

Integration of innovative technologies of positive energy districts into a holistic architecture

## **Results**

- ° Showcasing successful PED-approaches
- Design of the fully integrated renewable energy community
- Evaluation of specific business models, based on stakeholder motivation analysis
- Proposed new market structure and pricing models
- A roadmap for the implementation of fully integrated energy communities



This project has received funding in the framework of the PED Programme, which is implemented by the Joint Programming Initiative Urban Europe and SET Plan Action 3.2. The project is supported by the Austrian Ministry of Climate Action, Environment, Energy, Mobility, Innovation, and Technology (BMK), Technology Agency of the Czech Republic (TAČR) and Viable Cities, a research program funded by the Swedish Energy Agency, Formas and Vinnov

## Fully integrated energy community

harmonized with the power grid

- ✓ Physical laws are not changable, any solution must consider them
- Holistic system architecture ensures a standardized structrue across all network levels and customer installations, and enables their seamlessly coordinated integration and operation
- ✓ The technical solution mitigates the challenges of implementing distributed energy resources
- Appropriate reactive power control strategy increases grid capacity, reduces data exchange
- ✓ Citizen centered approach based on trust, transparency and fairness
- Creation of a local market to optimize the fit of production and demand, and strenghten local value streams
- ✓ Data protection ensured by design
- Power grid integration increases grid stability, uses flexibility potentials, and supports emergency recovery
- ✓ Market integration to enable the democratisation of power industry
- Community building and knowledge exchange to strenghten social cohesion and local capabilities

integrated to the energy exchange

- ✓ New market structure proposed in line with European Directives
- ✓ National, regional and local market levels with vertical integration
- ✓ Same market logic over all levels to ensure reliability and resilience



INTERACT – Integration of Innovative Technologies of Positive Energy Districts into a Holistic Architecture – is an international research and innovation project with a cross-sectional collaboration between academia, municipalities, and businesses with participants from Austria, the Czech Republic, and Sweden, active 2021 to 2023.

INTERACT boosts the emergence of energy communities as one crucial building block to achieve positive energy districts. The project developed a roadmap for the energy community's secure and reliable embedding into the power system structure, focusing on two pilot regions in Sweden and Austria.

## Contact

TECHNOLOGIES

www.ped-interact.eu helmut.bruckner@ped-interact.eu

Project consortium SOMENPLATZ<sup>®</sup> Großschönau IFFF

WIEN

## **Business models towards a full integration**



Energy communities can offer more services to its members and to its environment the better they are integrated into the surrouding systems:

- Basic operation enables to share renewable energy locally produced.
- Advanced operation with optimized production and demand, using flexibilities locally.
- Integrated operation enables the automated support of the power grid with balancing services, as well as price-driven and emergency-driven demand-response processes.
- With full integration, all provided services can be handled by the respective market structure, and flexible pricing models can be introduced supporting investements into additional production facilities for renewable resources.

**Two focus regions** 



Großschönau is rated an e5-municipality, has

won the European Energy Award in Gold for its

achievements in energy efficiency, and has two

sustainable thinking and acting - the BIOEM fair

and the permanent exhibition SONNENWELT.

nationwide renowned showcase projects of

**Großschönau / Austria** a rather small but very well-known rural municipality in Waldviertel has been promoting sustainable and environmentally friendly ways of living since decades.

**Fyllinge / Sweden** is one of a number of developing areas of Tornet Property Development AB. Fyllinge is part of the city of Halmstad, south-west in Sweden.



Fyllinge is of special interest since the municipality has invited for innovative solutions and new and somewhat "daring" and "challenging" concepts to really address and initiate a change of use for the limited resources at hand. The plans for Fyllinge include around 2000 apartments in combination with recreation areas and areas for urban farming.