Abstract

- EcoGrid overview
  - Partners
  - Real Time Market
  - Participants
  - Key Functions

- What can the industry provide to enable DSM in buildings
  - Decentralized Energy Management System DEMS®
  - Home Automation Synco™ living
  - Building Automation System DESIGO
EcoGrid EU, Energy-Project on the Danish island Bornholm

EcoGrid EU Partners

DENMARK
ENERGINET.DK
ÖSTKRAFT
energy for a greener society
DTU
IBM
SIEMENS

NORWAY
SINTEF

ESTONIA
TALLINN UNIVERSITY OF TECHNOLOGY

NETHERLANDS
ECN
TNO
innovation for life

GERMANY
SIEMENS AG*

BELGIEN
Selia
eandis

AUSTRIA
AIT

SPAIN
technalia

SWITZERLAND
IBM
SIEMENS ZRL* CH*

* Third party

EcoGrid.eu
www.eu-ecogrid.net
EcoGrid EU
in Brief

- EU funded Energy project (total budget: 21 million €)
- Demonstration > 50% of budget
- A large scale demonstration of a real-time marketplace for distributed energy resources (DER)
- ICT systems and innovative market solution enable small consumers to offer TSOs additional and more efficient balancing services
- A demonstration of a real power system with more than 50 % renewable energy
- Preparation for a fast-track towards European real-time market operation of renewable energy sources and demand response
- Project timeline March 2011 to March 2015
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Why a Real-time Market?

- An efficient way to meet the future challenge of balancing
  - High(er) demand of flexible consumption/production
  - High(er) volatility
  - High(er) balancing cost

- An efficient instrument to wide spread adoption of small-scale end-users/prosumers in the power market(s)

- Increasing competition on the power market(s)
  - Small scale end-users can attain economic benefits
  - TSOs get access to alternative balancing resources
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The Scope of a Real-time Market

The EcoGrid real-time market will be an integrated part of the current power markets and supports the need of direct control options on a very short time scale.
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Different Types of Participants in the Demonstration

Type I
Statistic Control Group
- 200 households with smart meters
- No access to specific information or “smart” equipment

Type II
Manual Control
- 400-500 households with smart meters
- Receiving simple market price information
- Must move their energy consumption by themselves

Type III
Automatic Control
- 700 automated households with IBM Green Wave Reality equipment and smart meters
- All houses have heat pumps or electric heating - responding autonomously to price signals

Type IV
Automatic Control
- 500 automated households with Siemens equipment and smart meters
- All houses have heat pumps, or electric heating – all responding to aggregator control

Type V
Smart Businesses
- Up to 100 commercial with smart meters
- Include also small business and public customers
- Connected smart appliances responsive to control signals
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Key Functions and Responsibilities
Aggregated Demand Side Management with DEMS®, DESIGO and Synco™ living

EcoGrid EU Real-time Market (5 min. price signal)

DEMS® Dezentralized Energy Management System
- Modeling
- Forecasting
- Scheduling
- Real-time Optimization

DESGO Building automation systems for commercial buildings

Synco™ living Home automation system for residential buildings

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EcoGrid EU residential solution
Synco living Home Automation

- Internet
- Synco Living Webserver
- Central Apartment Unit
- Room Units (each room/zone)
- Meteo Sensor
- Heating Controller
- DHW-Boiler
- Electric Heating
Synco living
Smart User Interface

Initial setup
User chooses the daily temperature profile

Use
Adjustments are made via wireless room units – if user feels cold, he/she simply sets thermostat to e.g. +1K.

Webinterface
Most settings are reconfigurable via web
EcoGrid EU commercial buildings
DESIKO Building Automation System

Commercial building

Building management system (BMS)

BMS

Building automation systems (BAS)

BACnet IP

HVAC controller
Heat controller
Cool ctrl
HP ctrl
EV ctrl
LG ctrl
ES ctrl

Field devices (Primary Plants)

Air Handling Unit
Thermal storage heat
Thermal storage cold
Heat pump
E-Vehicle
Local generation
Electrical storage

Siemens EcoGrid commercial solution

Embedded PDL (DR Logic)
SEA Grid gateway
DEMS (Aggregator system)

EcoGrid market

Siemens

EcoGrid commercial solution

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EU
EcoGrid EU commercial solution example
DESIGO Building Automation System

Building automation
DESIGO PX\textsubscript{Modular} controls comfort process
(here: air handling unit)

Building Management
Facility Manager adjusts via DESIGO Insight the influence
parameters of DESIGO PX\textsubscript{PDL} via Building automation network.
(priority, time of use, operating mode,..)

Building automation demand limiter (PDL)
Sends automatically prioritized control signals to the building
processes according demand signals from DEMS/Grid (via
internet).
Reference

- This presentation includes an abstract of the official EcoGrid EU material available in the Documentation and Download section on

EcoGrid EU website: www.eu-ecogrid.net
Thank you for your Attention

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Be sure to read our half-way report!
Get it at www.eu-ecogrid.net!