

SEWAT – Sustainable Energy By Waves Trap

ABSTRACT

The observation that sea waves are an untapped energy source inspired our SEWAT (Sustainable Energy by Waves Trap) project. Wave energy is constantly wasted producing coastal erosion.

The key words are therefore:

- exploitation of a new energy source;
- fight against energy waste;
- sustainable use of natural resources and territory.

With the SEWAT project a plurality of goals are pursued, including:

- contribute to the energy transition by making sustainable energy available at low cost;
- effectively protect the coast from erosion;
- collect waste transported by the sea, helping to clean the marine environment;
- monitor the fish species trapped in the device before their release into the sea.

The characteristics of the SEWAT project are such that:

- fully reflects numerous Sustainable Development objectives of the UN 2030 Agenda (1.4 - 6.3 - 7.2 - 8.4 - 9.1 - 9.4 - 12.2 - 14.1);
- place it in the field of low carbon emissions technologies, due to the absolute lack of production of waste, waste water and CO₂;
- it is absolutely free from risks, even accidental, for the environment and for the community and involves the use of easily available common materials;
- it is scalable and replicable. Modularity allows the creation of systems of any power, combining individual independent and autonomously productive modules;

DESCRIPTION OF THE PROJECT:

the construction of a succession of modular tanks placed in the sea, partially submerged, is planned.

Each tank is equipped with a wall exposed to the waves, suitably equipped, capable of capturing the water of the waves crashing on it. The collecting wall has numerous openings equipped with mobile gates which, under the action of each wave, open allowing the water to enter the tank which is then filled.

During the ebb phase of the wave, the gates close, preventing the water from exiting the tank.

ENERGY PRODUCTION:

energy is produced in three ways with the same device:

- exploiting, through turbines, the flow of water accumulated in the tank towards the sea, as happens in hydroelectric plants;
- exploiting the movement of mobile gates;
- exploiting the water hammer that is generated in the moving mass of water;
- using floats to exploit the variation in the water level inside the tank.

The system is innovative. We estimate that a 50-meter module can produce 5,500 MWh/year of sustainable energy.