

SUCCESSFUL INNOVATION IS A JOINT VENTURE

Traditionally, energy and environmental companies have been abundant in the Eastern Netherlands. The kiEMT network now enables these companies to collaborate on innovative products and services, with successes varying from flexible solar cells to underground containers and from an algal nursery to hydrogen-fuelled mobile power. With a virtual knowledge centre, kiEMT is aiming for a breakthrough in electric transport.

by Annemarie Barbier

The sun is shining and there is a cool breeze blowing in Arnhem. Perfect weather for solar collectors and wind turbines, as well as a visit to kiEMT, the foundation for knowledge and innovation in Energy and Environmental Technology. Arnhem is the hub of the electric Netherlands. It is home to KEMA, the leading energy consulting and testing & certification company, the electric trolley bus, energy companies Nuon and Essent, and chemical concerns BASF and AkzoNobel. It is, therefore, the ideal place for a joint venture between companies involved in energy and environmental technology.

NETWORK

'I learned from economists that you should always form a cluster where the roots of a discipline lie, and given that there are more

than 600 organisations and companies currently working in the field of energy and environmental technology in the Eastern Netherlands, this region is perfect for kiEMT', says Harry de Vries, director and chairman of the KiEMT foundation. Since 2005, the foundation has been bringing parties together to look for new ideas and develop them into products and services. What began as a small-scale initiative from within the business sector has grown into a powerful collaborative network of businesses, research and education institutions and governments. And the formula works, with 25 innovations and companies being created in the last four years. Typical examples include the environ-

KiEMT chairman and director Harry de Vries: 'People are only prepared to switch if they are convinced of the quality of the new product and the necessity of the change.' Photo: Gerard Verschooten



mental company Sidcon Milieutechniek, which manufactures underground containers that reduce plastic, waste processor Providentia, which oxidises liquid industrial waste underground into ash and heat, and the algal nursery Ingrepro, which uses residual flows from the food processing industry and CO₂ from Essent. Each of these companies has benefited from kiEMT's knowledge and network. Other successes include Purity, the hydrogen-fuelled mobile power generator from Bredenoord, the flexible solar cells from Nuon Helianthos (see boxes), and Binnenstadservice.nl (City Centre Service).

CLEANER TRANSPORT

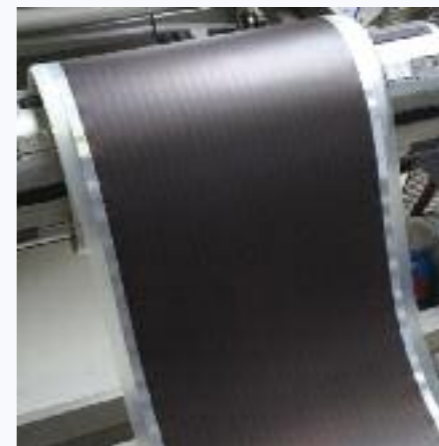
'Binnenstadservice.nl started in Arnhem on 14 September', says kiEMT programme manager Erik Meiberg enthusiastically. 'We are the fourth city in the Netherlands to use this service to reduce traffic and traffic-related pollution in the city centre. Shopkeepers tell their transporters to deliver packages to the Binnenstadservice distribution centre outside the city centre. The deliveries for a particular street are then bundled and delivered by bicycle, electric car or gas-driven lorries. Goods ordered by consumers, such as washing machines, are delivered via Binnenstadservice and they no longer enter the city. As a result,

KiEMT programme manager Erik Meiberg on breakthrough projects: 'If it's possible anywhere, it's certainly possible here.' Photo: Gerard Verschooten



Flexible solar cells

A nice example of an innovation from the Eastern Netherlands is the flexible solar cells from Nuon subsidiary Helianthos. The solar cells will be launched in a few years' time as lightweight, flexible, unbreakable foil suitable for curved surfaces such as roofs, façades, sunblinds and noise barriers. Its light weight means that the foil can be applied over large (roofing) surface areas without the engineering structure requiring reinforcement. The foil, which was developed in the 1990s by AkzoNobel, contains solar cells made from amorphous silicon fifty times thinner than a human hair.



The production of the solar cell foil is currently being carried out in Helianthos' pilot plant in Arnhem, where they are scaling up production and developing a new generation solar cell foil. The first production plant will be built in 2010. The existence of the kiEMT knowledge cluster was an important factor for the financial support from the province and the choice of location by the parent company.

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www.helianthos.nl

Flexible solar cell foil from Helianthos. Photo: Nuon

the city centre is cleaner and more easily accessible.' KiEMT supported the company in developing its strategy and business plan, helped to secure funding, and also supported Eco2City, the foundation responsible for rolling this initiative out nationwide.

BREAKFAST SESSION

What is the key to successful innovation? De Vries and Meiberg, unanimously: 'The participants. They are so enthusiastic that they even got together during a breakfast session at 7.15 a.m. to talk about underground storage for CO₂.' KiEMT was established from within the business sector, by entrepreneurs wanting to collaborate in order to achieve concrete results. 'We bring entrepreneurs together, help them find the right technological know-how that will enable them to develop an idea and look for a suitable sounding board or a laboratory where they can make their products. In addition, we also support starters with the operational aspects associated with the step from idea to company', explains Meiberg, 'and we can also provide high-quality starters with €25,000 credit.' TechnoPartner, which is

part of the Ministry of Economic Affairs, has approved kiEMT as a consortium that can carry out independent incentive projects.

3 X 20

A new initiative is the Gelders Transitiecentrum, a virtual knowledge centre focused on sustainable solutions for mobility, the built-up environment and a bio-based economy. 'The government would like to achieve the '3 x 20' objectives by 2020: a 20% reduction in energy consumption, a 20% reduction in CO₂ emissions and 20% more renewable energy. This knowledge centre is ideally suited to achieving such breakthrough projects', says Meiberg. He sees it all before him: an energy-neutral housing estate or a breakthrough in electric transport. 'If it's possible anywhere, it's certainly possible here.' 'The development of a properly working system such as electric transport is key', emphasises De Vries. People are only prepared to switch if they are convinced of the quality of the new product and the necessity of the change. 'In terms of technology, there is far more possible than is socially acceptable.

People need signals such as rising energy prices and a film by Al Gore in order for them to change their behaviour. And they expect a good product, an electric car with a longer range than is currently the case and plenty of charging stations', adds Meiberg.

ACROSS THE BORDER

While the kiEMT Foundation is primarily focused on the province of Gelderland, it also looks beyond its borders. A joint venture with the province of Overijssel is under development and companies from other parts of the Netherlands are also welcome. 'Everyone can join in, but you have to come to Gelderland', says Meiberg, clarifying the working method. There are also international opportunities. 'We see an abundance of opportunities in the German industrial region of North Rhine-Westphalia, for example. We are open to international contacts, but we will remain a Gelderland club', says De Vries. ●

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Hydrogen-fuelled mobile power

Mobile power using a hydrogen fuel cell is the sustainable invention by Bredenoord, the Apeldoorn-based supplier of mobile energy services. The mobile power generator, called Purity, was launched at this summer's Lowlands Festival, and comprises a stack of sixty fuel cells of around 5 mm thick. An electrothermal reaction between bottled hydrogen and oxygen from the air enables the fuel cells to produce electricity, heat and water. In contrast to traditional diesel generators, the Purity does not emit any harmful substances such as CO₂, fine dust, soot or nitrogen oxide. The quality and reliability are

equal to that of diesel generators, claims Bredenoord. The Purity took 18 months to develop. Bredenoord worked with Nedstack, which specialises in fuel cells and, like Bredenoord, is a member of the kiEMT network. In a consortium including Nedstack, Hygear, AirProducts, ECN and Exendis, Bredenoord is now working on a larger power generator, the Uniflex, which can use both hydrogen and bio-ethanol as fuel.

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www.bredenoord.com



This summer, the discussion tent at the Lowlands Festival was powered by Bredenoord's hydrogen-based generator, the Purity. Photo: Bredenoord