Research outputs:

- **Economic value of electric vehicle reserve provision in the Nordic countries under driving requirements and charger losses**
  Research output: Research - peer-review › Journal article – Annual report year: 2019

- **Large-scale provision of frequency control via V2G: The Bornholm power system case**
  Research output: Research - peer-review › Journal article – Annual report year: 2019

- **A Market Framework for Enabling Electric Vehicles Flexibility Procurement at the Distribution Level Considering Grid Constraints**
  Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

- **Analytical Assessment of Voltage Support via Reactive Power from new Electric Vehicles Supply Equipment in Radial Distribution Grids with Voltage-Dependent Loads**
  Research output: Research - peer-review › Journal article – Annual report year: 2018

- **An Equivalent Time-Variant Storage Model to Harness EV Flexibility: Forecast and Aggregation**
  Research output: Research - peer-review › Journal article – Annual report year: 2018

- **Core functions of the Web-of-Cells control scheme**
  Research output: Research - peer-review › Report – Annual report year: 2018

- **Demonstration of decision support for real time operation**
  Research output: Research - peer-review › Report – Annual report year: 2018

- **Electric Power System Inertia: Requirements, Challenges and Solutions**
  Research output: Research - peer-review › Journal article – Annual report year: 2018

- **Influence of V2G Frequency Services and Driving on Electric Vehicles Battery Degradation in the Nordic Countries**
  Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

- **Recommendations on future development of decision support systems**
  Research output: Research - peer-review › Report – Annual report year: 2018

- **Report on the evaluation and validation of the ELECTRA WoC control concept**
  Research output: Research - peer-review › Report – Annual report year: 2018
Response Accuracy and Tracking Errors with Decentralized Control of Commercial V2G Chargers
Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

Robust Allocation of Reserve Policies for a Multiple-Cell Based Power System
Research output: Research - peer-review › Journal article – Annual report year: 2018

Simulations based evaluation of the ELECTRA WoC solutions for voltage and balance control - Stand-alone Use Case simulation results
Research output: Research - peer-review › Report – Annual report year: 2018

Suitability of Commercial V2G CHAdeMO Chargers for Grid Services
Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

The ACES Project - Large-scale Integration of Electric Vehicles into the Electric Power System
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2018

A Decision Support Tool for Transient Stability Preventive Control
Research output: Research - peer-review › Journal article – Annual report year: 2017

Aggregation of Single-phase Electric Vehicles for Frequency Control Provision Based on Unidirectional Charging
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Assessing the Energy Content of System Frequency and Electric Vehicle Charging Efficiency for Ancillary Service Provision
Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

Comparison between AGC and a tuningless LFC approach based on direct observation of DERs
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Comparison between Synthetic Inertia and Fast Frequency Containment Control Based on Single Phase EVs in a Microgrid
Research output: Research - peer-review › Journal article – Annual report year: 2018

Co-simulation with DIgSILENT PowerFactory and Matlab: Optimal integration of plug-in electric vehicles in distribution networks
Research output: Research - peer-review › Book chapter – Annual report year: 2018

Demonstration of visualization techniques for the control room engineer in 2030.: ELECTRA Deliverable D8.1. WP8: Future Control Room Functionality
Research output: Research - peer-review › Report – Annual report year: 2017

Description of the detailed Functional Architecture of the Frequency and Voltage control solution (functional and information layer)
Research output: Research - peer-review › Report – Annual report year: 2017

Enabling Technologies for Smart Grid Integration and Interoperability of Electric Vehicles
Research output: Research › Ph.D. thesis – Annual report year: 2018

Experimental analysis of flexibility change with different levels of power reduction by demand response activation on thermostat controlled loads
Research output: Research - peer-review › Journal article – Annual report year: 2016
Functional description of the monitoring and observability detailed concepts for the Pan-European Control Schemes: ELECTRA Deliverable D5.4. WP5: Increased Observability
Research output: Research - peer-review › Report – Annual report year: 2017

Guidelines for Distribution System Operators on Reactive Power Provision by Electric Vehicles in Low Voltage Grids
Research output: Research - peer-review › Conference article – Annual report year: 2017

Identification of Conflicts between Transmission and Distribution System Operators when Acquiring Ancillary Services from Electric Vehicles
Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

Implementation and validation of synthetic inertia support employing series produced electric vehicles
Research output: Research - peer-review › Conference article – Annual report year: 2017

Implementation of fuzzy logic for mitigating conflicts of frequency containment control
Research output: Research - peer-review › Conference article – Annual report year: 2017

Management of Power Quality Issues in Low Voltage Networks using Electric Vehicles: Experimental Validation
Research output: Research - peer-review › Journal article – Annual report year: 2016

Requirements for future control room and visualisation features in the Web-of-Cells framework defined in the ELECTRA project
Research output: Research - peer-review › Journal article – Annual report year: 2017

Robust Multi-Objective PQ Scheduling for Electric Vehicles in Flexible Unbalanced Distribution Grids
Research output: Research - peer-review › Journal article – Annual report year: 2017

Scenario-based approach adopted in the ELECTRA project for deriving innovative control room functionality
Research output: Research - peer-review › Conference article – Annual report year: 2017

Supporting Control Room Operators in Highly Automated Future Power Networks
Research output: Research - peer-review › Conference article – Annual report year: 2017

Supporting involvement of electric vehicles in distribution grids: Lowering the barriers for a proactive integration
Research output: Research - peer-review › Journal article – Annual report year: 2017

Thermostat Controlled Loads Flexibility Assessment for Enabling Load Shifting – An Experimental Proof in a Low Voltage Grid
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Transient stability improvement: a review and comparison of conventional and renewable-based techniques for preventive and emergency control
Research output: Research - peer-review › Journal article – Annual report year: 2017

Tuningless Load Frequency Control Through Active Engagement of Distributed Resources
Research output: Research - peer-review › Journal article – Annual report year: 2018

Analysis and Comparison of Voltage Dependent Charging Strategies for Single-Phase Electric Vehicles in an Unbalanced Danish Distribution Grid
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016
A Novel Grid-Wide Transient Stability Assessment and Visualization Method for Increasing Situation Awareness of Control Room Operators
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Coordinated voltage control of a decoupled three-phase on load tap changer transformer and photovoltaic inverters for managing unbalanced networks
Research output: Research - peer-review › Journal article – Annual report year: 2016

Designing a master level course from scratch – where to start and how to proceed? Experience from course 31783
Research output: Research › Conference abstract for conference – Annual report year: 2016

Economic Comparison of Electric Vehicles Performing Unidirectional and Bidirectional Frequency Control in Denmark with Practical Validation
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Enhanced Situational Awareness and Decision Support for Operators of Future Distributed Power Network Architectures
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Enhancing the Role of Electric Vehicles in the Power Grid: Field Validation of Multiple Ancillary Services
Research output: Research - peer-review › Journal article – Annual report year: 2016

Evaluation of Electric Vehicle Charging Controllability for Provision of Time Critical Grid Services
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Experimental Testing and Model Validation of a Decoupled-Phase On-Load Tap Changer Transformer in an Active Network
Research output: Research - peer-review › Journal article – Annual report year: 2016

Grey-box Modelling of a Household Refrigeration Unit Using Time Series Data in Application to Demand Side Management
Research output: Research - peer-review › Journal article – Annual report year: 2015

Grid Frequency Support by Single-Phase Electric Vehicles Employing an Innovative Virtual Inertia Controller
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Grid Frequency Support by Single-Phase Electric Vehicles: Fast Primary Control Enhanced by a Stabilizer Algorithm
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Integrating Multi-Domain Distributed Energy Systems with Electric Vehicle PQ Flexibility: Optimal Design and Operation Scheduling for Sustainable Low-Voltage Distribution Grids
Research output: Research - peer-review › Journal article – Annual report year: 2016

Investigation of phase-wise voltage regulator control logics for compensating voltage deviations in an experimental low voltage network
Research output: Research - peer-review › Journal article – Annual report year: 2016

Key requirements for future control room functionality
Research output: Research - peer-review › Report – Annual report year: 2016

Modeling and experimental testing activity of the Voltage Optimization Unit.: Testing activity of the distribution transformer with single-phase on-load tap changer in an experimental low voltage network and investigation of different control logics.
Research output: Research - peer-review › Report – Annual report year: 2016
Multi-objective optimization control of plug-in electric vehicles in low voltage distribution networks.
Research output: Research - peer-review › Journal article – Annual report year: 2016

Phase-wise enhanced voltage support from electric vehicles in a Danish low-voltage distribution grid
Research output: Research - peer-review › Journal article – Annual report year: 2016

 Provision of secondary frequency control via demand response activation on thermostatically controlled loads: Solutions and experiences from Denmark
Research output: Research - peer-review › Journal article – Annual report year: 2016

Reduction of Topological Connectivity Information in Electric Power Grids
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

The Pan-European Reference Grid Developed in the ELECTRA Project for Deriving Innovative Observability Concepts in the Web-of-Cells Framework
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Trade-off Analysis of Virtual Inertia and Fast Primary Frequency Control During Frequency Transients in a Converter Dominated Network
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016

Validating a centralized approach to primary frequency control with series-produced electric vehicles
Research output: Research - peer-review › Journal article – Annual report year: 2016

Research output: Research - peer-review › Report – Annual report year: 2015

Detailed requirements and constraints for the control of flexibility
Research output: Research - peer-review › Report – Annual report year: 2016

Distribution Grid Services and Flexibility Provision by Electric Vehicles: a Review of Options
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Future control architecture and emerging observability needs
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Identification of observables for future grids – the framework developed in the ELECTRA project
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Identification of Requirements for Distribution Management Systems in the Smart Grid Context.
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Impact of thermostatically controlled loads’ demand response activation on aggregated power: A field experiment
Research output: Research - peer-review › Journal article – Annual report year: 2015

Improved Power Quality Monitoring through Phasor Measurement Unit Data Interpretation
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Phase Balancing by Means of Electric Vehicles Single-Phase Connection Shifting in a Low Voltage Danish Grid
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015
Voltage Control for Unbalanced Low Voltage Grids Using a Decoupled-Phase On-Load Tap-Changer Transformer and Photovoltaic Inverters
Research output: Research - peer-review › Article in proceedings – Annual report year: 2015

Wind and Photovoltaic Large-Scale Regional Models for hourly production evaluation
Research output: Research - peer-review › Journal article – Annual report year: 2014

A Dynamic Behaviour Analysis on the Frequency Control Capability of Electric Vehicles
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Analysis of Voltage Support by Electric Vehicles and Photovoltaic in a Real Danish Low Voltage Network
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Concurrent Provision of Frequency Regulation and Overvoltage Support by Electric Vehicles in a Real Danish Low Voltage Network
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Electric Vehicle Smart Charging using Dynamic Price Signal
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Energy shift estimation of demand response activation on domestic refrigerators – A field test study
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Experimental Validation of Energy Resources Integration in Microgrids via Distributed Predictive Control
Research output: Research - peer-review › Journal article – Annual report year: 2014

Implementation and Demonstration of Grid Frequency Support by V2G Enabled Electric Vehicle
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Technical feasibility study of Voltage Optimization Unit: Technical evaluation of distribution transformer with single phase on load tap changer for increasing hosting capacity of photovoltaic
Research output: Research - peer-review › Report – Annual report year: 2014

Testing of a Predictive Control Strategy for Balancing Renewable Sources in a Microgrid
Research output: Research - peer-review › Journal article – Annual report year: 2014

The Nikola project intelligent electric vehicle integration
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

Voltage Management in Unbalanced Low Voltage Networks Using a Decoupled Phase-Tap-Changer Transformer
Research output: Research - peer-review › Article in proceedings – Annual report year: 2014

An Auto Tuning Substation Peak Shaving Controller for Congestion Management Using Flexible Demand
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Day-Ahead Scheduling of a Photovoltaic Plant by the Energy Management of a Storage System
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Domestic Refrigerators Temperature Prediction Strategy for the Evaluation of the Expected Power Consumption
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013
Experimental Testing Procedures and Dynamic Model Validation for Vanadium Redox Flow Battery Storage System
Research output: Research - peer-review › Journal article – Annual report year: 2014

Grey-box Modeling for System Identification of Household Refrigerators: a Step Toward Smart Appliances
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Indirect control of DSRs for regulating power provision and solving local congestions
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Low voltage microgrid under islanded operation: Control strategies and experimental tests
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Overview of Simulation Tools for Smart Grids
Research output: Research - peer-review › Report – Annual report year: 2013

Scheduling of Domestic Water Heater Power Demand for Maximizing PV Self-Consumption Using Model Predictive Control
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Evaluation of Requirements for Volt/Var Control and Optimization Function in Distribution Management Systems
Research output: Research - peer-review › Article in proceedings – Annual report year: 2012

Experimental validation of control strategies for a microgrid test facility including a storage system and renewable generation sets
Research output: Research - peer-review › Article in proceedings – Annual report year: 2012

Model of a Real Medium Voltage Distribution Network for Analysis of Distributed Generation Penetration in a SmartGrid Scenario
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Optimal Management Strategy of a Battery-based Storage System to Improve Renewable Energy Integration in Distribution Networks
Research output: Research - peer-review › Journal article – Annual report year: 2012

Renewable energy sources and storage for integrated control in electric distribution system
Research output: Research - peer-review › Report – Annual report year: 2012

Analysis of Inertial Response and Primary Power-Frequency Control Provision by Doubly Fed Induction Generator Wind Turbines in a Small Power System
Research output: Research - peer-review › Article in proceedings – Annual report year: 2011

Microgrid concepts and models for the electrical grid of an industrial district
Research output: Research - peer-review › Article in proceedings – Annual report year: 2011

Modelli dinamici di sistemi di accumulo basati su tecnologia Vanadium Redox per integrazione con sistemi eolici
Research output: Research - peer-review › Paper – Annual report year: 2011

Power and energy control strategies for a Vanadium Redox Flow Battery and wind farm combined system
Research output: Research - peer-review › Article in proceedings – Annual report year: 2011
Wind power and storage modeling and integrated control in electric distribution systems
Research output: Research › peer-review › Report – Annual report year: 2011

Wind Turbine and Electrochemical Based Storage Modeling and Integrated Control Strategies to Improve Renewable Energy Integration in the Grid
Research output: Research › Ph.D. thesis – Annual report year: 2012

Wind Turbines Integration with Storage Devices: Modelling and Control Strategies
Research output: Research › peer-review › Book chapter – Annual report year: 2011

Generation and battery modelling and integrated control strategies for a better acceptance of intermittent renewable energy sources in the electric distribution system
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

Generazione eolica ed accumulo: modelli e strategie di gestione integrata
Research output: Research › peer-review › Journal article – Annual report year: 2010

Modeling of DFIG Wind Turbine and Lithium Ion Energy Storage System
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

Transient support to frequency control from wind turbine with synchronous generator and full converter
Research output: Research › peer-review › Article in proceedings – Annual report year: 2010

Characterization of wind and solar generation and their influence on distribution network performances
Research output: Research › peer-review › Article in proceedings – Annual report year: 2009

Modelli Dinamici per la generazione elettrica distribuita da fonte rinnovabile e convenzionale
Research output: Research › Paper – Annual report year: 2009

Modeling of doubly fed induction generator (DFIG) equipped wind turbine for dynamic studies
Research output: Research › peer-review › Article in proceedings – Annual report year: 2008

Modellazione di generatori eolici a velocità variabile equipaggiati con generatore asincrono a doppia alimentazione
Research output: Research › peer-review › Journal article – Annual report year: 2008

Projects:

Creating Automotive Renewal
Project: Research

Enhancing the role of electric vehicles for a proactive integration in global power systems
Project: PhD

Across Continents Electric Vehicle Services
Project: Research

Parker project
Project: Research

Electric vehicles in the Nordic countries: Control strategies for coordinated grid services
Project: PhD
Validation of decentralized and coordinated operation of frequency and voltage control systems in the control room
Project: PhD

Observability and decision support for supervision of distributed power system control
Project: PhD

Enabling Technologies for Smart Grid Integration of Electric Vehicles
Project: PhD

Control strategies and modelling of electric vehicles in the distribution network
Project: PhD

Electric vehicles in the Nordic countries: Control strategies for coordinated grid services
Project: Research

Concepts, capacities and Methods for Testing EV Systems and their Interoperability within the Smart Grids
Project: Research

System adequacy and reserve margins with increasing levels of variable generation
Project: Research

Validation of Decentralized and Coordinated Operation of Frequency and Voltage Control Systems
Project: Research

Nikola - Intelligent electric vehicle integration
Project: Research

Pan European Climate Data
Project: Research

Energy Saving by Voltage Management
Project: Research

ELECTRA Top-Up
Project: Research

Renewable Energy Sources and Storage for Integrated Control in electric distribution system
Project: Research

Wind power and storage modeling and integrated control in electric distribution systems
Project: Research

Activities:

KTH - Royal Institute of Technology (External organisation)
Activity: Membership › Membership in review committee

Enhancing the role of EVs as grid proactive DER - The Danish experience
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities
52nd International Universities' Power Engineering Conference (Event)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

SINTEF (External organisation)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Power frequency control provision from electric vehicles in a high voltage system with high wind power penetration
Activity: Other

University of the Basque Country (External organisation)
Activity: Membership › Membership in review committee

Enhancing the role of EVs in the smart grid: Resources or threats to power system operation? Trends and research drivers in Europe
Activity: Talks and presentations › Conference presentations

Investigation of stability aspects in a Pan-European interconnected grid with different wind power penetration
Activity: Other

Ancillary services analysis and provision by Electric Vehicles in a Danish distribution grid
Activity: Other

Large-scale energy storage in the future Danish power system by means of Vanadium and Li-Ion batteries
Activity: Other

Single Phase Analysis of an Active Low Voltage Grid with Congestion Management Provided by Electric Vehicles
Activity: Other

Wind power plants internal distribution system and grid connection - A technical and economical comparison between a 33 kV and a 66 kV
Activity: Examinations and supervision › Supervisor activities

IEEE Denmark (External organisation)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Modelling and experimental verification of power generation characteristics of different PV technologies under various operation conditions
Activity: Examinations and supervision › Supervisor activities

Unbalance analysis of a real low voltage Danish network in presence of electric vehicles and small size photovoltaic plants
Activity: Examinations and supervision › Supervisor activities

Decoupled On-Load Tap-Changer Transformer in a Danish Low Voltage Grid with Unbalanced Distributed Generation
Activity: Other

Electric Vehicle Smart Charging and V2G Service Automation
Activity: Other

IEEE (Publisher)
Activity: Research › Series editor