

PRESS RELEASE

Innovation in 100% renewable energy: CNR and Sweetch Energy to launch in 2023 the first pilot plant for large-scale production of osmotic electricity in the Rhone delta

The breakthrough INOD^{®1} technology developed by Sweetch Energy enables the natural, continuous and large-scale production of 100% renewable electricity by harnessing the difference in salinity between fresh and sea water. The partnership will accelerate the development of the French industrial sector in osmotic electricity production.

Lyon and Rennes, 14 February 2022 –

Sweetch Energy, a renewable energy player specialising in osmotic energy, and CNR (Compagnie Nationale du Rhône), France's leading producer of 100% renewable electricity from water, wind and sun, have signed France's first industrial partnership on osmotic energy, a promising new component of the increasingly diversified global energy mix.

Osmotic energy, a still-untapped permanent source of renewable electricity

Osmotic energy is generated by harnessing the difference in salinity between fresh river water and sea water when they meet. It has the advantage of not being subject to weather conditions and can produce green electricity on a permanent basis. It is 100% natural, renewable, and massively available across the planet. Every year, nearly 30,000 TWh of osmotic energy – more than the world's total electricity demand – is released from the world's deltas and estuaries². While the most optimistic projections now foresee current renewables not exceeding 50% of global electricity production by 2050,³ adding osmotic energy could increase this share to over 65%⁴.

A first osmotic power plant as soon as 2023

CNR and Sweetch Energy will combine their expertise in transforming fresh and salt water energy from the Rhone delta into electricity by installing the delta's first osmotic power plant. This pilot site will integrate the INOD[®] technology developed by Sweetch Energy. Resulting from French public research directed by Professor Lydéric Bocquet (CNRS / École Normale Supérieure), the INOD[®] technology incorporates the most recent advances in nanotechnology and eco-materials allowing for high ionic current generation from osmotic diffusion. This unparalleled performance paves the way for the large-scale, competitive generation of osmotic energy.

¹ Ionic Nano Osmotic Diffusion

² Estimate made by Sweetch Energy based on the research paper *Osmotic power plants: Potential analysis and site criteria* (P. Stenzel and H.-J. Wagner, 2010)

³ Sources: Statista, IEA - <https://www.statista.com/statistics/238610/projected-world-electricity-generation-by-energy-source/>

⁴ Sweetch Energy

By the end of 2023, the plant will start to produce 100% renewable electricity on a permanent basis. A modelling and technical testing phase will first be carried out at CACOH, CNR's integrated laboratory. Tests will also be carried out in various areas of the Rhone delta to determine the exact location of the pilot site. By 2030, more than 4 million MWh could be produced at a competitive price each year in the Rhone delta thanks to osmotic energy, ie. twice the annual energy consumption of the population of Marseille.

According to Frédéric Storck, Director of CNR's Energy Transition and Innovation Department: *"We absolutely need new sources of renewable energy to meet the dual challenge of growing electricity demand and decarbonisation. Osmotic energy, being available on a large scale and still untapped, is a tremendous opportunity for meeting this challenge! As a producer of 100% renewable electricity and a laboratory for the energies of the future, we are constantly seeking to build and support projects that accelerate the ecological transition. This collaboration with Sweetch Energy allows us to develop a new and very innovative source of energy from the river we manage, one that is complementary to renewable energies from water, wind and sun that we work on."*

For Nicolas Heuzé, CEO and co-founder of Sweetch Energy: *"The industrial journey of osmotic energy has just begun! Sweetch Energy's mission is to accelerate it to expand the frontiers of renewable energy rapidly and decisively. The Rhone Delta is one of the important sources of osmotic energy that will allow the production of truly clean electricity at a competitive price. We are therefore very excited to start this collaboration with CNR, whose know-how in renewable energy and innovation is recognised worldwide. We are laying the first stone of a new French and European industrial sector addressing the challenges of the fight against climate change and the energy transition."*

Diagram of osmotic plant



About Sweetch Energy

Founded in 2015, based in Rennes, France and with around 20 employees, Sweetch Energy is a renewable energy company specialising in osmotic energy, and committed to a carbon neutral world. Its INOD® technology enables the production of clean and competitive electricity from salt water, a permanent and abundant source of energy still untapped. Driven by a desire to expand the frontiers of renewable energy, its multicultural and highly qualified team combines scientific expertise and industrial vision. Sweetch Energy

benefits from the support of many renowned European and French institutions. It is financially supported by deeptech and cleantech investors (Go Capital, Demeter Ventures, Future Positive Capital) as well as by the BPI and ADEME, and cooperates closely with French research institutions, in particular teams led by Professor Lydéric Bocquet (CNRS, ENS). Sweetch Energy won the Mondial Innovation, I-Nov and I-Lab competitions and participated in the European Nanophlow consortium founded by H2020 as part of the FET-Open program.

About CNR

CNR (Compagnie Nationale du Rhône) is the leading French producer of 100% renewable electricity with an installed capacity of almost 4,000 MW. It transforms energy from the sun, wind and the water of the Rhône River, a concession it has held for almost a century. Its work providing energy allows it to finance and develop other general interest activities, coordinating with local stakeholders: managing navigation and port areas, irrigation and managing water resources, developing the Rhône River and preserving its natural ecosystems. CNR manages three natural resources – water, wind and sun – as commonly-held assets for which it shares governance and part of the value with local authorities. Its threefold expertise in energy, transport and irrigation allows it to provide innovative energy and ecological solutions for regions throughout France. CNR is the only public interest company in France. Its capital is mainly public (held by 183 local authorities and public institutions and the Caisse des Dépôts Group); ENGIE is its main industrial shareholder.

Key figures :

- 27,000 ha of concession land (14,000 ha on the river, 13,000 ha on land, of which 836 are suitable for berth leasing)
- 15.4 TWh of production from exclusively renewable sources (in 2020)
- 4,000 MW of installed capacity in water, wind and solar energy:
- 152 production sites in hydroelectric, wind and photovoltaic energy (49 hydroelectric power stations, 57 wind farms and 46 photovoltaic power stations)

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