February 2020

Media Information

The project Flexible Energy Production, Demand and Storage-based Virtual Power Plants for Electricity Markets and Resilient DSO Operation (FEVER) receives funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no 864537

Orchestrating flexibilities to enable the energy transition

February 1, 2020: **The new European Research & Innovation project FEVER aims at demonstrating and implementing solutions that leverage the potential of flexibility in generation, consumption and storage of electricity. Seventeen partners from eight European countries are working together to accelerate the transformation of the energy system. With an overall budget of almost 10 million euros, their purpose is to prepare the distribution grids for shifting from fossil and nuclear to renewable energy sources.**

FEVER's objective is to promote optimal management of the power grids in the future energy system based on renewable sources. An ever-growing share of fluctuating electricity generators, such as wind and solar, makes it more difficult to calculate the loads being fed in. The constantly increasing power demand, boosted by more and more people switching to electric vehicles, pose an additional challenge. For a secure and resilient energy supply, production and demand need to be harmonized. FEVER meets these challenges by fine-tuning orchestration of flexibilities in generation, storage and consumption.

The project encompasses technologies and techniques to extract flexibilities on various levels from small-scale households to industrial appliances which can automatically be switched on and off within set time frames. Flexibility sources also include distributed power storage assets, such as electric vehicles, and Virtual Power Plants, a type of cloud-based decentralized power plant that aggregates distributed energy resources.

In a holistic approach, FEVER facilitates establishing and operating appropriate business models for all market participants. The project will link consumers and prosumers via a peer-to-peer mechanism to a trading platform to enable their active participation and remuneration. By offering flexible energies, they help stabilizing the system as a whole. The solution incorporates artificial intelligence to achieve optimal coordination of all types of flexibilities and allow autonomously trading them on local and regional as well as wholesale markets.

Distribution System Operators (DSOs) need optimal observability and controllability of their grids to meet upcoming challenges. FEVER will provide them with a set of applications and instruments to this end. The toolbox will include advanced monitoring options for gaining information on the current grid condition. Automated control functions such as critical event prevention, self-healing or island-mode power management will support the management of the networks. The toolbox will be linked to the trading platform to make use of the necessary flexibilities.

To fully exploit the potential of flexibilities, FEVER integrates different existing components and will develop new ones. The consortium partners can leverage from their experiences in preceding projects such as RESOLVD, which developed advanced algorithms for forecasting, monitoring and control of local systems, and GOFLEX, which developed a bottom-up management and trading of flexibilities deploying the emerging standard FlexOffer.

The solutions and services will be implemented and tested in three European trial sites in Cyprus, Germany and Spain and by a laboratory simulation in Greece. FEVER is part of Horizon 2020, the biggest EU Research and Innovation programme. It will run three and a half years and has. The seventeen consortium partners are from Belgium, Cyprus, Denmark, Germany, Greece, Ireland, Slovenia and Spain.

About FEVER

FEVER – Flexible Energy Production, Demand and Storage-based Virtual Power Plants for Electricity Markets and Resilient DSO Operation – is a three-and-a-half-year project, funded in the EC Horizon 2020 Research and Innovation program with almost 10 million Euro. Horizon 2020 aims at fostering competitiveness, growth, and increasing benefits to the European Union economy and citizens. Under different funding schemes the framework programme supports research and development activities resulting in new knowledge, new products and services, and also in non-technological and social innovation. In these funding schemes, FEVER works under the topic "Flexibility and retail market options for the distribution grid" within the Horizon 2020 focus area "Secure, Clean and Efficient Energy". The

FEVER consortium is an association of 17 partners from the European countries Belgium, Cyprus, Denmark, Germany, Greece, Ireland, Slovenia and Spain.

The solutions will be tested in three large pilots and one laboratory simulation in Europe. FEVER has officially been launched on February 1st, 2020 under coordination of Intracom S.A. Telecom Solutions and runs until 31st of July 2023.

Project contact: For any information, please contact our project partner B.A.U.M. Consult GmbH, info@fever-h2020.eu, +49 (0)30 53 60 18 84-14

www.fever-h2020.eu

FEVER Facts & Figures

Duration

1st of February 2020 until 31st of July 2023

Financing

- Overall budget: € 9 929 911.25
- EU contribution: € 7 794 376.63, of it
  - 1 740 387.50 € in Greece
  - 1 707 137.50 € in Spain
  - 1 355 462.50 € in Germany
  - 799 225.00 € in Slovenia
  - 742 312.50 € in Denmark
  - 706 351.63 € in Ireland
  - 413 625.00 € in Cyprus
  - 329 875.00 € in Belgium

Consortium

17 project partners from 8 European countries working together:

- 4 from Germany
- 4 from Spain
- 3 from Greece
- 2 from Denmark
- 1 from Belgium
- 1 from Cyprus
- 1 from Ireland
- 1 from Slovenia

Intracom S.A. Telekom Solutions (Coordinator)

- Location: Greece, Athens
- Main operating domain: Largest multinational provider of telecommunications products and integrated ICT solutions & services in Greece
- Role in FEVER: Coordination of the project, design and implementation of a DSO Toolbox, technical support
- http://www.intracom-telecom.com

University of Cyprus

- Location: Cyprus, Nicosia
- Main operating domain: The FOSS Research centre for Sustainable Energy at UCY offers a unique perspective of the energy needs of a variety of system actors and can demonstrate the calculation and offering of flexibility
- Role in FEVER: Campus facility management, Enhancing the Energy Management System, Integration and deployment of the Pilot Site in Cyprus
- https://www.ucy.ac.cy/en

University of Patras

- Location: Greece, Patras
- Main operating domain: Research centre with expertise in all aspects of power systems control and energy management and real time networked embedded systems
- Role in FEVER: Analysis of flexibility measures, design of the DSO Toolbox, design of the flexibility relevant market mechanisms and market tools
- http://www.upatras.gr/en

INEA - Informatizacija, Energetika, Avtomatizacija D.O.O.

- Location: Slovenia, Ljubljana

- Main operating domain: Leading Slovenian company for energy management solutions, industrial automation, process computer control and manufacturing informatics
- Role in FEVER: Providing prototypes of core solutions for flexibility management and trading, Coordination of the deployment of flexibility solutions to demonstration sites and Dissemination of FEVER solutions
- https://www.inea.si/en

Estabanell y Pahisa Energia, S.A.

- Location: Spain, Granollers
- Main operating domain: Distribution Systems Operator (DSO) and retailer in the electricity domain as well as telecom operator
- Role in FEVER: Local DSO in the Spanish pilot
- https://www.estabanell.cat

Estabanell y Pahisa Mercator, S.A.

- Location: Spain, Granollers
- Main operating domain: Retailer, in the electricity domain, deploying a customer focused relationship marketing
- Role in FEVER: Pilot of the Flexibility Aggregation, Management and Trading platform in Spain
- https://www.estabanell.cat

Université Catholique de Louvain

- Location: Belgium, Louvain-la-Neuve
- Main operating domain: Research centre with expertise in electricity market design as well as a current focus on Distribution system operations
- Role in FEVER: Definition of relevant market mechanisms and market tools for mobilizing distribution system flexibility, Dissemination of FEVER results
- https://uclouvain.be/en

Universitat de Girona

- Location: Spain, Girona
- Main operating domain: Research centre with expertise on data driven methods for smart grid supervision and decision support as forecasting and statistical modelling; and their exploitation of such models to support grid operation
- Role in FEVER: Project execution, development of the DSO toolbox
- https://www.udg.edu/en

Universitat Politècnica de Catalunya

- Location: Spain, Barcelona
- Main operating domain: Technology transfer for companies with needs of developing products, services and solutions with expertise i.e. in Smart Grid architecture design, optimization of energy systems and local and whole sale energy markets
- Role in FEVER: Architecture design, Implementation of technology for storage and electro mobility, optimization of the storage asset operation, distribution grid engineering, batteries-based power quality monitoring and power quality enhancement services, communication, dissemination and exploitation
- https://www.upc.edu/en?set_language=en

SWW Wunsiedel GmbH

- Location: Germany, Wunsiedel
- Main operating domain: Municipal, highly innovative utility company and DSO
- Role in FEVER: DSO and Flexibility Aggregator in Germany, integration of the DSO Toolbox, demonstration of the solutions
- https://www.s-w-w.com

Hellenic Energy Exchange S.A.

- Location: Greece, Athens

- Main operating domain: Nominated Electricity Market Operator in Greece, also responsible for organising and operating Greek gas and environmental markets
- Role in FEVER: Development of different market tools for introducing the active roles of the Flexibility Aggregator and the Distribution System Operator in the electricity markets
- http://www.enexgroup.gr/en

B.A.U.M. Consult GmbH

- Location: Germany, Munich/Berlin
- Main operating domain: Consulting company, involved in the smart energy system development
- Role in FEVER: System modelling and user integration; dissemination and exploitation of the results, Fostering innovative development of the project by Design Thinking workshops
- http://www.baumgroup.de

Aalborg University

- Location: Denmark, Aalborg
- Main operating domain: Research centre with expertise in data-intensive systems, embedded software systems and human-centered computing
- Role in FEVER: Adaptation of existing generalized flexibility modelling (FlexOffer) methodology and underlying techniques for flexible storage loads/assets
- https://www.en.aau.dk

Stadtwerk Haßfurt GmbH

- Location: Germany, Haßfurt
- Main operating domain: Municipal, highly innovative DSO. The main goal of SWH is to ensure the generation, distribution, storage and consumption of renewable energies in the form of modern (“smarter”) electricity, water and, in particular, heating technologies
- Role in FEVER: Providing renewable energy sources, integration of the DSO Toolbox and demonstration of the solutions
- https://www.stwhas.de/

Es-geht!-Energiesysteme GmbH

- Location: Germany, Berlin
- Main operating domain: Consulting company with specialisation in innovative software and hardware development, business development, security management and renewable energy sources solutions, including subsidies, funding or financing
- Role in FEVER: Co-creation, adaption and promotion of a core solution enabling DSOs and prosumers to take part in energy trading and demand side management, field installation of infrastructure needed for the German pilot, contribution to flexibility management and the DSO toolbox as well as technical support
- https://es-geht.gmbh/

IBM Ireland Ltd

- Location: Ireland, Dublin
- Main operating domain: Information and Communications technology (ICT) company with expertise in the creation, development and manufacture of advanced information technologies, including computer systems, software, networking systems, storage devices and microelectronics
- Role in FEVER: Implementation of a toolbox capable to support P2P flexibility trading on the basis of distributed ledger technologies, integration and deployment for the needs of the German pilot, technical support
- https://www.ibm.com/ie-en

FlexShape Aps

- Location: Denmark, Aarhus
- Main operating domain: ICT company that specialised in the development and exploitation of energy flexibility, offering tools for smart energy forecasting, aggregation, optimization, and trading based on Big Data, Internet of Things, Machine learning/AI, and blockchain

- Role in FEVER: Extension of its current Aggregator-As-A-Service platform to support the extended FlexOffers and trading, extension of related tools such as its Energy Planner
- https://www.flexshape.dk/

Demonstrations

three European pilots under realistic conditions in Cyprus, Germany and Spain and accompanied by a laboratory simulation in, of it

- 1 in Cyprus
- 1 in Germany
- 1 in Greece
- 1 in Spain

Cypriot Pilot

- Demonstration of the aggregation of local flexibility and assessing the impact of blending complementary flexibility technologies with different availability and dynamics
- Campus area of the University of Cyprus

German Pilot

- Focus on the consistent production, use and expansion of renewable energy and sustainable technologies
- Region with rural character which includes a high volume and density of renewable energy sources (RES)
- The consumer/prosumer population covers all types of infrastructures, such as industries, small and middle-sized enterprises (SME), professional RES sites, farms, multifamily residences with common installations and single homes
- SWW Wunsiedel already participated in the GOFLEX project

Spanish Pilot

- Demonstration of how the activation of aggregated local flexibility can be used in ancillary services, as well as enhancing the observability and controllability of the distribution grid in light of the ever-expanding penetration of distributed photovoltaics (PV) generation
- Industrial settings related to food processing and refrigeration in the area of Les Riberes