



Decentralised DC power network

Experimenting with Intelligent Networks

Aim

To carry out a sustainable trial with direct current in a horticulture area in order to show the benefits of a DC network.

Issues

- How can the potential of DC networks be realised?
- How do we achieve energy saving and economic benefits for investors and end-users with this network?
- How do we formulate laws and regulations in this area?

Running time

2011 to 2014

Project partners

- Direct Current BV - A company within which Direct Current (DC) Expert Harry Stokman and a team of specialists are developing innovative DC solutions for the renewable energy market. Also developing the missing links in the overall chain.
- Stichting Gelijkspanning - The link between business, science and government with regard to direct current.
- Joulz - Has been working on the construction and maintenance of the energy infrastructure in the Randstad urban area for over 50 years.
- Siemens - Technology partner for DC converters for high and medium voltage applications.
- DNV KEMA - This energy knowledge company will provide technical advice and will test the DC converters.
- Stallingsbedrijf Glastuinbouw Nederland (SGN) - Represents market gardeners amongst others and is contributing to the development and restructuring of the PrimAviera greenhouse horticulture area.
- Hellas - Manufacturer and supplier of all kinds of rectifiers based on a 60 year history.

The increasing use of complex equipment means that our power consumption is growing massively. We are also increasingly using decentralised power generation. The current alternating current network is not set up for this. That is why the first direct current network with a feed in of renewable energy is being created in the PrimAviera sustainable greenhouse horticulture area near Schiphol. This trial is intended to show that direct current is the solution to today's energy issues. Energy savings can reach 30 percent.

The DC network in PrimAviera is being created with the aid of a large number of solar panels and a combined heat and power station. It enables the easier exchange of electricity between a number of connected market gardeners and other generators and users, such as charging points for electric vehicles, solar panels and plant lighting. "And it gives energy savings which can reach 30 percent," explains Harry Stokman of Direct Current. This company develops innovative solutions for the renewable energy market and is working with various companies, government bodies and universities on the DC project. "Direct current allows a much better harmonisation between the supply of and demand for energy. If there is more supply than demand, the surplus power can be stored in a battery system and used at a later time."

Proving the quality of direct current

There are conflicts between various research findings relating to the potential of direct current. The amount of energy saved is also unclear. Research by the independent research and consultancy organisation CE Delft has shown that practical tests in a trial could show the added value of DC. That was the reason for various parties

to take part in the project. Stokman says: “We want to get to the point where the quality of a DC network is no longer in question. Other projects relating to DC work from the existing alternating current network. But we don’t want to muddle on with an existing system. We want to show that a DC network is the logical successor to the AC network.”

New laws and regulations

Laws and regulations relating to the DC network need to be developed from scratch. Direct Current will also be working on that over the coming years: the company has a legal solution programme running for this. “We need to clarify what can and cannot be done in this area, and that needs to be laid down in law,” explains Stokman. “If this is not clear, that will impede our work.”

More information

If you would like to know more about the approach to the DC network in the PrimAviera greenhouse horticulture area or the latest developments on the project, please contact Harry Stokman of Direct Current via harry@dcbv.eu or call +31 (0)6 11 95 07 20.

Stakeholders

- Prysmian - Cable manufacturer specialising in High Voltage Direct Current (HVDC) cables.
- Innosys Delft BV - Innovation company for electric cars.
- Jenbacher - Manufacturer of combined heat and power stations.

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Intelligent Network Trials

Innovating with energy

The aim of the Intelligent Networks innovation programme (IPIN) is to accelerate the introduction of intelligent networks in the Netherlands. In twelve trials we are gaining experience with new technologies, partnerships and forms of collaboration. The results of the trials are helping to resolve important issues relating to intelligent networks, such as the needs of consumers, new business cases and new laws and regulations. We are thus working cost-efficiently towards the large scale application of these networks.

For more information see:
www.agentschapnl.nl/intelligentenetten

Supporters of associated organisations

- TU Delft - TU Delft works with many other educational and research institutions at home and abroad and is known for its high standard of research and education. Carries out a great deal of research in the area of direct current.
- Schiphol - Amsterdam Airport Schiphol wants to be and remain Europe’s preferred airport. One important pre-condition for this is to be as sustainable as possible in terms of its own activities and to act as a driver for the continuous improvement of the processes of the airport’s users. The Grounds has been set up for this in order to work with TU-Delft, Wageningen University, Imtech, TNO and other partners on creating a sustainable airport.
- Magneto Special Anodes BV - Magneto is a participant in Wetsus, and has already taken over a number of patents for DC-relevant technologies from Wetsus; Magneto is also a member of (EU) consortia which are developing such technologies.
- Wetsus - Centre of excellence for sustainable water technology is a facilitating intermediary for trend-setting development of knowledge in the area of sustainable water treatment technology, and attaches great importance to conducting trials for technologies for producing energy from water through the generation of DC electricity.
- Koppert Cress - The company Koppert Cress specialises in ‘Cresses’, seedlings of unique plants which each have their own specific effect on the senses. This leading company has won a number of prizes and has been recognised for its innovative approach to both product and market.
- Greenport Campus Zuid-Holland - The Greenport Campus offers market gardeners and suppliers the opportunity to submit research requests in the area of technology direct to knowledge institutions. The Campus provides the greenhouse horticulture sector with professional support in the search for new innovative solutions and the bespoke training of personnel.