Plant-e

Spark of Nature!

A unique company

Plant-e was founded on the 14th of September 2009, as a spin-off company from the sub-department Environmental Technology at Wageningen University by Marjolein Helder and David Strik.

In 2012 Nanda Heshof was hired and since 2013 Marjolein en Nanda are committed fulltime to Plant-e. In that same year a large research project started and Plant-e was able to grow to its coreteam: Marjolein, Nanda, Pim (de Jager), Paulien (van Straten) and Daniël (Groen). Apart from this coreteam Plant-e has several temporary and on-call employees.

David works as an assistent professor at Wageningen University and is still an important link between the scientific research and the research and development at Plant-e.

Plant-e is constantly working on developing the technology and products further. Everyone at Plant-e contributes to this development from their own discipline, making Plant-e a dynamic company.

"Plant-e technology uses naturally occuring processes around the plant roots. This way we can harvest energy while the plant can keep on growing. It doesn't get any greener than that! "

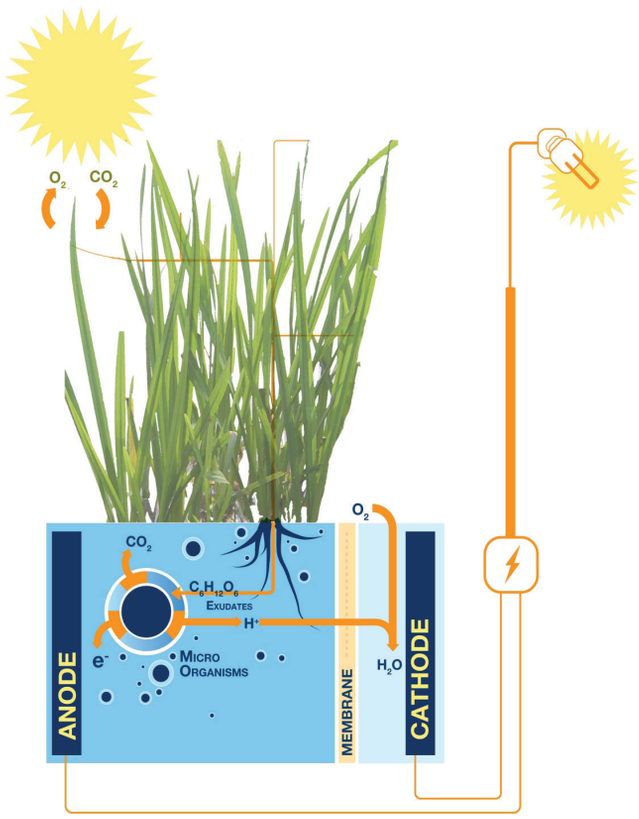
Revolutionary

Plant-e develops products in which living plants generate electricity.

Plants produce organic matter through photosynthesis. Part of this organic matter is used by the plants to grow, but a large part can't be used by the plant and is excreted into the soil, through the roots.

In the soil, bacteria around the roots break down this organic matter. In this process, electrons are released as a wasteproduct. Plant-e technology makes it possible to use these electrons as electricity.

Research shows that plant growth is not harmed by the harvest of electricity. This means that the plant can keep on growing while electricity is produced at the same time.



Patented technology

Plant-e technology was patented in 2007. It enables Plant-e to produce electricity with living plants at practically every site where plants can grow and water is abundantly available. The technology is based on natural processes and is safe for plants, bacteria and the environment.

Energetic building blocks

One of the products that Plant-e has developed is a modular plant tray. In these trays, or modules, plants grow in an electrode of carbongrains. Subsequently, the plants grow through a screen that contains a spacer and a counterelectrode. By connecting both electrodes, electricity can be produced with the plants.

The roots of the plants are continuously submerged in water. This creates the ideal environment for the technology. This is why marshplants thrive best in this Plant-e system.

The modules are 50cm x 50cm. Setups can be deliverd in several sizes, starting from one square meter. Per square meter a blinking LED-light is connected. A bigger setup creates more possibilities for other electrical applications.

The modules can be included in designs for rooftop gardens, public spaces like schoolyards or eventsites, indoor gardens or as an eyecatcher at several locations.

A fairy-like effect

One square meter of the Plant-e modular system is a unique, sustainable and decorative element for any living- or work-environment. The setup appeals to one's imagination and visualizes the technology in a playful way.

Multiple square meters with blinking LED-lights create a fairy-like and magical effect. The modular setup makes it possible to create many different designs.

Do it yourself

WIth schools and consumers in mind, Plant-e designed "*DIY (Do It Yourself)-boxes*".

With these boxes people can get their hands dirty on Plant-e technology and make their own Plantbattery. The boxes contain all materials needed to make 5 or 25 plantbatteries (depending on the type of box) including the electronics needed to light an LED on the electricity produced by the plants and measure the output.

The composition of a DIY-box plantbattery is the same as the composition of the modular setup but on a smaller scale.

The Plant-e DIY-boxes are very suitable for use as teaching materials in (high) schools. Many different biological and chemical processes are involved in the Plant-e technology and assembling a plantbattery provides insight into these processes.

Children from 8 years old can work with the DIY-boxes. They really enjoy putting a plantbattery together and seeing the magical effect of generating electricity with a plant.

"It is fantastic to experience that you can use plants to generate electricity. With the construction guide the DIY-box is easy to assemble. The included multimeter allowed me to measure the output, which I put in a graph. Very nice to experiment with."

(User of theDIY-box)

Tubes in the ground

Plant-e technology is not only suitable for the built environment. It is Plant-e's ambition to apply the technology on a large scale, in natural environments.

In previous products, plants were taken out of their natural environment and put in the Plant-e technology. In 2013, Plant-e started development of a completely new design in which the technology is brought to wet (natural) areas. Suitable area's are marshes, floodplains and river delta's.

This new design consists of flexible tubes, which are installed under the surface over the length of many meters. With this tubular system it is important that the tubes are installed beneath the ground water level.

The tubular system makes it possible to generate electricity in wet area's, while the area can still be used for the original purpose. This enables multifunctional land use and adds a new business model to the area.

Research and development of the tubes is still ongoing. The currect testarea's (pilots) are located in the provinces of Zuid-Holland and Noord-Brabant. First results of these pilots are expected at the end of 2017. Based on these results the design of the tubes will be optimized. The current pilot phase will be followed by a demo phase before bringing the tubular system to the market.

The application of the tubes stimulates multifunctional land use. This way, generating electricity can go alongside recreation, nature conservation and cultivation of various crops.

Discover Plant-e

Plant-e can be discovered at the following locations.

Modular systems:

* HEMbruggrounds in Zaandam
* Next to the A12 (Ede/Wageningen)
* Schoolyard Christelijk College Zeist
* Grounds of Neobuild in Luxembourg
* Patio of the Ministry of EZ in Den Haag
* Rooftopterrace of Cityhall in Venlo
* Main office Interpolis in Tilburg
* Rooftopterrace of the Netherlands institute of Ecology (NIOO)
* Windpark Nijmegen-Betuwe

Tubular system:

* Next to the N470 at Berkel en Rodenrijs (ZH)
* Nyrstar-grounds in Budel (NB)
* Natural garden of Wageningen University

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