

New approach for matching production and consumption of renewable electricity promotes large-scale integration of solar and wind power

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VTT Technical Research Centre of Finland is coordinating the **BALANCE** project, which brings together leading European research institutes in the field of electrochemical conversion. The project aims to demonstrate a technology that enables flexible storage of large amount of renewable power. Such technologies are needed for the further integration of additional wind and solar power. The European Commission funds the project by 2.5 million euros.

As the investment costs of solar and wind installation are decreasing, the most significant obstacle for further power from the very same hydrogen gas it produced. Using the same device for converting power to a storable gas and for converting this gas back to power again enables very flexible usage of the device, thus increasing its operating hours as well as reducing its capital costs.

Already today, the electricity market is being challenged when flooded by green electricity on a windy or sunny day. This causes the electricity prices to plunge or even go negative in some European countries. Because electricity cannot be stored as such and our current capacity to store it with hydropower or batteries is limited, the production of windmills and solar panels must at times be curtailed to avoid power grid failure. This issue will become more and more important as the production capacity of renewable electricity is growing rapidly.

With a flexible energy conversion technology, such as a ReSOC, it is possible to balance the power market. At peak production hours, power is converted into a chemical, which can be stored for later use or used as industrial feedstock. Similarly, during peak consumption hours or on a calm, cloudy day, the stored chemical is converted back to electricity at the same site. Therefore, a ReSOC unit supports the integration of wind and solar power with the current power system by providing a compact, affordable and flexible technology for the conversion and storage of renewable power.

The three-year project began in December 2016 and will receive EUR 2.5 million in EU Horizon 2020 funding (grant agreement 731224). It includes several leading European research institutes and universities in the field of electrochemical conversion, including VTT (FI), DTU (DK), CEA (FR), ENEA (IT), University of Birmingham (UK), TU Delft (NL), EPFL (CH) and IEn (PL).

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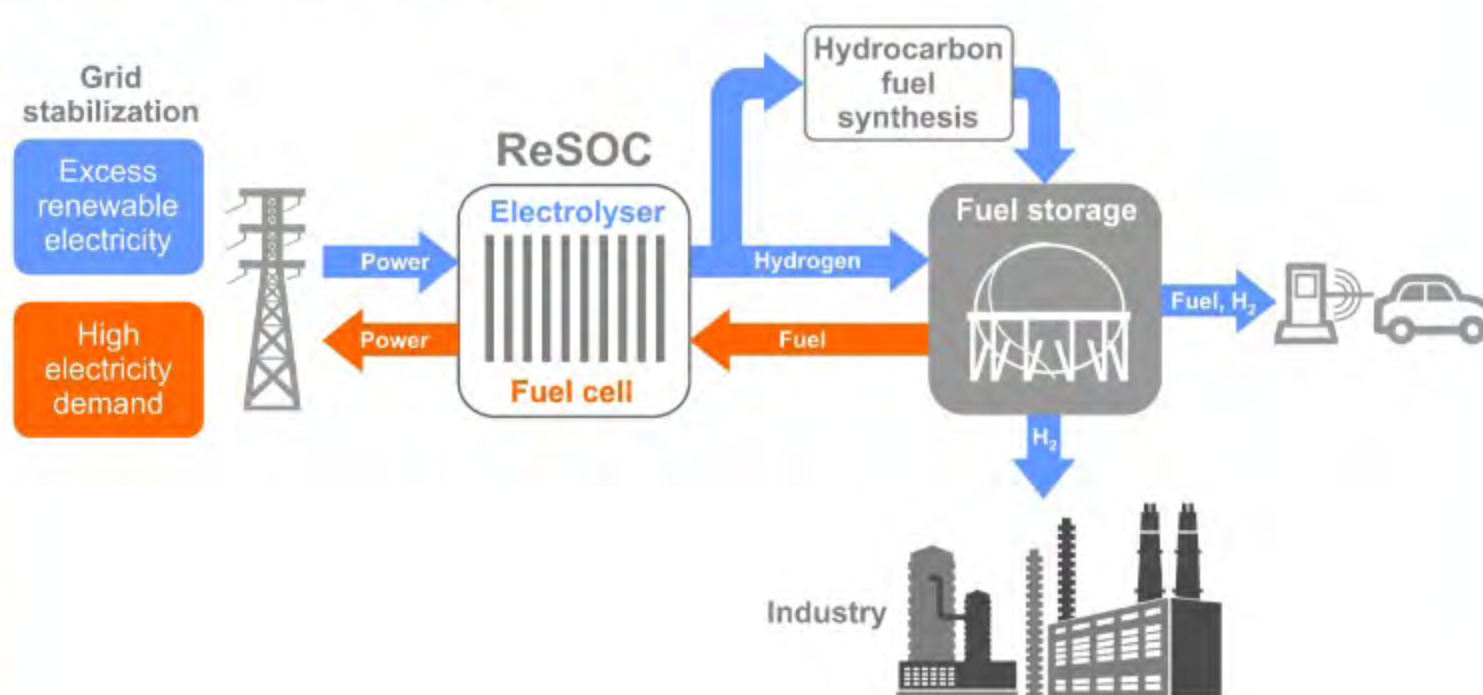


Figure 1 Schematics of the ReSOC concept. It is the missing link between the power grid and the fuel or the chemical feedstock for the industry.

Further information:

www.balance-project.org

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