A novel smart grid architecture that facilitates high RES penetration through innovative markets towards efficient interaction between advanced electricity grid management and intelligent stakeholders

Wyniki

Informacje na temat projektu

FLEXGRID

Identyfikator umowy o grant: 863876

Finansowanie w ramach
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Koordynowany przez
INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS
Greece

Rezultaty

Documents, reports (11)

Intermediate version of business modelling, dissemination and exploitation of results
This deliverable includes an updated version of FLEXGRID’s business models and innovative value propositions based on the market analysis described in D8.1. It also includes an updated version of the so far dissemination and exploitation-related achievements of the consortium.

**Intermediate version of DFA markets and ARMM**
This deliverable includes the first version of the mathematical models, research problem formulations, algorithms and performance evaluation results for the operation of FLEXGRID’s flexibility aggregation markets.

**OPF objectives and challenges towards smart grids with high RES penetration**
This deliverable elaborates on D2.2 and contains the detailed architecture design of all WP5 subsystems and their interactions as well as the respective technical specifications. It also includes a survey of all state-of-the-art research approaches and sets the research objectives and challenges for WP5 research.

**Architecture of advanced DFA markets and P2P trading**
This deliverable elaborates on D2.2 and contains the detailed architecture design of all WP3 subsystems and their interactions as well as the respective technical specifications.

**Intermediate version of advanced ESP and RESP BMs**
This deliverable includes the first version of the mathematical models, research problem formulations, algorithms and performance evaluation results for the support of innovative business models for ESPs and RESPs.

**Intermediate version of advanced market aware OPF algorithms**
This deliverable includes the first version of the mathematical models, research problem formulations, algorithms and performance evaluation results for the support of the efficient interaction between network operators and markets.

**FLEXGRID use case scenarios, requirements’ analysis and correlation with innovative models**
This deliverable includes the research outputs of Tasks 2.1-2.3. It includes the research methodology of FLEXGRID framework, the FLEXGRID use cases and operational scenarios as well as the requirements’ analysis for all FLEXGRID services.

**The overall FLEXGRID architecture design, high-level model and system specifications**
This deliverable includes the research output of Task 2.4. It includes the design of the overall FLEXGRID system architecture and the high-level technical specifications of each subsystem.

**Objectives and challenges towards advanced ESP and RESP BMs**
This deliverable elaborates on D2.2 and contains the detailed architecture design of all WP4 subsystems and their interactions as well as the respective technical specifications. It also includes a survey of all state-of-the-art research approaches and sets the research objectives and challenges for WP4 research.

**Pilot demonstration setup plan, experimentation plan and validation methodology**

This deliverable includes the research output of Task 7.1. It includes a detailed plan for the pilot demonstration setup and experiments to validate the research outcomes of WPs 3-5 in a laboratory environment.

**Data Model of FLEXGRID architecture**

This deliverable includes the research output of task 6.1. It includes a detailed data model for the S/W development of FLEXGRID software platform. High-level description of the interaction with existing S/W platforms is also provided.

**Open Research Data Pilot (1)**

**Data management, dissemination and exploitation plans**

This deliverable includes an updated version of the initial FLEXGRID Data Management Plan. It also includes the dissemination, communication and exploitation plans of the consortium. Finally, it includes detailed information regarding the ethics/privacy issues addressing thus the EC comments about all the ethics requirements from the Ethics Summary Report (EthSR).

**Demonstrators, pilots, prototypes (1)**

**First version of FLEXGRID S/W prototype**

This prototype deliverable includes the first version of the S/W integration and validation results of FLEXGRID platform. An initial version will be demonstrated during the 1st official review meeting (i.e. Month 20), while the release of the first integrated FLEXGRID system prototype will take place in Month 24.

**Publikacje**

**Conference proceedings (1)**

Designing a Distribution Level Flexibility Market using Mechanism Design and Optimal Power Flow
Sizing of electric vehicle charging stations with smart charging capabilities and quality of service requirements

**Autorzy:** Konstantinos Seklos, Georgios Tsaousoglou, Konstantinos Steriotis, Nikolaos Efthymiopoulos, Prodromos Makris, Emmanouel Varvarigos  
**Opublikowane w:** 2020 International Conference on Smart Energy Systems and Technologies (SEST), 2020, Page(s) 1-6  
**DOI:** 10.1109/sest48500.2020.9203564

**Peer reviewed articles (7)**

Sizing of electric vehicle charging stations with smart charging capabilities and quality of service requirements

**Autorzy:** Alireza Khaksari, Georgios Tsaousoglou, Prodromos Makris, Konstantinos Steriotis, Nikolaos Efthymiopoulos, Emmanouel Varvarigos  
**Opublikowane w:** Sustainable Cities and Society, Issue 70, 2021, Page(s) 102872, ISSN 2210-6707  
**DOI:** 10.1016/j.scs.2021.102872

Strategic and network-aware bidding policy for electric utilities through the optimal orchestration of a virtual and heterogeneous flexibility assets’ portfolio

**Autorzy:** Konstantinos Steriotis, Konstantinos Smpoukis, Nikolaos Efthymiopoulos, Georgios Tsaousoglou, Prodromos Makris, Emmanouel (Manos) Varvarigos  
**Opublikowane w:** Electric Power Systems Research, Issue 184, 2020, Page(s) 106302, ISSN 0378-7796  
**DOI:** 10.1016/j.epsr.2020.106302

Network and Market-Aware Bidding to Maximize Local RES Usage and Minimize Cost in Energy Islands with Weak Grid Connections

**Autorzy:** Konstantinos Smpoukis, Konstantinos Steriotis, Nikolaos Efthymiopoulos, Georgios Tsaousoglou, Prodromos Makris, Emmanouel (Manos) Varvarigos  
**Opublikowane w:** Energies, Issue 13/16, 2020, Page(s) 4043, ISSN 1996-1073  
**DOI:** 10.3390/en13164043

Optimal Battery Storage Participation in European Energy and Reserves Markets

**Autorzy:** Kristina Pandžić, Ivan Pavić, Ivan Andročec, Hrvoje Pandžić  
**Opublikowane w:** Energies, Issue 13/24, 2020, Page(s) 6629, ISSN 1996-1073  
**DOI:** 10.3390/en13246629

Individual Thermal Generator and Battery Storage Bidding Strategies Based on Robust Optimization

**Autorzy:** Matea Vidan, Fabio D’Andreagiovanni, Hrvoje Pandžič  
**Opublikowane w:** IEEE Access, Issue 9, 2021, Page(s) 66829-66838, ISSN
Managing Risks Faced by Strategic Battery Storage in Joint Energy-Reserve Markets

Autorzy: Kristina Pandzic, Kenneth Bruninx, Hrvoje Pandzic

Opublikowane w: IEEE Transactions on Power Systems, 2021, Page(s) 1-1, ISSN 0885-8950

DOI: 10.1109/access.2021.3076872

Energy Storage Integration in European Markets

Autorzy: Marija Miletić, Hrvoje Pandžić

Opublikowane w: Current Sustainable/Renewable Energy Reports, Issue 7/4, 2020, Page(s) 160-164, ISSN 2196-3010

DOI: 10.1007/s40518-020-00156-2

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