

First acid-base flow battery at pilot scale successfully installed



Last month the BAoBaB pilot plant has been finally installed, representing the first acid-base flow battery to be demonstrated as energy storage system in the real world. The pilot, which has a nominal power of 1kW and energy storage capacity of 7kWh, will be tested at the power plant in the island of Pantelleria (Italy). The BAoBaB project is a European project coordinated by Wetsus, in collaboration with AquaBattery, Fujifilm, University of Palermo, CIRCE, and SMEDE.



The need of energy storage for our society has drastically increased in the last years, due to a growing share of renewables (wind and solar) on electricity grids. Novel energy storage systems need to be developed, to ensure grid stability and allow sustainable large-scale storage of electricity during low-demand time, and distribution during peak demand time.

The aim of the BAoBaB project is to develop and demonstrate the first **acid-base flow battery as a novel and environmentally friendly technology** for stationary energy storage. The technology is based on bipolar electro dialysis, i.e. a membrane process able to dissociate water into acid and base solutions. During the battery charge, the excess electricity is used to generate acid and base from a salt solution. During discharge, the opposite process occurs, and electricity is generated by the controlled mixing of acid and base. As a result, such environmentally friendly technology allows to store electric energy using only salt and water.

The acid-base flow battery technology has already been demonstrated at laboratory scale, and since 2017 the BAoBaB partners have been focusing their R&D efforts on membrane development, process modeling, life cycle assessment, and battery design and scale up. The first pilot-scale plant has been recently installed in the island of Pantelleria (Italy), and will be tested in the next months at the local power plant. An important milestone in the path towards sustainable energy storage.

BAoBaB partners



Info and contacts:

www.baobabproject.eu | Baobab.Project@wetsus.nl

New Members

Susphos (www.susphos.com) became a platform participant of Wetsus. Susphos is a pioneering company focused on upcycling of phosphate rich waste streams to generate high-quality alternatives to replace current fossil-sourced products.

Water&Light BV (www.waterandlight.eu) also joined as a platform participant, Water&Light performs investigations on health and the quality of crops and food for humans and animals.

Bert Hamelers appointed professor at WUR

Bert Hamelers, Program Director at Wetsus, has been appointed as a Professor Electrochemical Resource Recovery at Wageningen University and Research, ETE. The position is embedded in the chair Biological Recovery and Reuse Technology, led by Cees Buisman. Bert will start this week, and will combine his professorship with his position at Wetsus.

Read this interesting [article](#) at the WUR website.



Wetsus Webinar series starting with Bioassays on December 10

Bioassays: added value for water quality monitoring

Are you responsible for the removal of micropollutants by applying a tertiary treatment step in your waste water treatment plant? Do you need better tools to know if you removed enough harmful compounds? Do you want to determine if the purification process of your (drinking)water is removing known and unknown micropollutants in an adequate way? Then this webinar is recommended!

Bioassays can aid in water quality assessment as they not only help to sensor chemical pollutants, but also provide insight in the type of adverse effects that these compounds can have. Bioassays don't replace, but extent chemical analytical tools. There is not one ultimate bioassay that provides all answers, so where, when and how should these be used in water quality assessments, and which type should you use? In this webinar we present an overview of bioassays, including a new type developed by Wetsus, and we discuss their current and future usability with 4 experts.

We invite you to join this webinar online on Thursday 10th December from 15.30-17.15 h. Registration:

<https://www.wetsus.nl/registration-webinar/>

Contributing experts:

Dr. Milo de Baat, University of Amsterdam

Antoine Karengera MSc. BPharm, Wetsus

Dr. Milou Dingemans, KWR Water Research

Dr. Corine Houtman, Het Waterlaboratorium

More webinars, save the date!

February 11, 2021, we will address **Artificial Intelligence in Water Technology**. The management of water infrastructures in terms of water quantity and quality can greatly benefit from novel automated ways to collect, process, and learn from data. During this webinar we'll hear about some examples.

February 25, 2021: Food & Water. Water is a critical component in food physics and food technology. Taste, quality and shelf life are determined by the way water interacts with other food components. In this webinar we explore aspects of food from the water rather than from the ingredients perspective and explore what water technology can bring to these disciplines.

Ettore Virga wins the Marcel Mulder award 2020

At the Wetsus Members Only Congress, held on November 26, the Marcel Mulder Prize 2020 was awarded to Ettore Virga.

Ettore is working for the Membrane Science & Technology cluster of the University of Twente. His research is done in the Concentrates Theme at Wetsus. He has invented a new generation of membranes that can prevent fouling even in the most adverse conditions.

A novel zwitterionic polymer has been successfully coated on membranes to make them less prone to fouling. In this way, the industry will use less energy and chemical consumption for water filtration.

The coating can be applied to any surface where fouling needs to be avoided, creating an even bigger impact.

Ettore Virga will graduate within the standard 4 years and already has published 6 papers on his new technology, all in high ranking journals. He is now in charge of coordinating the Concentrates Theme, while finishing his PhD research.





Christian Felber visited Wetsus last week. Felber is a writer and university lecturer and the initiator of the “Economy for the Common Good“, the topic of his keynote at our online Members Only Congress.

Patent transferred to Paqell

Wetsus transferred a patent on advanced process control to Paqell BV. Paqell, a joint venture of Paques and Shell, provides biotechnological desulfurization technology of gas streams. The patent, which is a result of the research of the Sulfur team, helps to optimize process performance under fluctuating feed conditions. Wetsus wishes Paqell a lot of success with further valorization of the invention.

