

SATREPS PROJECT Ocean Thermal Energy Conversion

Ocean Thermal Energy Conversion

Ocean Thermal Energy Conversion (OTEC) is a process that can produce electricity by using the temperature difference between deep cold seawater and warm tropical surface seawater. OTEC plant pumps large quantities of deep cold seawater and surface seawater to run a power cycle and produce electricity. OTEC is firm power (24/7), a clean energy source, environmentally sustainable and capable of providing massive levels of energy. (Source: Makai Ocean Engineering, 2020)

The deep seawater is a resource that is **cold**, **clean** and **mineral rich**. Furthermore, we can use the deep seawater effluent for air conditioning, aquaculture, agriculture, cosmetics, drinkable water production and many more.



OTEC Working Principle



Global OTEC Potential (Source: www.lockheadmartin.com/

us/products/otec.html)



VR, 360 View of Mini OTEC https://otec.streetview.my/

What is Hybrid OTEC (H-OTEC)?

New system combining OTEC and desalination to promote the commercialization. The facility will be the first operational plant in the world.

H-OTEC can prevent bio-fouling in heat exchanger, enhance heat transfer performance, and produce desalinated water simultaneously.



What are the benefits of this project?

- Generating electric power by exchanging heat from Surface Seawater.
- H-OTEC can produce electricity stable with high availability.
- It can produce up to 2 million litres per day of desalinated water per MW of power output.
- It is not susceptible to the volatility of costs that affects other energy resources (coal, natural gas and petroleum).
- Has less environmental impact.
- The project will be a trigger to promote large and various commercial or experimental projects in Asia-Pacific region.

"We look forward to potential collaborators in the long run"

SATREPS

Science and Technology Research Partnership for Sustainable Development Program





The scientific evidence obtained from SATREPS-OTEC Project will be utilized for making an effective ROADMAP for larger scale of H-OTEC Plant in Malaysia ~The BLUE techno-economics of OTEC MALAYSIA~





Research Organizations: ODUTM AIST WNIVERSITI MALAYA Wataka Malaya Mataka Malaya Mataka Malaya Mataka Malaya Malay Supported by: **JICA**

Development of Advanced Hybrid Ocean Thermal Energy Conversion (OTEC) Technology for Low Carbon Society and Sustainable Energy System: First Experimental OTEC Plant of Malaysia

H-OTEC TEST Facility

- Hybrid OTEC system (H-OTEC) will be the first operational plant and most advanced OTEC system in the world. H-OTEC 3kW Test Plant will be located at I-AQUAS, UPM Port Dickson.
- Heat Exchanger Fouling Test-rig will produce cold water. It will be utilized for Deep seawater simulation studies for aquaculture demonstration.

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