

The Siemens logo is displayed in a white rectangular box in the top left corner of the slide. The background of the slide is a photograph of a large building with a roof covered in blue solar panels. In the distance, there is a green forest and a white wind turbine with red-tipped blades under a blue sky with light clouds.

SIEMENS

BIPV and challenges of Building Energy Management Systems

Siemens Building Technologies | Christian Trodella

Demand for renewable energy at facility level will further increase and generate new challenges for energy management

Strong case for power generation at the consumer level from technical and political drivers



- Energy production will get closer to energy consumption sites
- Buildings will become energy producers and storage (prosumers)
- Strong case for BIPV as an important option in this context

BIPV Environment

- Business-as-usual projections see global energy demand to raise
- PV hardware costs decrease while end user prices are high
- Energy change policies encourage renewables & energy efficiency
- Incentives for large PV parks reduced in Europe
- Onsite generation and consumption reduces grid stability challenges
- Consumers support expansion of renewable close to their homes*
- Energy efficiency improvements support renewable energy
- ...-

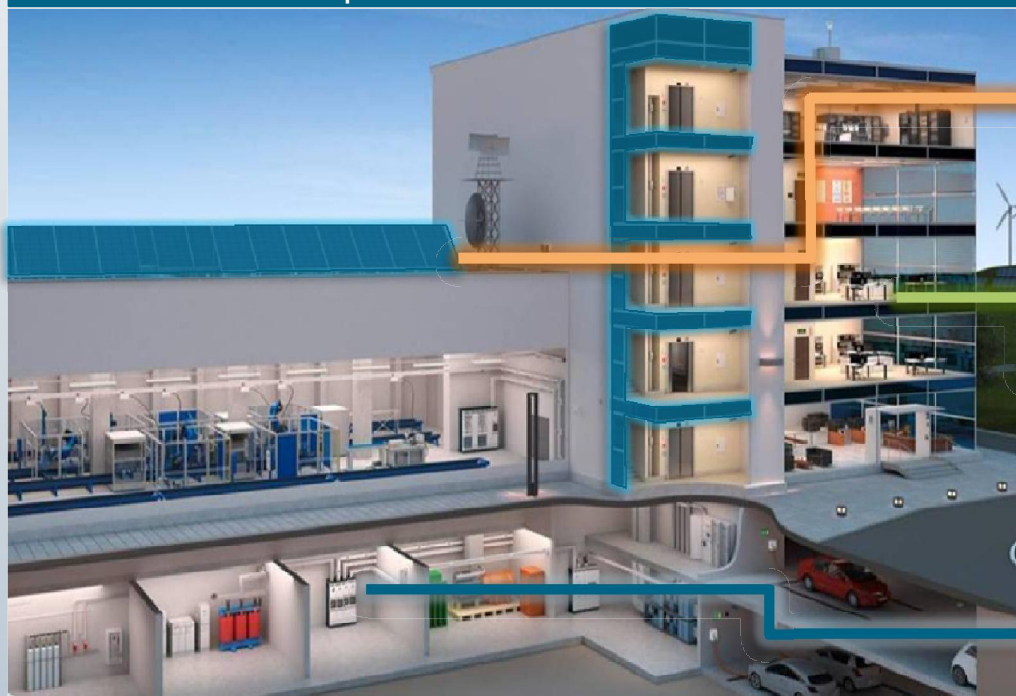
Challenges

- High(er) soft costs of integrated PV relative to non integrate PV
- Compliance with building and safety standards, design restrictions
- Maintenance and service
- Management of shadow in urban environments influences Voltage
- ...

*Quelle: Umfrage von TNS Emnid im Auftrag der Agentur für Erneuerbare Energien

Building will manage local generation, storage and consumption

Strong case for power generation at the consumer level from technical and political drivers



Monitoring, Analysis & Forecast

Detailed monitoring and forecast about building's processes

- Interpretation of monitored data
- Forecast for consumption, generation, storage
- Building transparency
- ...

Energy Efficiency

Reduced energy consumption, cost and CO2 at highest comfort, improved sustainability

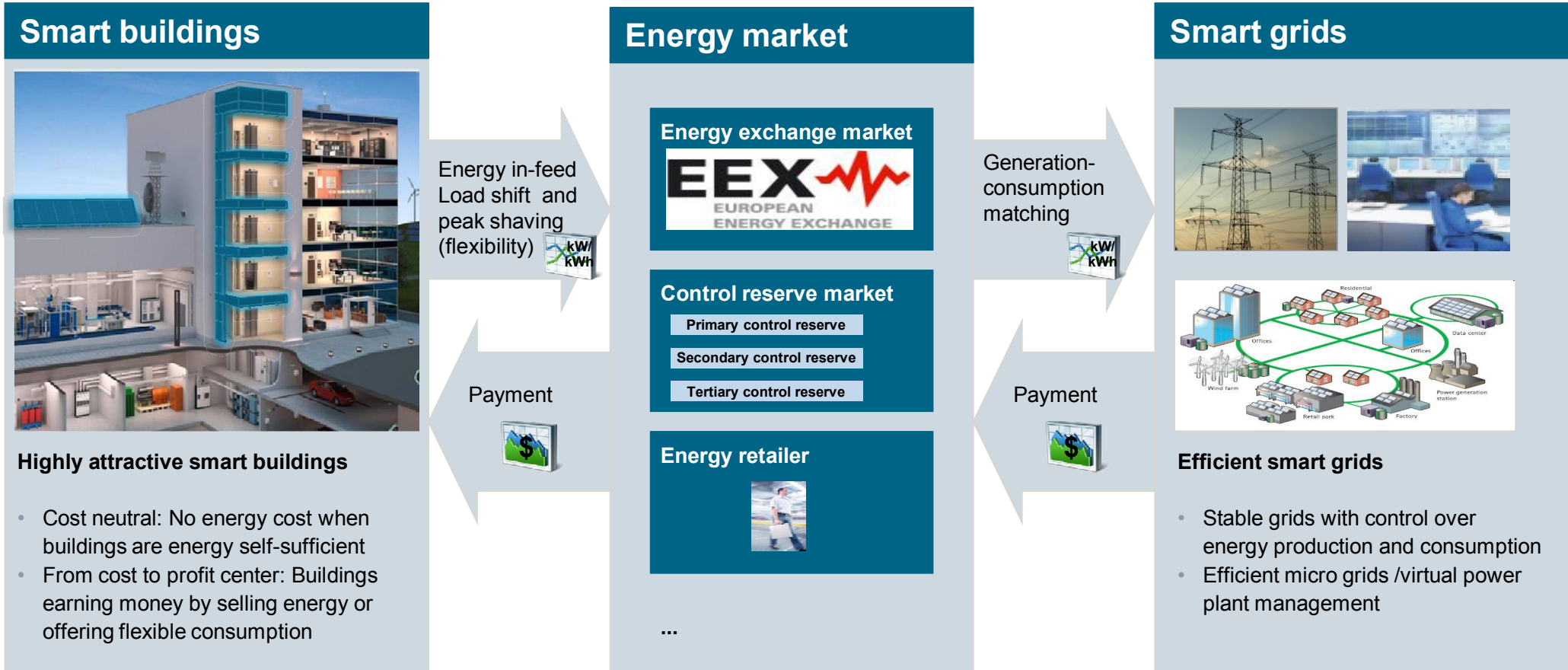
- Heat generation with heat pump
- Air distribution
- Temperature control with blinds
- Brightness control with lighting
- Schedule optimization
- ...

Optimization in buildings

Total building solution including local generation, local storage, power management and e-mobility

- Energy generation and storage
- Optimal management of generation, consumption (small PV, small wind power) and storage, incl. e-mobility

Comprehensive energy management offers new business opportunities



Sample Projects

New Monte Rosa Hut



- 2795 m above sea level
- ETH Zurich and the Swiss Alpine Club have teamed up
- Siemens BMS
- PV, Cogen, Battery and water storage in a cavern
- 90 % energy independent

Quelle: BFE Bericht 29. Oktober 2012
 Unrestricted © Siemens AG 2015

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project sun@huizingen



- Grid connected, 34 kW PV and 9 kW cogen
- E-mobility with charging stations
- Siemens BMS und EMS

Green-City-Tower Freiburg



- Investor & Architect: Wolfgang Frey
- ca. 400 KWp PV
- ca. 0,5 MWh Li-Ionen-Battery
- DC-coupled System
- Innovative Siemens BMS and EMS System

Quelle: Pressemeldung FWTM 06.05.14

Seestadt Aspern, Wien



- Multifunctional areas for 20,000 residents
- One compound (240 hector) as large as 72 football fields
- Siemens takes care of the BMS and EMS in multi family houses, a student hostel and a school campus

Smart building project: Seestadt Aspern, Vienna

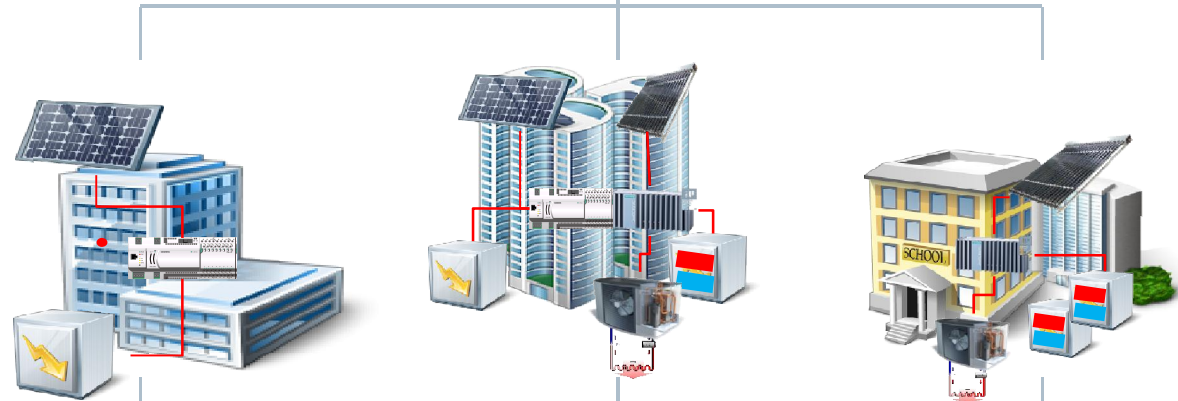
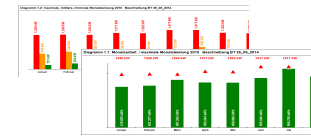
Seestadt Aspern, Wien



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- Siemens takes care of the building and energy management in multi family houses, a student hostel and a school campus

Reporting and Benchmarking

Navigator



Automation and Optimization



DESIGO CC



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Smart building project: Seestadt Aspern, Vienna

Combine energy - efficiency, -generation



Do the projects deliver the expected performance?

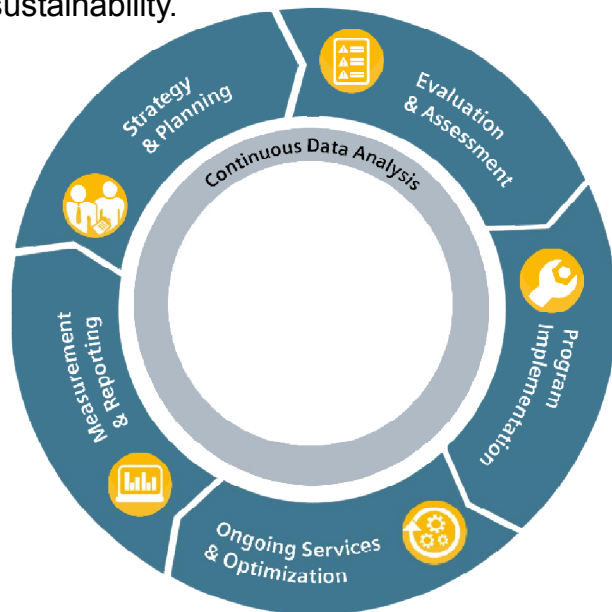
Site Manager



Decentral energy generation makes sense in combination with consumption optimization.

Building Performance and Sustainability

We optimize existing buildings through a Life Cycle Approach and help increase the value of facilities, reduce costs and improve sustainability.



Energy Efficiency Projects bundle measures of different paybacks

Decentral energy generation makes sense in combination with consumption optimization.

Siemens has proven solutions to help customers win new business opportunities

Portfolio

Wide spectrum of components and their interface: from distributed energy production, storage, consumption to the grid

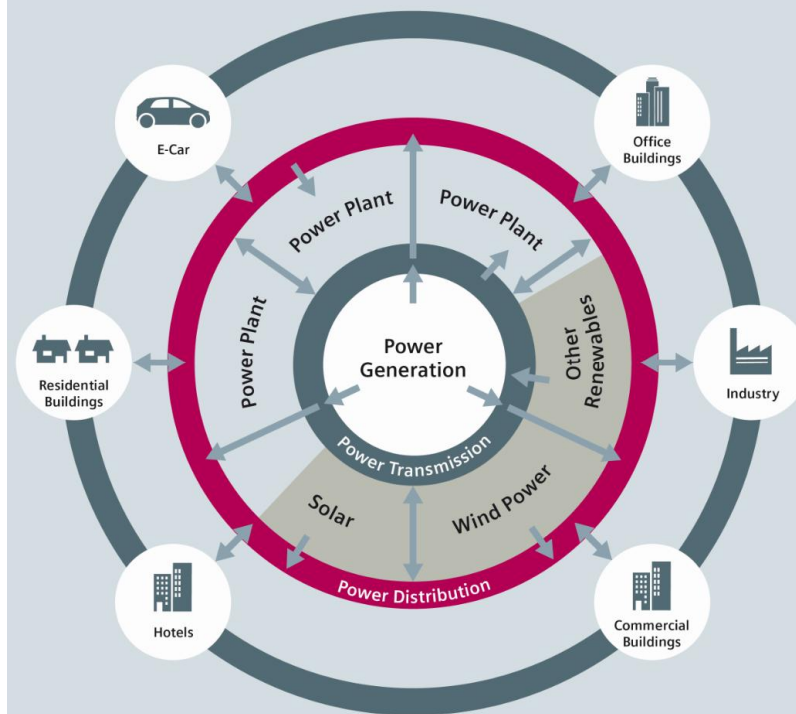
Competencies

Deep understanding in energy management, building technologies and data management

Experiences

Monitoring of more than 34,000 buildings worldwide. Energy savings of €2 billion and CO₂ reductions of 1.9 mil. metric tons.

Comprehensive energy management



Global presence

Strong regional and global presence: more than 400 branches supported by 12 centers of competence

Financing

Siemens Financial Services offering attractive and suitable options

Partnership

Optimal solutions through combination of Siemens expertise and partner know-how