

Enabling Technologies for Smart Energy

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About T&D Europe

Europe's Grid Technology Providers

T&D Europe's members enable the energy transition to a climate-neutral Europe by 2050.

Over 200,000 people in our industry manufacture, innovate and supply smart systems for the efficient transmission and distribution of electricity.

Our technologies and services future-proof the grid and make clean electricity accessible to all Europeans.

We put our collective expertise to work to craft a brighter, electric future.

Ready for the Green Deal

www.tdeurope.eu

National trade association members



Corporate members



Associate members



Our Strategic Objectives

1. Support EU efforts to achieve **climate-neutrality and sustainability** targets, including promoting the circular economy and by delivering on ambitious climate and energy objectives for 2030
2. Promote **European leadership** in grid technology
3. Unlock investments in **efficient, flexible and resilient** electricity networks to drive Europe's recovery and transformation
4. Further position T&D Europe as a recognised and active stakeholder



Aspern Smart City Research
THE FUTURE OF ENERGY IS ALREADY HERE

SIEMENS



One of Europe's largest & most innovative Energy Research Projects



Aspern, Vienna



Energy & Smart Infrastructure



Second program phase launched in 2019 by Wien Energie, Wiener Netze, the City of Wien, and Siemens



85 million € total R&D expenditure

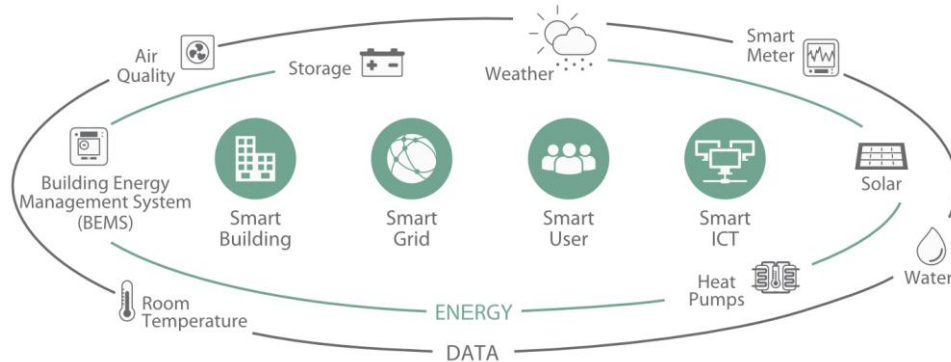


Over 100 researchers from various disciplines

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ASCR's research is not just about technology and individual elements, but much more about the complex interrelationships within a smart city district

Integration of Energy- and Data Network



1st project phase (2013-2018)

- Established **research infrastructure** which serves as basis for **data collection** and practical testing of solution concepts

2nd research phase “ASCR 2023” began in 2019

- **Intelligent integration** of buildings into the supply grids and energy markets
- Refining prototype building and grid systems into **economically viable and practical systems** for residents, grid operators, building operators, and energy providers
- Previously collected data play a key role

Main Research Results to Date:

- Efficiency and renewables generate considerable **carbon emission reductions**
- **Building flexibility** is valuable
- **Active grid management** makes economic use of smart grids viable
- “**Smart grid ready**” buildings can help avoid high peak loads and thus expensive grid expansions
- **Power storage systems** valuable
- **Stakeholder collaboration / cooperation** is key
- Load shifting in households proved to be possible only to a limited degree

Smart Energy is about making grids intelligent

Best combination of cost-efficient grid expansion and timely bidirectional communication

Goals:

- manage ever-increasing peak power demand,
- reduce the power consumption of loads without significantly restricting energy trading, and
- support energy communities.

Active Grid Management requires:

- Creating transparency:
- Creating control options for the grid operator
- Comprehensive data basis and tools for future grid planning
- Coordination in the smart grid

Implementation in 3 phases:

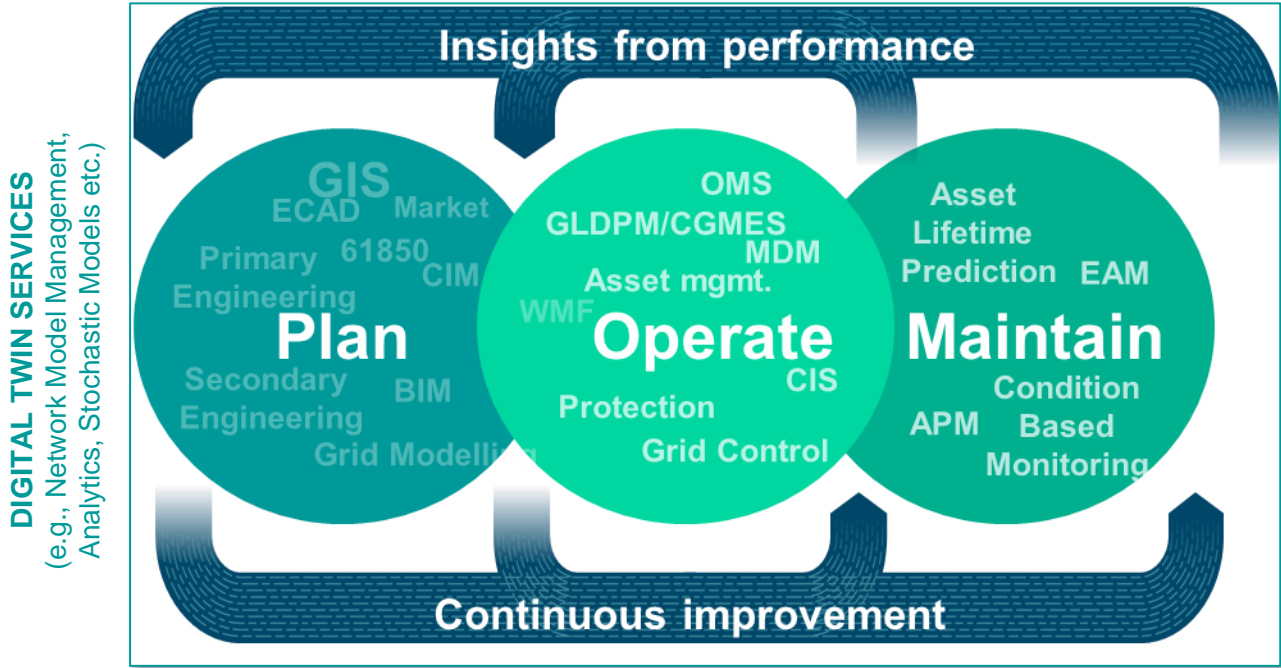
1. Sensor installation
2. Software solutions unlock the full potential of the grid
3. Optimal interaction in the smart grid

ASPERN equipment

- 12 power grid stations with 24 transformers of different types
- > 100 Enhanced Grid Sensors
- > 500 Smart meters in the researched buildings
- 5 grid storage systems



Grid software solutions and Digital Twins are key to accelerate the energy transition
 From isolated OT and IT systems to a lifecycle-spanning and use case-centered approach



The **Digital Twin** is changing the way information is connected

Combining digital and the real results in transparency, cost savings, flexibility, economic efficiency, low resource use, reduced carbon emissions and (energy) efficiency

Smart Grid Modules

- **Plug & play** functionality
- **Fully automated** post-configuration
- Low costs and installation effort and compatibility; creation of synergies while ensuring end-to-end security



Path to the Digital Grid

- **Constantly recurring planning process**
- Smart grid functionality focusing on transformer stations and without infrastructure adaptation
- **Standardization** minimizes complex systems, and facilitates simulations



Create the Intelligent Grid / Digital Twin

- **Assessment** of grid management and planning with regard to data quality
- **Integration** and **evaluation** of digital and real
- **Examination** and **documentation** of opportunities using data analytics



Added Value in the Data Pool

- Include data for **urban functions** (e.g. energy zoning)
- Share data
- Internal **increase in efficiency and quality at grid operators**



Future proofing the grid, from passive to active and intelligent. Upgrading the distribution grid infrastructure while maintaining supply quality and without increasing grid tariffs



Europe has a world-leading industry in grid technology, which allows the EU to approach the current challenges with confidence



About T&D Europe: The Secretariat

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