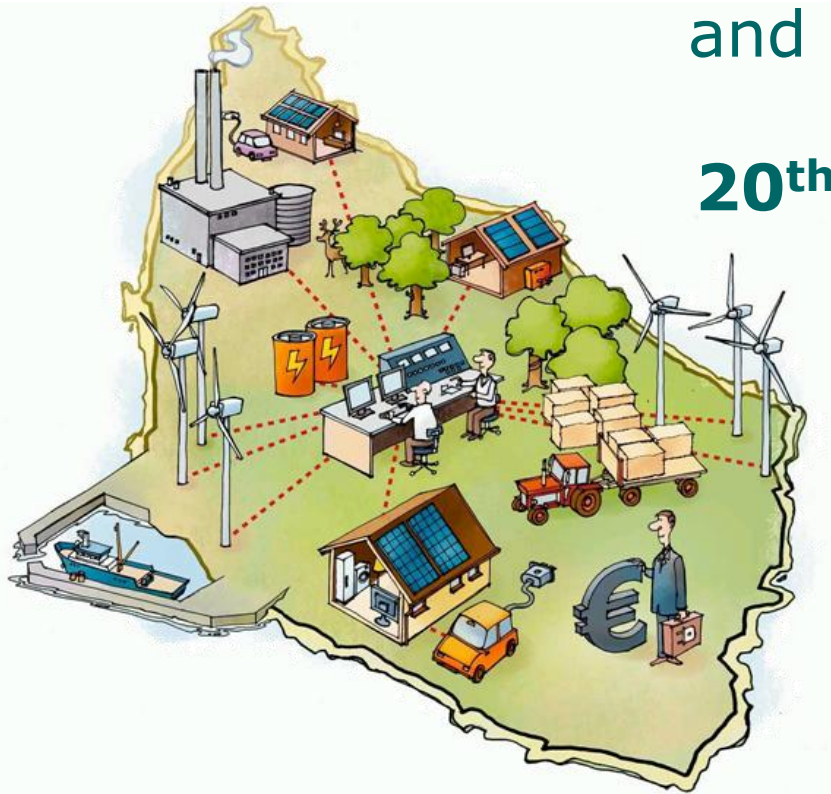


EcoGrid EU

Workshop on DSM Potentials, Implementations and Experiences

20th May 2014

Presentation at: Graz, Austria
Presentation by: Werner Ziel



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

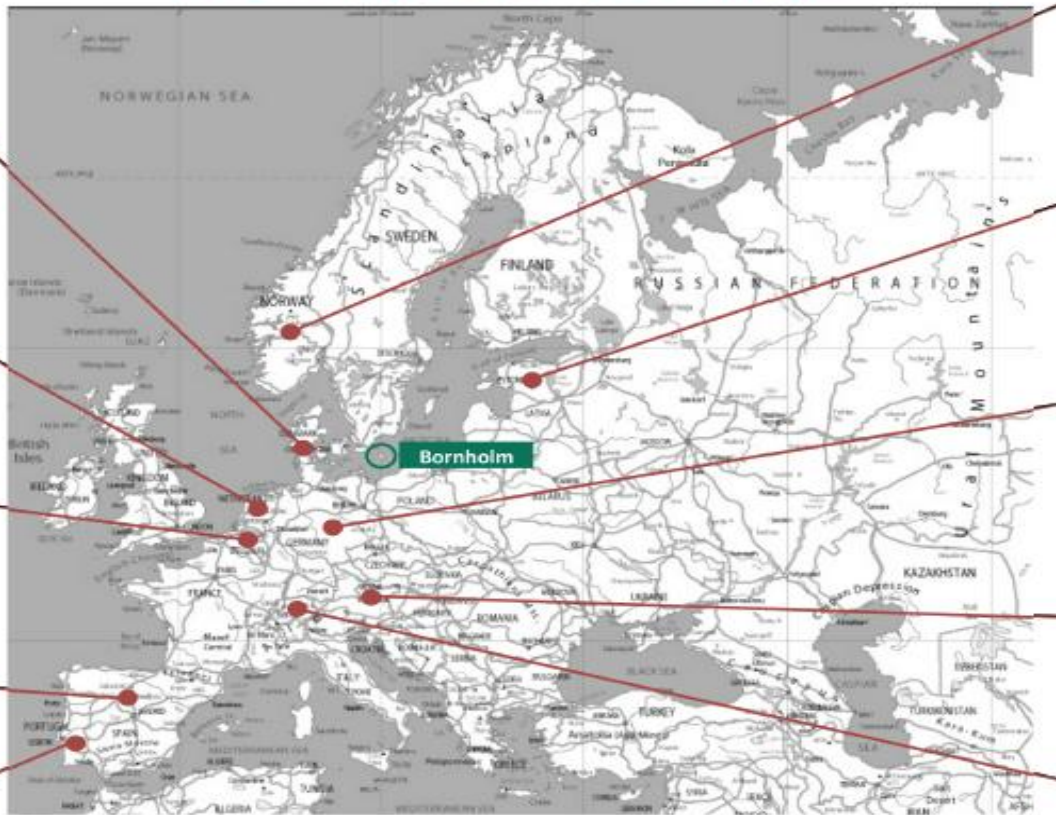
DENMARK
ENERGINET/DK
OSTKRAFT
 energi til gode oplevelser
DTU **IBM**
SIEMENS
 Landis
 Gyr
 Encourage energy better

NETHERLANDS
ECN
TNO innovation for life

BELGIEN
elia
eandis

SPAIN
tecnalia Inspiring Business

PORTUGAL
edp



NORWAY
SINTEF

ESTONIA
 TALLINN UNIVERSITY OF TECHNOLOGY

GERMANY
SIEMENS AG*

AUSTRIA
AIT

SWITZERLAND
IBM Zrl*
SIEMENS CH*

* Third party



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?

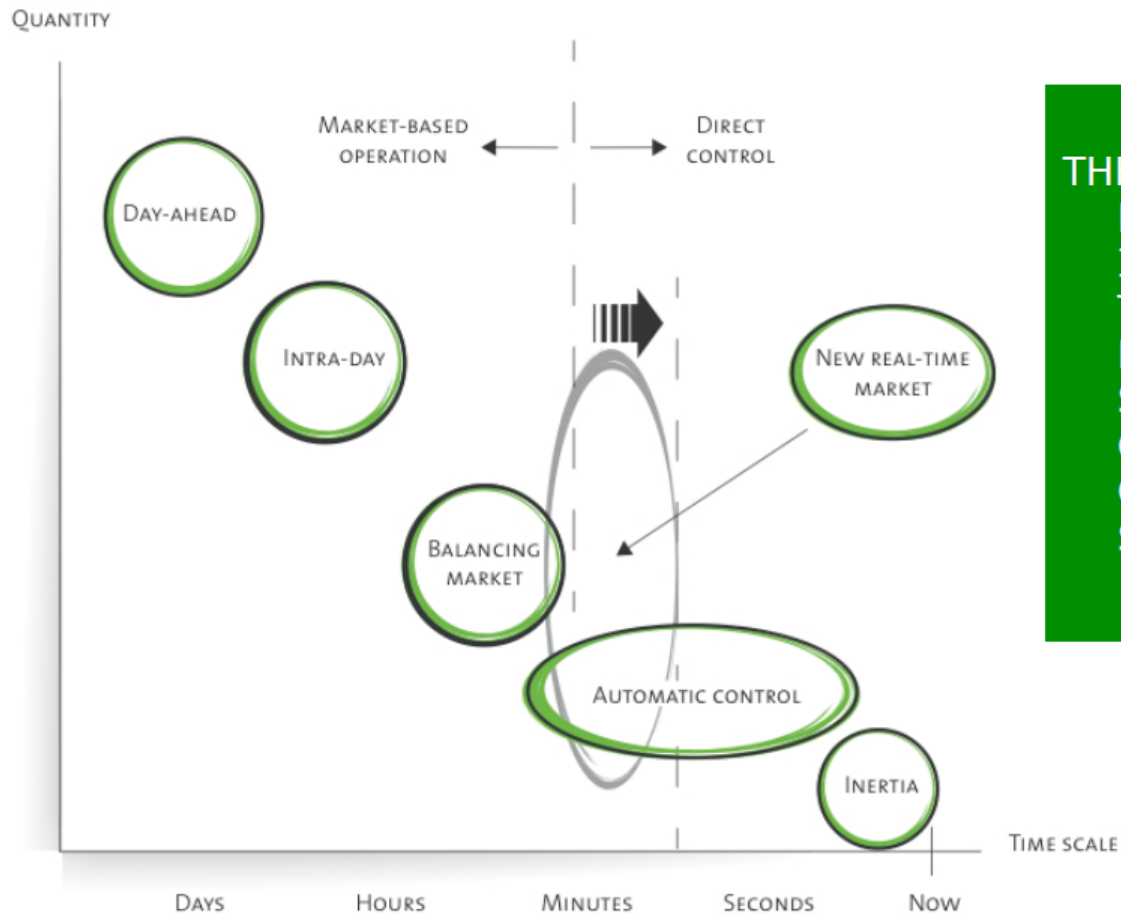
- An efficient way to meet the future challenge of balancing
 - High(er) demand of flexible consumption/production
 - High(er) volatility
 - High(er) balancing cost
- An efficient instrument to wide spread adoption of small-scale end-users/prosumers in the power market(s)
- Increasing competition on the power market(s)
 - Small scale end-users can attain economic benefits
 - TSOs get access to alternative balancing resources

DESIGN OF AN ECOGRID
PROTOTYPE REAL-TIME
MARKET PLACE IS
A REALISTIC APPROACH
BECAUSE IT IS 'JUST'
WIDENING THE SCOPE OF
THE CURRENT POWER
MARKET SYSTEMS



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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



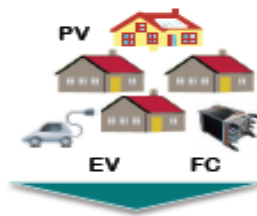
Type I
Statistic
Control Group

- 200 households with smart meters
- No access to specific information or "smart" equipment



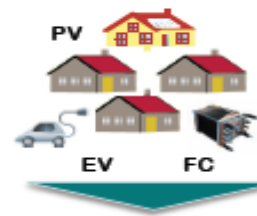
Type II
Manual Control

- 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

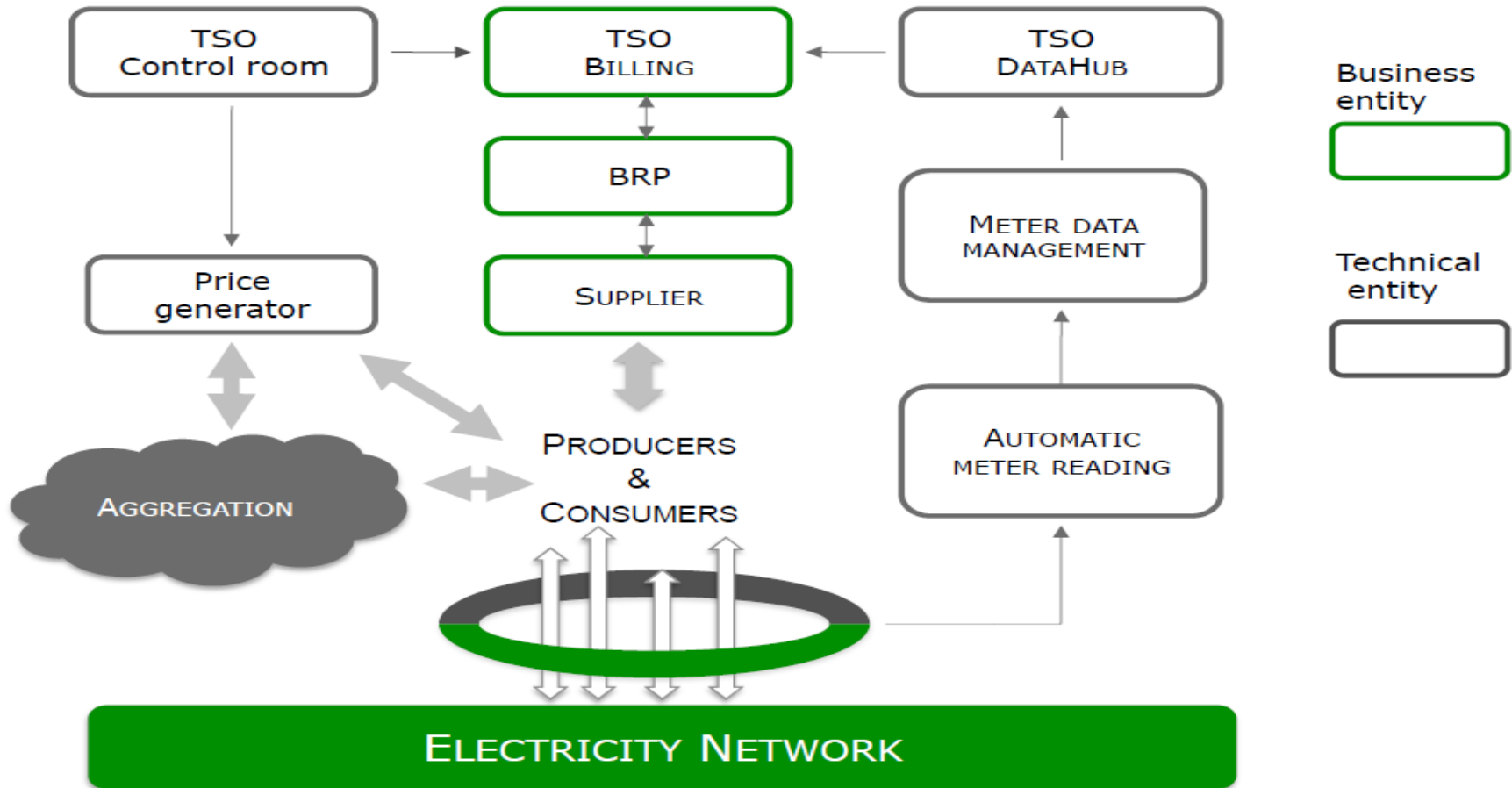


Type V
Smart
Businesses

- 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

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Real-time Market
(5 min. price signal)

DEMS®
Dezentralized Energy Management System

- Modeling
- Forecasting
- Scheduling
- Real-time Optimization



Effectivity €

Current



Optimized



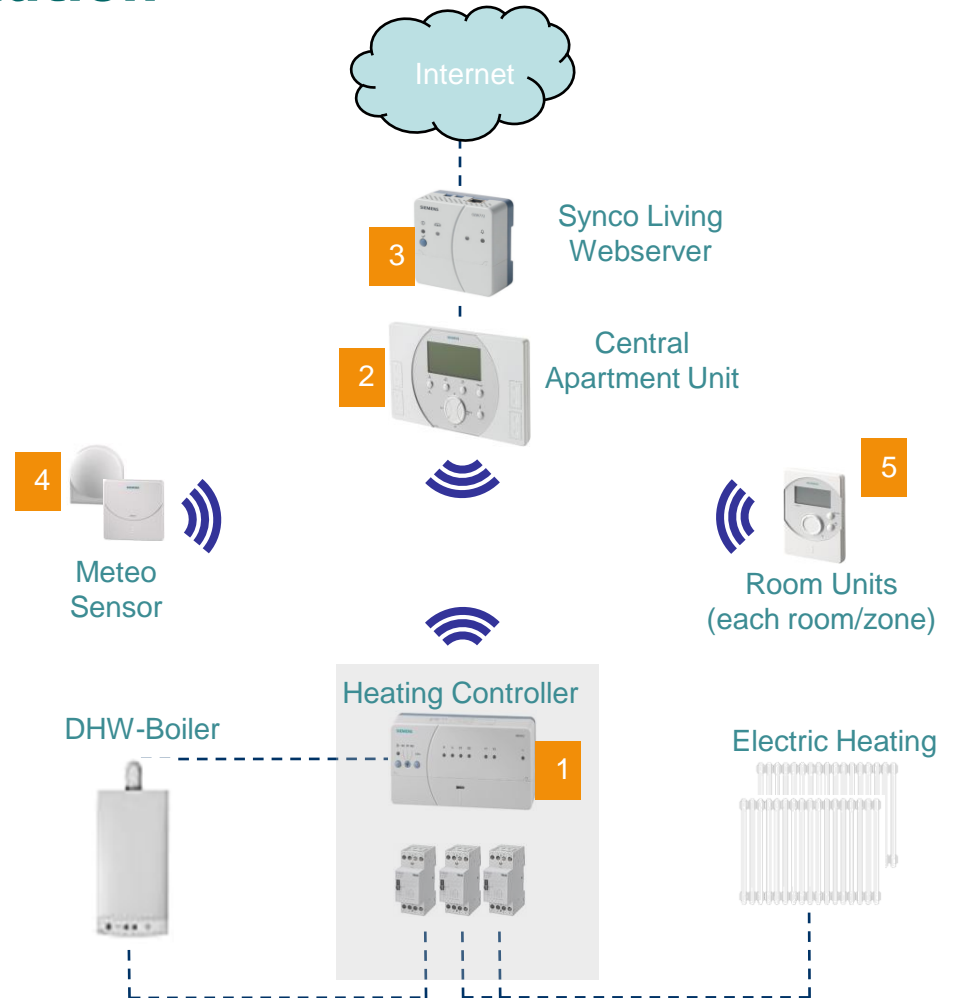
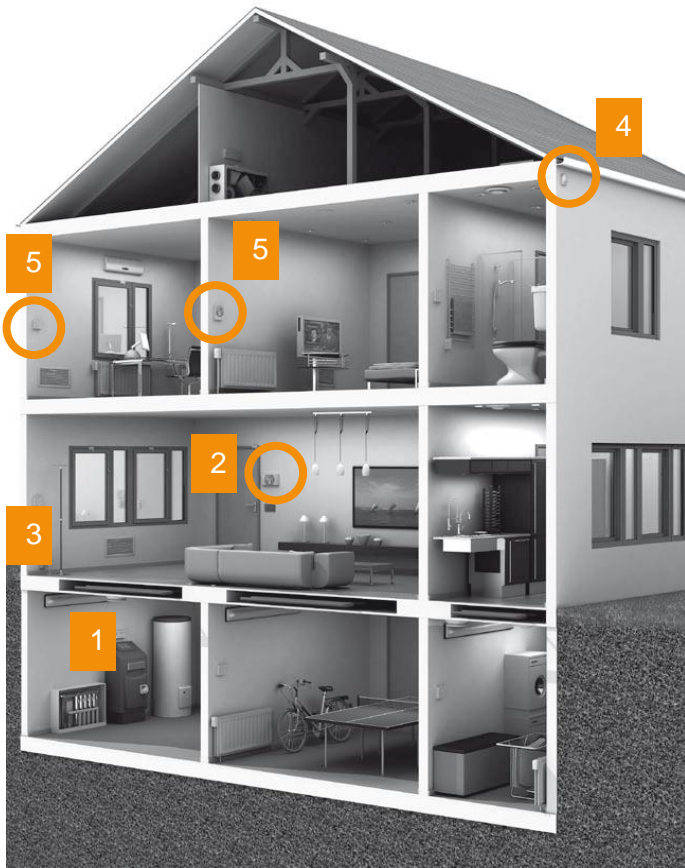
DESIGO
Building automation systems for commercial buildings




Synco™ living
Home automation system for residential buildings


EcoGrid EU residential solution Synco living Home Automation



Synco living Smart User Interface

Initial setup

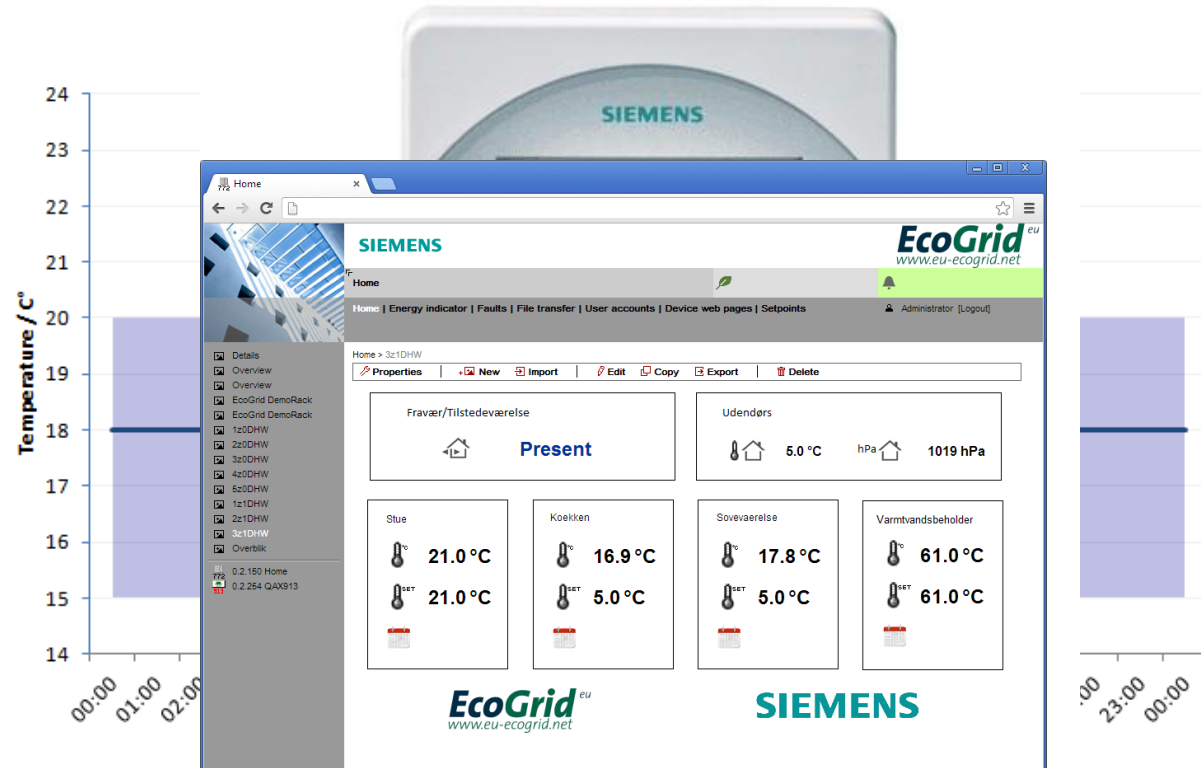
User chooses the daily temperature profile

Use

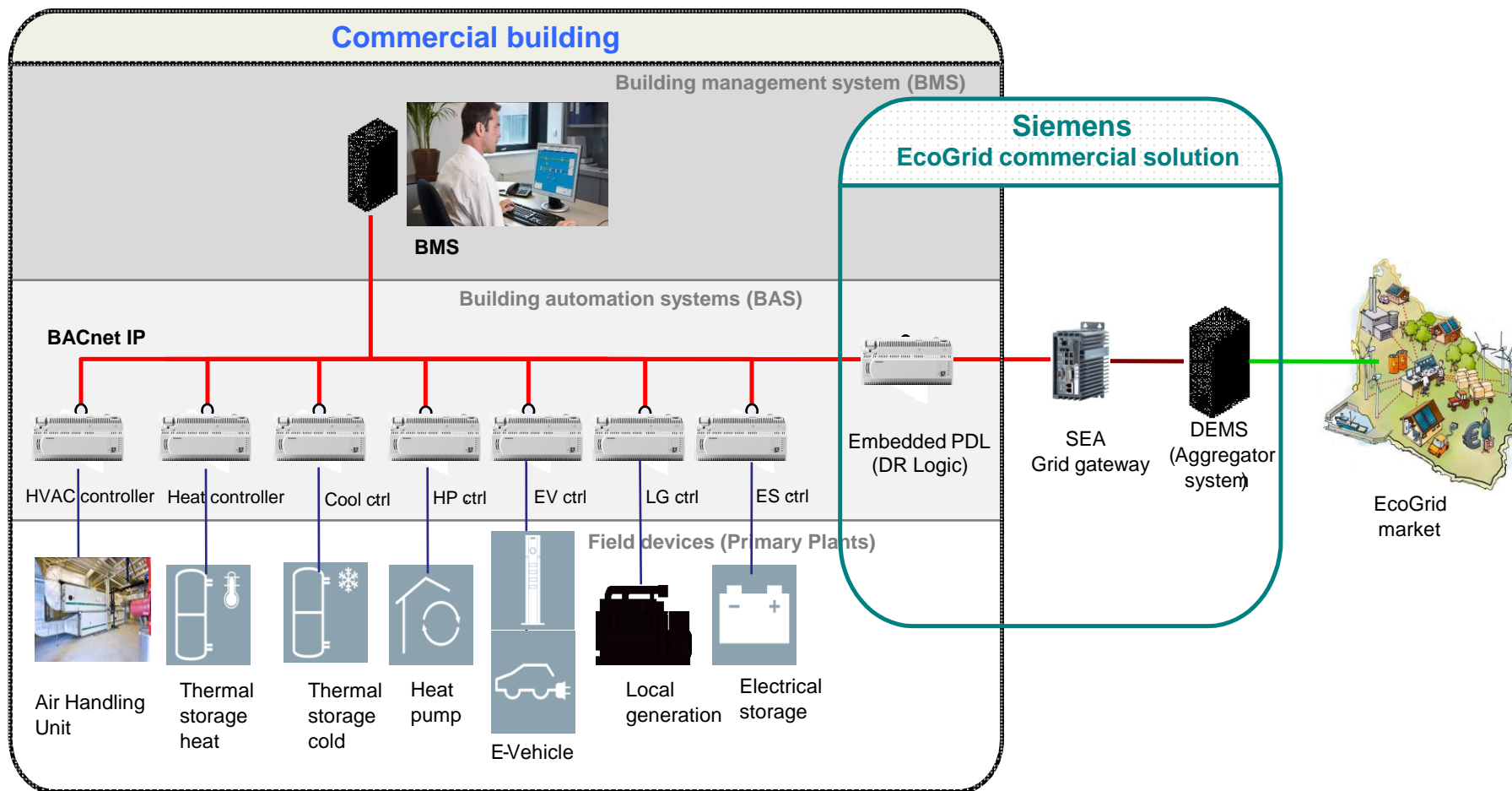
Adjustments are made via wireless room units – if user feels cold, he/she simply sets thermostat to e.g. +1K.

Webinterface

Most settings are reconfigurable via web



EcoGrid EU commercial buildings DESIGO Building Automation System



EcoGrid EU commercial solution example DESIGO Building Automation System

Building automation

DESIGO PX_{Modular} controls comfort process
(here: air handling unit)

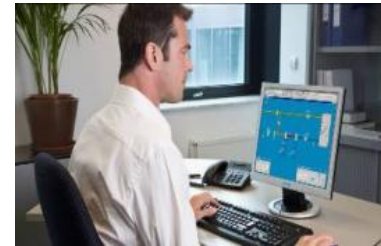
Building Management

Facility Manager adjusts via DESIGO Insight the influence parameters of DESIGO PX_{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).

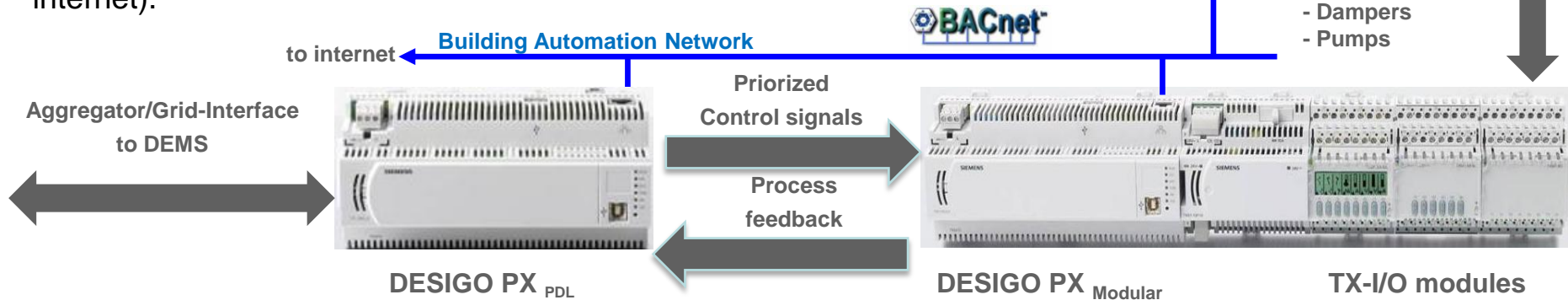
DESIGO Insight
Building Management System



Air Handling Unit



I/O-connection to:
- Sensors
- Fans
- Dampers
- Pumps



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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siemens.com/answers



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