



PRESS RELEASE

Kaamera extraction in mobile demo unit

In April 2022, a mobile Kaamera extraction plant will be in operation at the wastewater treatment plant (WWTP) in Utrecht, The Netherlands. The pilot is built in the frame of the WATER-MINING project and allows Kaamera production to be researched in different environments. The installation is containerized, transportable and due to the batch process easily adjustable to local conditions.

Kaamera

Kaamera is a new bio-based raw material that is extracted from the sludge granules that form during the Nereda® purification process. Due to its unique properties, Kaamera lends itself for multiple applications. It can repel and absorb water and it is fire retardant. It is also very suitable for coatings and composite materials. Currently, applications in agriculture prove to be very promising.

The first Kaamera plant in the world is located in Zutphen, The Netherlands. It is operated by the Rijn en IJssel Water Authority and has been producing Kaamera from the process water of the dairy industry since October 2019. The second plant in Epe by the Vallei en Veluwe Water Authority produces Kaamera using sewage water, mainly from households.

Quote

Prof. Mark van Loosdrecht, Chair professor in Environmental Biotechnology at the Delft University of Technology: *With the construction of this installation, we aim to stimulate the international product development and research of Kaamera. This material adds economic value to the water chain and can result in a net-zero carbon wastewater treatment.*

The mobile Kaamera unit

The installation consists of four mobile containers (*see illustration below*). The heart of the installation is a 20ft container with separation equipment (centrifuges). This container is stacked on a 40 ft container with general equipment like pumps, tanks and control cabinet. A 10 ft container holds a steam generator to heat the sludge and a 20ft container holds the chemical storage and dosing equipment. Two reactors for warming and alkalization of the sludge and for cooling and acidification of the Kaamera are part of the installation.

The installation serves to promote Kaamera and the Kaamera extraction technology on the Iberian Peninsula, the WWTP Utrecht / Netherlands and beyond. Stakeholders should be able to visit the technology and see that it works reliable.

With the data from the pilot, reliable and plant specific mass balances for electricity, Kaamera yield, chemicals, water, waste streams can be made which are the basis for further scale-up considerations like business plans or environmental evaluations.

In parallel the possibility to integrate phosphate recovery in the Kaumera extraction process and to produce green gas from an organic rich waste stream from the extraction will be evaluated on lab scale in the WATER-MINING project. This is however not part of the actual installation but can be integrated at a later stage of the project.

Project partners for all Kaumera related activities in the WATER-MINING project are TU Delft, ACCIONA, Águas do Algarve, Lenntech, RHDHV and Wetsus.

Why Utrecht and the Iberian Peninsula?

The owner and operators of the WWTP Utrecht (Water Authority Hoogheemraadschap De Stichtse Rijnlanden) are very interested in innovative technological solutions recovering raw materials with multiple market applications, making a major contribution to the national's objective of sustainability and circular economy and reducing the total sludge discharge of the WWTP.

All Kaumera experts (operators, designers, scientists, product developers) are close by in the Netherlands and can give advice in starting up the pilot installation.

In the second half of 2022, the plant will go to the WWTP Faro/Olhão, Portugal. Águas do Algarve, the owner of the WWTP, has similar interests as their Dutch colleagues in Utrecht.

For the future business development of Kaumera it is important to know if Kaumera produced from wastewater treatments located in different climate zones with different wastewater characteristics differs and if individual applications have to be defined.

Future objectives for Kaumera

Kaumera will be able to replace chemical polymers in a variety of high value applications. It will add value to the water chain, thus making water purification more cost effective.

We aim at production of Kaumera at all Nereda® installations worldwide to produce a local, environmentally friendly alternative for oil derived products, stimulating local industries.

Contact details Kaumera:

For more information, see attached Q&A

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ABOUT WATERMINING

WATER-MINING is an EU-funded multidisciplinary research project that creates water management solutions using a circular economy approach. The project's consortium consists of 38 public and private partners and four linked third parties from 12 countries and is led by the Delft University of Technology. WATER-MINING works with pilot sites in Cyprus, Spain, Portugal, Italy and the Netherlands to demonstrate new and efficient ways to reclaim nutrients, minerals, biopolymers, energy and freshwater from desalination, and industrial and urban wastewater. To successfully integrate these value-added products into resource supply chains, the project produces science-based, market-oriented policy recommendations, designs circular business models, and engages stakeholders, leading to sustainable management of water resources.

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