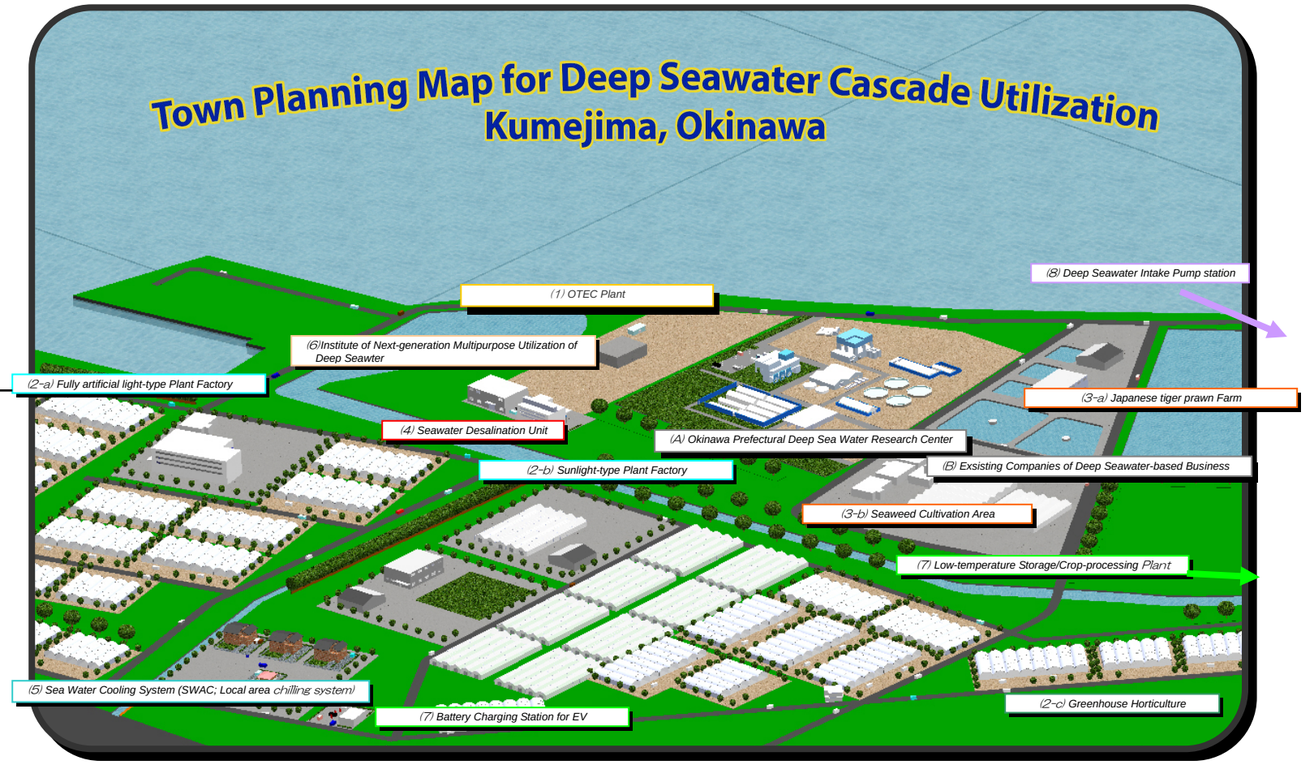
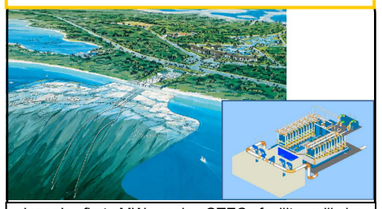
Multipurpose Utilization of Deep Seawter "Kumejima Model"
― Self-contained Community using Deep Seawater ―

Kumejima island will become a model domestically and abroad for OTEC combined with local area cooling, aquaculture and agriculture. Kumejima will promote the multipurpose utilization potential of deep seawater through diverse implementation, such as the creation of new locally-owned industries, energy self-sufficiency, and a recycling society with a low impact on the environment. Together, the multiple uses of deep seawater are the "Kumejima Model." As a model island, it can help spread low-carbon and self-sufficiency to other small islands throughout Okinawa Prefecture and beyond.



(1) OTEC Plant

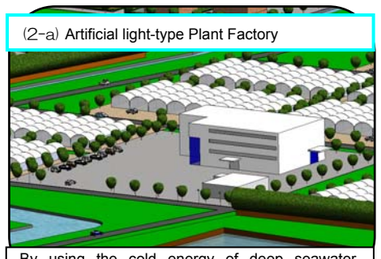


Japan's first MW scale OTEC facility will be capable of generating electricity for about 2,000 households and power surrounding facilities. OTEC is the best renewable energy for remote islands because it can generate power stabily all day and all night.

(A) Okinawa Prefecture Deep Seawater Research Center

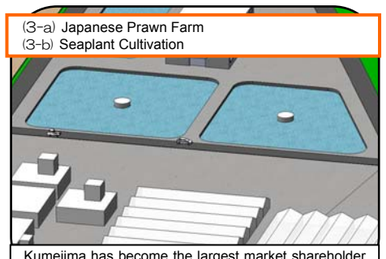
The Okinawa Prefecture Deep Seawater Research Center was opened in 2001. It has led investigation of deep seawater applications for over 10 years, while transfering technology to the private secter. The achievements of current efforts are appearent in not only the fishery but also agricultural fields.

(2-a) Artificial light-type Plant Factory



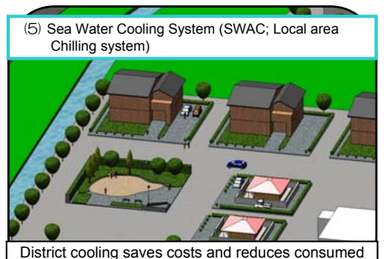
By using the cold energy of deep seawater, the facility can produce vegetables at a low cooling cost. It can stably produce throughout the year and can supply various produce such as grape tomatoes, butter lettuce, and mushrooms, for Kumejima and other Okinawa islands.

(3-a) Japanese Prawn Farm
(3-b) Seaplant Cultivation



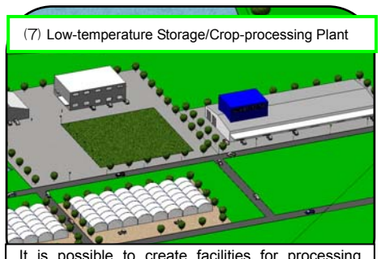
Kumejima has become the largest market shareholder for Kuruma Prawns in Japan after utulizing the cold performance of deep seawater effectively. High-quality Seagrapes, an edible seaweed, are shipped in the off-season to Okinawa and other prefectures. These industries are constrained by the limited water currently available.

(5) Sea Water Cooling System (SWAC; Local area Chilling system)



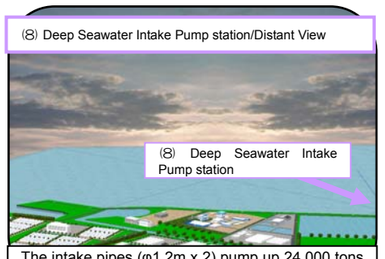
District cooling saves costs and reduces consumed power considerably by utilization of deep seawater (about 10MW) after OTEC power generation. It can supply Hotels and the town office located about 3 km away from the intake site. Of course, the construction of model eco-house is also possible.

(7) Low-temperature Storage/Crop-processing Plant



It is possible to create facilities for processing vegetables and storing them at low temperature by use of deep seawater cooling systems. Current farmers can use these facilities. It will be possible to stabilize produce supply and management. The low-temperature storage can also be used for non-agricultural products.

(8) Deep Seawater Intake Pump station/Distant View

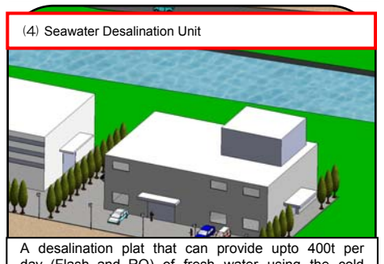


The intake pipes (φ1.2m x 2) pump up 24,000 tons per day (provisional value), and will be one of the world's leading intakes by scale. If used as a shared infrastructure by the community, Kumejima will be a model area of multipurpose utilization of deep seawater both domestically and abroad.

(2-b) Sunlight-type Plant Factory
(2-c) Greenhouse

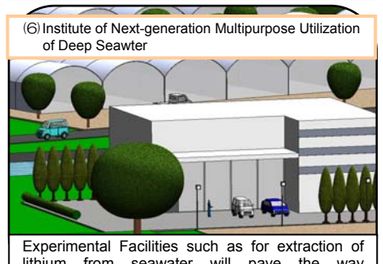
This form of agricultue harnesses a combination of natural sunlight and a deep-seawter cooling system. It can produce plants that are expensive during summer such as spinach and flowers, in and out of season by using deep seawter. Okinawa Prefectural Deep Sea Water Research Center has been researching methods of cultivation.

(4) Seawater Desalination Unit



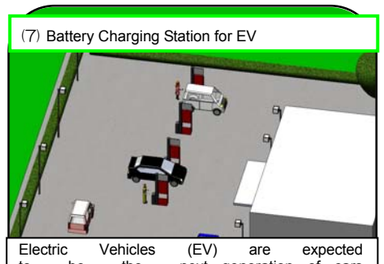
A desalination plat that can provide upto 400t per day (Flash and RO) of fresh water using the cold performance and purity of deep seawter. The fresh water will be provided to agricultural buildings such as the plant factory. The facility is expected to function as a showcase for developing projects outside of Kumejima.

(6) Institute of Next-generation Multipurpose Utilization of Deep Seawter



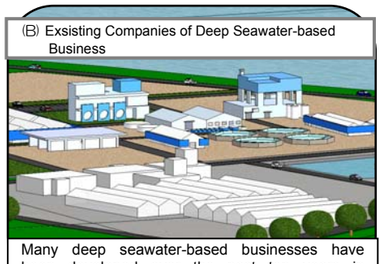
Experimental Facilities such as for extraction of lithium from seawater will pave the way for the popularization of electric vehicles and seaplant cultivation. Extraction of lithium is appropriate to the economic characteristics of remote islands. These experimental study buildings will create a new-generation of multipurpose utilization industry.

(7) Battery Charging Station for EV



Electric Vehicles (EV) are expected to be the next generation of cars following hybrid. They are adapted to the size of Kumiejima. It may be possible to change every car on the island into EV and EV can be used as a means of transportation in daily life and for sightseeing.

(B) Exsisting Companies of Deep Seawater-based Business



Many deep seawater-based businesses have been developed over the past ten years in areas such as cosmetics, food, drink, and spa, creating new jobs. These buisnesses will keep contributing to community development as the vanguard of Kumejima's economy.