

STEPSol, a Corsican start-up founded on September 30<sup>th</sup>, 2016, develops a hydraulic storage solution coupled with a solar production, to supply sustainable electricity through day and night, to rural territories or isolated zones.

### An idea, a vision, a story

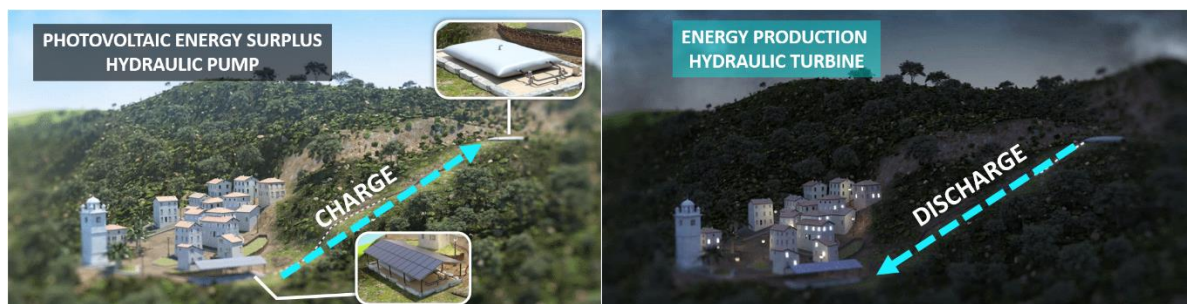
We aim at developing sustainable and responsible projects, in accordance with communities and the environment, by considering local specificities and electrical grid constraints. Furthermore, the hybrid system developed by STEPSol goes beyond a simple green electricity production: it creates additional benefits to the people who host the installation.

Thus, “water and solar energy united for the environment” implies the development of a simple and sustainable energy solution, adapting harmoniously to each territory.

### Principle of our “hydraulic battery”

The solution developed by STEPSol combines the simplicity and rusticity of pumped hydro storage system (STEP in French) with a smart management of solar and hydraulic resources.

During the day, solar panels power a village but also a pump which brings the water from a lower tank to an upper tank. When night falls, or when the electrical demand is too important, the water goes down and activates a turbine, which will produce electricity and compensate the lack of solar energy. Water acts as a “hydraulic battery”: it makes the solar production fully controlled and flexible.



This hydraulic battery allows flexible storage services for several hours. Also, more services are provided for consumers or grid gestionnaires :

- The system encourages local electricity consumption
- The system participates to territorial grid balance (predictability, guaranteed power...)
- The system actively reinforces the local grid and improves electricity supplying quality

About the storage, our innovation focuses on the development of a completely reduced-size pumped-storage power plant, and the use of an artificial closed-loop circuit. Thanks to a certified R&D program, and a first operational system on the technological platform Paglia Orba in Corsica, our systems are finely optimized according to the consumption, the electrical grid, and the topography.

Corsica, considering its mountains and its partially connected electrical grid, is a great island to begin our deployment. There, we have built scientific partnerships, and we are supported by the State and regional infrastructures too.

## Positioning



Globally, the energy storage is a growing market accelerated by the development of intermittent renewable energies.

Our pumped hydro storage plants are a competitive alternative to existing electrochemical batteries such as Lithium-ion batteries, identified as our main competitor, in terms of price, performance and environmental impact.

Besides, our technology offers major assets that classical batteries are unable to propose:

1. Flexible storage services for several hours
2. Drastically reduced environmental impacts (absence of chemicals and rare-earth)
3. Numerous societal benefits (civil engineering and local maintenance, tanks used as fire reserves, irrigation for agriculture...)
4. Resilience and long-lasting equipment (more than 20 years)
5. Mutualization of equipment: reusing existing water reserves, pumping systems, water pipes...

Our team is currently working on the "containerization" of our technology in order to propose a "Plug and play" solution, easily exportable worldwide.

Furthermore, many approaches have been led with key-role governmental institutions, industries, and suppliers – such as Engie -, and two partnerships have been concluded with  ACTEMIUM (Vinci Energy group) and  suez for industrializing and deploying our solution in the French non-interconnected zones.

## Expertise and international perspectives

In 2020, STEPSol successfully responded to a first call for tenders from the French Energy Regulation Commission (CRE in French), with an installation of 250kWp of PV and 125kW of Hydraulic Battery for the village of Mausoleo, north of Corsica. This is the first time that a national tender has been awarded to a battery other than the classics, which further proves the competitiveness of our micro-STEP.

STEPSol is also developing internationally. In July 2021, the French Ministry of Economy and Finances granted STEPSol a Green innovation FASEP, an aid scheme that funds demonstrators of innovative technologies related to sustainable development settled in in developing countries. This fund will allow the construction of a pumped hydro storage plant in Colombia providing 24 hours of clean electricity to two indigenous communities in the region of Cauca.



The second semester of 2021 has also marked the beginning of our approaches to the Lebanese market. Lebanon is currently experiencing a major political and energy crisis, and the need for alternative solutions like the micro-STEP is more relevant than ever. We are currently working, with the municipalities of Tannourine and Aqoura, on assembling projects consistent with local needs and in the search for financing to carry them out.

After 3 years of research and development (R&D), our first hydraulic battery is operational. Our industrial and institutional allies reiterate their support to foster the development of new projects in France, Colombia, Lebanon, and soon the world.

With Prime Minister Edouard Philippe; the Minister of Ecological Transition and the Governor of Corsica



With Brune Poirson, Secretary of State for the Ecological Transition



STEPSol, awarded the innovation prize at the POLLUTEC 2018 business fair

