

Intelligent power electronics (IPE) for high power quality of electricity in urban areas (IQ-GRID)

Publieke samenvatting / Public summary

Aanleiding

The Dutch government aims a low-carbon energy system and create opportunities for a new, sustainable economic growth. This aim requires transition to a large-scale utilization of renewable energy sources (RES). For increasing the flexibility of the grid power, electronic components have to become autonomous assets that utilize real-time analytics, which are able to perform on-board execution models and to ensure energy supplying quality for urban areas.

Doelstelling

Primary goal is to secure a high electrical-power quality in urban grids with significant utilization of electricity from RES by designing and developing intelligent power electronic components. These components will perform autonomous control demand response in order to cope with the intermittent nature of RES and the increase of energy storage and electrical vehicle (EV) chargers in the network.

Korte omschrijving

WP1: Project management WP2: Mapping electrical requirements and performance of e-loads and RES regarding power quality - Fast charging of EV - Renewable energy generations - High power e-transportation in urban areas - More electric houses - Processes converting power to gas for energy storage WP3: Design rules for IPE components for controlling power quality in urban networks - Investigate state of the art power quality solutions -

Projectinformatie / Project information

Projectnummer / Project number
TKITOE1721404

Subsidiebedrag / Grant amount
€ 437.573,00

Algemene informatie / General information

Penvoerder / Secretariat
TU Delft

Publicaties en materialen / Publications and attachments

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Eindrapport - IQ-grid

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Integrate power quality improvement functions into the interfacing converters of both the generators and e-loads - Urban energy planning strategy to define the optimal location for inserting the IPE
WP4: IPE measurement of power quality and data sharing
WP5: Case study and development IPE components - Business and market - Case study: definition and analysis - Test platform with power electronics based grid - Case study: experimental validation
WP6: Dissemination & communication e.g. via workshops.

Resultaat

Improving the power quality in urban networks by using their power electronic components, such as the ones used in RES, EV Fast chargers. Results to be delivered: - Identification and modelling of urban area energy network - Development: power electronic hardware and control algorithms - Methods allowing power electronic components to safely monitor the power quality - Design, fabrication and testing of power electronic components for validation.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

Voor meer informatie over de Topsector Energie, ga naar www.topsectorenergie.nl.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar www.rvo.nl/tse.