

Flexible and future power links for smart grids

Publieke samenvatting / Public summary

Aanleiding

The future electricity supply system will be characterized by large quantities of dispersed and renewable energy sources - like solar and wind - and new energy consumers like heat pumps and electric vehicles. If the anticipated number of such new elements is to be fully integrated into the existing distribution grid, the existing connections will become stressed significantly in trying to cope with the increased, bi-directional power flows. Simultaneously, the distribution grid itself will become significantly more complex to manage, in particular with regards to acceptable voltage deviations. The challenge for the distribution network operator (DNO) is then to maintain a (very) high level of availability as well as reliability and quality of supply (QoS) throughout its entire operation, despite these impending changes and, at the same time, limiting the additional investment effort. There are several options to realize this flexibility, e.g. demand response at end users or electricity storage. However, next to these service options the DNO needs solutions that are fully controllable by themselves.

Doelstelling

The main objective of the FLINK project is to investigate and develop new concepts to increase the flexibility and control of the distribution grids, particularly at the lowest voltage levels. In addition, the project aims to: 1 investigate the possibility of creating innovative power-balancing and voltage control algorithms for distribution grids containing a high participation of renewable energy and power electronic devices; 2 investigate how these

Projectinformatie / Project information

Projectnummer / Project number
TESG114007
Subsidiebedrag / Grant amount
€ 895.344,00

Algemene informatie / General information

Penvoerder / Secretariat
DNV GL Netherlands B.V.

Publicaties en materialen / Publications and attachments

- 09.07.2020

**Eindrapport FLINK 2019
(TESG114007)**

**Volg Topsector Energie op X / Follow
Topsector Energie on X**

@TSEnergie

innovative power-balancing and voltage control algorithms will interact with other possible smart energy mechanisms; 3 identify design requirements, new topologies and constraints of such utility-interactive power electronic systems.

Korte omschrijving

Problem approach To increase the flexibility and control within the lower voltage levels of DNO's distribution grids, the feasibility of reconfigurable DC links will be investigated. A novel concept based on utility-interactive power electronics - equipped with appropriate control algorithms - will be developed to increase grid capacity and control and steer the power flow within the network and thereby allow for larger numbers of new renewable technologies to be integrated in the future energy system - at acceptable costs - without the direct need for consumer engagement.

Resultaat

The FLINK project will deliver answers to the following research questions: 1 What can reconfigurable DC link concepts offer future Smart Energy Systems in terms of flexibility and cost savings? 2 What services can be offered to a future market for ancillary services with reconfigurable DC link concepts within distribution grids? 3 Is a reconfigurable DC link concept interoperable with other Smart Grid Services and is it in line with the Universal Smart Energy Framework USEF? 4 How does a reconfigurable DC link interact with the control system used in a particular network? Which protection philosophy is required to ensure reliable operation of the interconnected system and its components?

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.