.7 kWh/m2/a

which is according to Austrian standard way in the category of a "Niedrigenergiehaus" standard.

Question

in kWh/m²BGFa^(a) how much more can we save Passivhaus Ä++ ≤ 15–25 Niedrigstenergiehaus A+ Niedrigenergiehaus B Zielwert nach Bauvorschrift alte, unsanierte Gebäude

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Demonstrator schematic

Local Energy Resource Cluster



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Demonstrator of FIEMSER project



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Demonstrator installed and under construction





Demonstrator installed and under construction





METHODOLOGY FOR EFFICIENCY MEASUREMENT Will be adapted from a method developed in and based on:

IPMVP (International Performance Measurement & Verification Protocol) of U.S. Department of Energy

The IPMVP is being widely adopted by national and regional government agencies and by industry and trade organizations to help increase investment in energy efficiency and achieve environmental and health benefits.

4 different options are given to calculate the energy savings, depending of the saving objective and preconditions The IPMVP is the basis of energy savings determination in energy performance contracting and chosen by the EU as methodology for all 3e-Houses consortia.

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About 3e-Houses







Focusses on energy efficiency for social housing in Europe

<u>Objectives:</u> savings up to 20% with providing of measurement data(webportal, displays, i-phone) and active energy management components, user involvement programme

3 project consortia in other european counties





About 3e-Houses







Pilot installations in Spain and Germany, replicators in UK and Bulgaria

