enesca

THE ORGANIC ENERGY STORAGE DEVICE PROJECT

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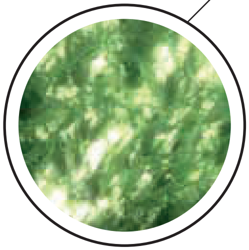
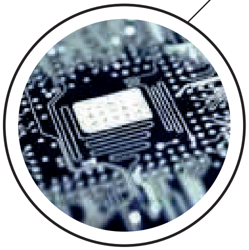
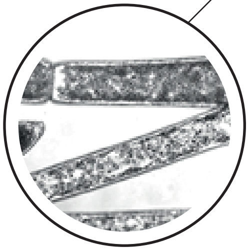






INTRODUCING THE FUTURE OF ENERGY STORAGE

THE ENESCA PROJECT AIMS TO BRING FORWARD NEW TYPES OF ENVIRONMENTALLY FRIENDLY POWER SOURCES AND ENERGY STORAGE SOLUTIONS.

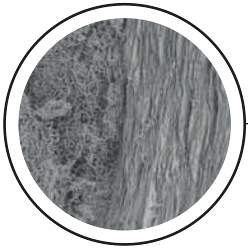
In 2007 a group of researchers in Uppsala, Sweden, came up with the idea of using cellulose from the cladophora algea as the basis for a polymer composite material. That proved to be suitable for a thin paper based battery.

The prototype was tested with very promising results and the discovery of a thin, flexible, environmentally friendly battery was a fact.

The project has been financed by Swedish Foundation of Strategic Research and the Nordic Council of Ministers' Nordic Innovation. It has today developed into a collaboration with industrial and academic partners.

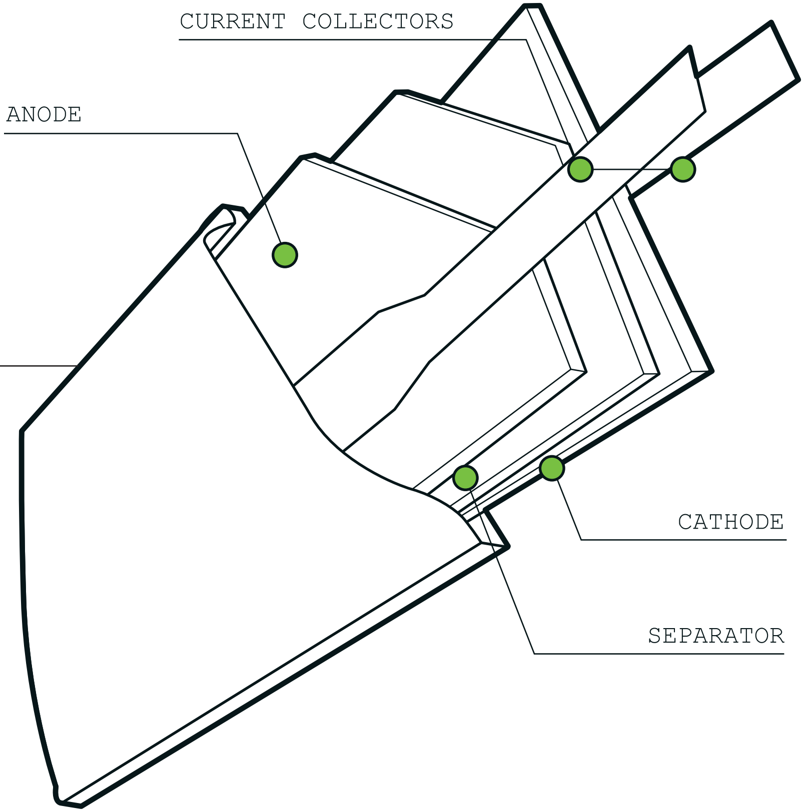
Read more about the organic energy storage device project and its progress, challenges and how you can join us on www.energyscandinavia.eu

TECHNICAL DATA



Close-up

Electrode and separator



TECHNICAL DATA

Chemical composition:

polypyrrole, cellulose, graphite, (water-based) electrolyte

Thickness:

from about 1 mm

Cell voltage:

0.6 to 1.0 V

Cell resistance:

>0.4 Ohm

Active material:

up to 65% in the composite

Electrode specific surface area:

up to 246 m2/g

Cell capacitance:

up to 60 F/g (active material)*

up to 2.1 F/cm2

Charge time:

22 s for a 12 F device (0.8 V)

Current density:

up to 31 A/g (active material)

Energy density:

up to 1.75 Wh/kg (active material)*

up to 0.18 Wh/L ((active material)*

Power density:

up to 2.7 kW/kg (active material)*

up to 0.27 kW/L (active material)*

Self-discharge time:

a few days

Cycling stability:

0.7% capacitance loss during 4000 cycles

Technical advantages:

non-metal based, fully organic energy storage device

Special features:

disposable as non-hazardous waste after use

REFERENCES

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A. Razaq, L. Nyholm, M. Sjödin, M. Strømme, A. Mihranyan. Adv. Energy. Mater. 2 (4) (2012) 445-454 (BACKCOVER)

See more references on **www.energyscandinavia.eu/publications** or scan the QR-code.

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