

European Social Innovation Competition

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I/we enter the competition as:*	An individual
If you're a representative, please name the organisation/company	Private
Language of entry *	English
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Country *	Italy
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Website	http://www.spawhe.eu
Project Name *	SUBMERGED HYDROELECTRIC PLANTS FOR ENERGY PRODUCTION, OXYGENATION OF SEABED (SHOS)
Tweet your idea! *	to produce hydroelectric power do not serve the flooding of valleys and large dams, we can do it in any basin fighting eutrophication.
Choose the field to which your idea relates mainly: *	Energy

Provide a summary of your idea, highlighting how it solves a social need or societal issue. *

Hydropower submerged is based on the exploitation of the hydrostatic pressure, in fact, if we install an electric pump in a tube with an axial flow down deep in a wide basin and below it, in the same tube, insert a turbine connected to a alternator, we must provide the electric energy only for departure. After that, when the turbine rotates, produces an amount of energy much higher than that absorbed by the pump. The energy produced is proportional to the pressure energy related to installation depth ($m * g * h$). In fact, the rotation of the pump in the tube transforms the pressure energy into kinetic energy ($1/2 * m * V^2$) pushing the mass (m in kg with $V=m/s$) in the turbine, whose alternator produces electrical current. They are opposed to the transformation of energy only the performance of the machines and the pressure losses in the hydraulic hose of a few tens of meters, which are negligible. Obviously, almost all the energy is used by the turbine and the residual energy is dissipated in the seabed, but brings in it the oxygen of surface water. The plants can be suspended from a floating system.

Explain why your idea is innovative in the context and in the country where it will be implemented. Alternatively, if your idea is based on an existing concept, explain how your idea differs from this. *

Submerged hydroelectric plants for energy production, oxygenation of seabed (SHOS) is an italian demand patent (CE 2014a000012 dated 06/10/2014). Although there has long submersible pumps and more recently also turbines and pumps used as turbines coupled to power generators, no one has put together in this way to exploit the hydrostatic pressure after it is transformed into kinetic energy by means of the pump. The other systems producing hydropower exploit directly the kinetic energy by means of

hydraulic jumps or waves. But the hydrostatic energy is recognized by Hydraulic principles of Bernoulli that say: the water level on the suction side of the pump is defined positive head and is subtracted in the calculation of the total head of the pump. In addition, these systems can be made subject to a depth level of floating craft and not affected by either of the waves that may damage them.

Describe clearly how your idea is expected to have an impact. *

This idea can have a huge impact for the large amount of clean energy that can produce, for environmental benefits producible by oxygenation of the seabed and the rise of the sedimented nutrients that feed the amount of food for fish species, for the development of employment due the construction of the facility and floating platforms that support them, that will be realized in the shipyards that have no work and then towed and assembled on site. But these systems can be used in many plants to be built in the water that do not exist today, described in others tabs of competition, such as: Coastal water purifiers of seas and lakes (CWPSL; marine floating pumping stations for artificial welling (MFPSAW); floating villages for work activities and tourism (FVWT); floating ponds for chemical precipitation of oceanic calcium carbonate (FPPCC). This energy, which was always under the eyes of all without anyone noticing, probably, is the energy more economical and practical in the world, having no need of major infrastructure such as reservoirs and dams, large spaces (such as solar) and even to be transported and refined as fossil energy, with all the environmental risks and costs involving these operations.

Indicate at what scale your idea will operate initially and how it could be implemented at a larger scale in your country or in Europe in the future *

This energy, though never been realized is ready and can be carried anywhere and in any size seas in lakes and reservoirs, of any size, being the pumps and turbines already produced as standard as the other elements necessary to achieve the plants, including floating systems. Must be especially public bodies to promote clean energy and protection of the environment by encouraging experimentation and supporting trials and patents of small inventors who can not support themselves.

Specify how your idea could be sustained over the next three years. *

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