Modular smart grid for business parks

Smart Grid Pilot Projects – Results as of September 2015

Innovation programme commissioned by the ministry of Economic Affairs

- Local electricity grid on DC voltage
- Electric transport and decentralised electricity generation
- Energy-neutral Heijplaat
- Modular smart grid for business parks
- Smart grid and energy transition in Zeewolde
- ProSECo examines four user groups
- Smart grid in sustainable Lochem
- Smart heat grid on TU Delft campus
- Your Energy Moment
- Couperus Smart Grid
- Cloud Power Texel
- PowerMatching City II

Goal
- The development of a modular smart grid for a new, energy-neutral business park based on smart power grids.

Issues
- How can we construct a modular and smart medium voltage grid that can adapt with the growth of the industrial park?
- How can we link locally generated renewable electricity to mostly process-based heating and cooling installations?
- How can we manage and combine fluctuating energy flows, energy buffers and energy prices in a smart grid?
- How can we encourage end users to use smart applications for energy supply and consumption?
- What are the legal opportunities for and hindrances to dynamic interaction between grid operators, energy producers and end users?

Duration
- July 2012 through December 2015.

Project partners

Cofely, Alliander, TU Eindhoven and Laborelec formed the Modienet consortium to design a development method for smart grids. This will ensure efficient distribution of all energy generated locally by wind turbines, solar panels, biomass boilers or biomass CHP plants in the A1 business park in Deventer. The development method is already being deployed in existing business parks to align energy supply and demand. Modular smart grids will make it possible to efficiently scale up the energy supply of business parks in the future.

Results
Modienet went through a difficult period when it proved businesses were not interested in establishing premises at the new Greenfield business park in Deventer. But the consortium persevered with the development of their system concept for the application of smart grids in area development. The result was the Modienet method. “The system is based on five themes: technology, organisation, legal, economic and ICT,” says Leon Straathof of Cofely and pilot project spokesperson for Modienet. “This varies from the right location for the grid cables and coordination between the participating businesses to choosing an ICT infrastructure and installing flexible energy systems. The method is not carved in stone; the smart grid can be adapted to the requirements of the stakeholders and the energy demand.” Existing business parks were also involved in the project in order to be able to run tests in the pilot phase. “We have completed
the development phase and are ready to implement in Duiven, Heerlen and Nijmegen,” says Straathof. “In Duiven we are considering how businesses can be connected to the energy grid. Currently, kilometres of cables have to be installed for each new business, while instead you could align supply and demand with neighbouring businesses. We hope to achieve this with the Modienet method.”

**Lessons**

The pilot project approached the ACM (Netherlands Authority for Consumers and Markets) to talk about the regulatory hindrances. “There are two wind turbines in Deventer that we wanted to connect to the same medium voltage grid as the business park. The law requires a separate substation for this, but this would mean the wind energy would only reach the businesses via a detour. Modienet wants this to be done differently, which is why we are talking with the ACM to see if the legislation can be changed.” According to Straathof, it is a question of being determined and persevering. “We do not give up and we give it all we’ve got. If you succeed in convincing people then this gives you a great boost of energy. But we aren’t doing it only for ourselves; we want other pilot projects to break through in this area too.”

**Plans for the future**

Although the project did not go entirely according to plan, Straathof is optimistic. “We have gained insight into what needs to be done to make it work and so we are continuing with our plan to generate local and decentralised energy in Deventer. Eight businesses have since displayed interest, now that the business park is accessible via a tunnel under the railway. So the setting still offers opportunities for us. Because we are building from scratch, we will be able to use the flexibility of the future businesses in the park to the best effect. Together with the Municipality of Deventer and Alliander, we now have our own permanent trial programme where we will be able to test and implement innovations in the coming years.”

**More information**

Would you like to find out more about the application of smart grids in business parks? Contact Leon Straathof of Cofely at leon.straathof@cofely-gdfsuez.nl or call +31 (0) 18 660 62 00.

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**Smart Grid Pilot Projects: energy innovations**

The goal of the Smart Grid Innovation Programme (Innovatieprogramma Intelligente Netten – IPIN) is to accelerate the introduction of smart grids in the Netherlands. The Netherlands Enterprise Agency (RVO.nl) carried out the project for the ministry of Economic Affairs. Over the past years, twelve different pilot projects have gained learning experiences with new technologies, partnerships and methods. The pilot phase has now been completed, but most of the projects will be continued. Via RVO.nl they share their experiences, particularly concerning the five key themes involved in smart grids: legislation and regulations, user research and user engagement, vision, standardisation and new products and services. The goal is to achieve widespread roll-out via the path of experimentation.

More information: www.rvo.nl/intelligentenetten