

Introduction of Seawater Desalination Plant

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New Energy Seawater Desalination Co.Ltd. locates in the east of Jiangsu Province. It's a joint venture invested by China National Pharmaceutical Group, China National Salt Industry Corporation, Harbin Electric Corporation, Jiangsu Dafeng Port Holding Group Co.Ltd., Jiangsu High-Tech Investment Group Co.Ltd. The total investment is RMB 288 million and registered capital is RMB188 million. As a solely state-owned enterprise, it's the world's First 1000 T off-grid wind power Seawater Desalination demonstration base and a professional company integrating R&D, production, sale, demonstration and promotion of seawater desalination integrated technology. The company is devoted to the R&D of new energy seawater desalination technology and industrialization development, providing premium drinking water resources and functioning as demonstration for the application and promotion of seawater desalination technology. Its major management scope includes the R&D of seawater desalination technology, R&D and manufacture of wind turbine equipment and seawater desalination equipment, park infrastructure construction, and garden landscape engineering construction.

Jiangsu New Energy Seawater Desalination Development Co.Ltd. has build up the second batch of national seawater desalination industry pilot city, national marine economic innovation development zone demonstration, Harbin Electric Corporation power generation equipment state engineering research center Jiangsu sub branch, state seawater utilization engineering technology research center Jiangsu branch, China Salt manufacturing engineering technology academy Dafeng branch etc. Jiangsu new energy seawater desalination engineering center has been established together with information and automation laboratory, product and process flow laboratory, testing room and so on. All necessary devices like design experiment and testing devices are all equipped as well. A project laboratory

integrating functions including design, test, inspection and industrialization is set up targeting advanced technology of seawater desalination home and abroad and implement theoretical research and provide guidance for new process, technology and product development, based on with Jiangsu energy structure is promoted, energy saving and emission reduction target is reached to achieve good social benefits.

The integrated equipment of container type intelligent micro-grid seawater desalination



The composition of container product:

The container type intelligent micro-grid desalination system is composed of the renewable energy input system (WTGS, photovoltaic power generation system, etc.), the energy storage system (PCS+ energy storage battery), the micro-grid control system, and the desalination system etc. The renewable energy input system includes WTGS, the photovoltaic power generation system, the solar-thermal power generation system etc, which can be selected as required by the customer.

The renewable energy such as solar energy, wind power, tidal energy and geothermal energy comes from nature, which is endless and inexhaustible and of little harm or even harmless to the environment. What's more, these resources are widely distributed. If they are exploited and utilized properly, it'll be of great significance to environmental protection and resources protection.

The system has following advantages:

- High Integration level: except wind turbine generators, photovoltaic equipment and water tanks, other equipment are all put inside the container. With compact layout and good flexibility, it's convenient for transportation;
- Clean Energy: only use clean energy for energy saving and environmental protection, and there is no pollution to marine environment
- Black Start Function: the system can start operation without any support of power
- Highly Automatic: during operation, the system can start with a push of button and the operation is automatic with remote monitoring function
- Protection Design: the system is featured with typhoon defense, corrosion protection and high temperature resistance functions

The system adjusts to a big range of water quality fluctuation; the pretreatment system doesn't need chemical cleaning. Reverse osmosis system doesn't require frequent cleaning. It releases very limited chemical to the environment and therefore is pollution-free. The routine operation cost for the system is very low. The maintenance of the system is simple and convenient, which is not labor intensive.

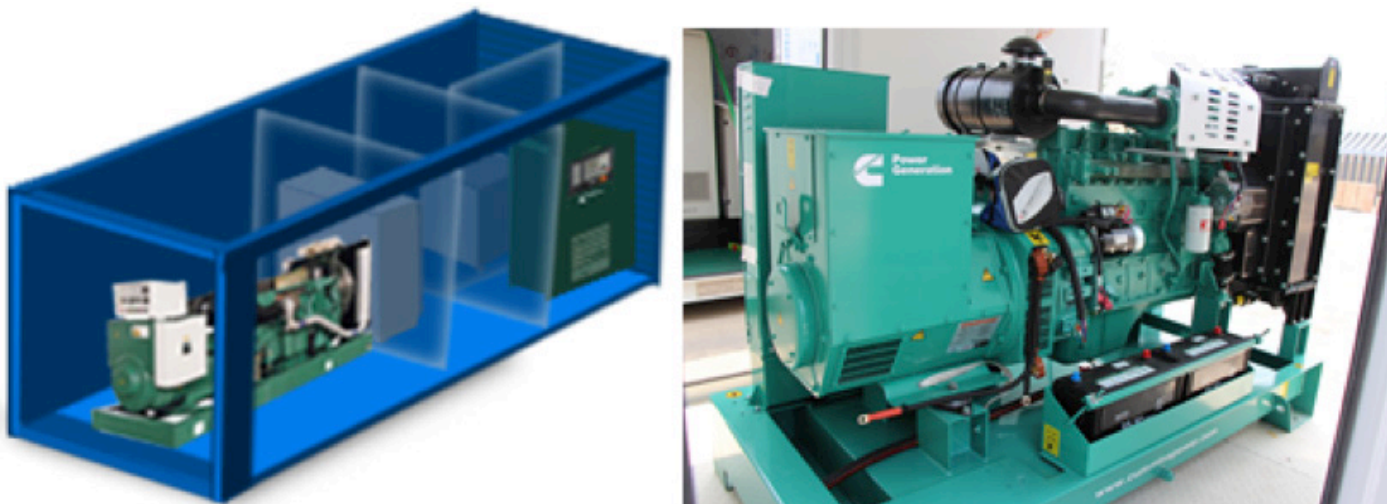
Not only can the integrated system of modular intelligent micro-grid and seawater desalination can supply living water and electricity to our remote islands and inland brackish water basins, but also the seawater desalination technology is an important part of China marine strategic emerging industry. The technology can be widely applied to vessels to avoid water shortage during long-distance travel. In the meanwhile, the complete container modular intelligent micro-grid desalination system may not only be integrated but also be disassembled into the micro-grid system and the desalination system to be respectively used in the areas lacking in electricity but not lacking in water and areas lacking in water but not lacking in electricity.

Micro-grid System

The micro-grid system operation mode includes normal operation mode (operation mode combining wind energy with energy storage), complementary operation mode of wind energy and diesel generated energy, complementary operation mode of wind energy, diesel generated energy and energy storage, the operation mode by introducing external power. When the wind power is strong enough to start the wind turbine

generator, the wind turbine generator works normally and the system is in the wind power storage operation mode. Otherwise if the generated wind power cannot meet the operation conditions of seawater desalination equipment, the system needs extra energy supply from the outside to guarantee its operation. The system has various operation modes like complementary operation mode of wind energy and diesel generated energy, complementary operation mode of wind energy, diesel generated energy and energy storage, the operation mode of independent diesel generator power supply, the operation mode by introducing external power.

These modes can be inter-converted. The normal operation mode of the micro-grid system combines wind energy with energy storage. In such mode, it's unnecessary to start diesel generator and diesel generator is only used in special cases or for the purpose of guaranteeing the diesel generator's safe shutdown.



The capacity of the power generator has to meet the corresponding requirement of daily seawater desalination equipment. At the same time, the capacity should also be sufficient for partial power supply to the residents on the island. The power generation mainly relies on wind power and photovoltaic system can be added if the space is allowed.

Generally there're 30kw, 50kw and 100kw wind turbine generator for selection. At present, 100kw is mostly chosen based on the analysis of performance and application maturity. The 100kw wind turbine generator applies automatic pitch control structure and the rest relies on manual control. Therefore, 100kw wind turbine generator is slightly safer.

Seawater desalination technology desalinates seawater through primary and secondary reverse osmosis to make the water meet living drinking water quality. Based on that, the tertiary reverse osmosis is adopted to further remove the irons from the water to acquire bottled (barreled) purified water for drinking. The strong brine, backwater water from the filter tank and filter are released to the neighboring seas after being collected. Dewater the wastewater in the pre-sedimentation tank and clarification tank. The chemical cleaned sewage is neutralized for innocent treatment and then is discharged to municipal sewage pipeline after reaching the sewage standard.

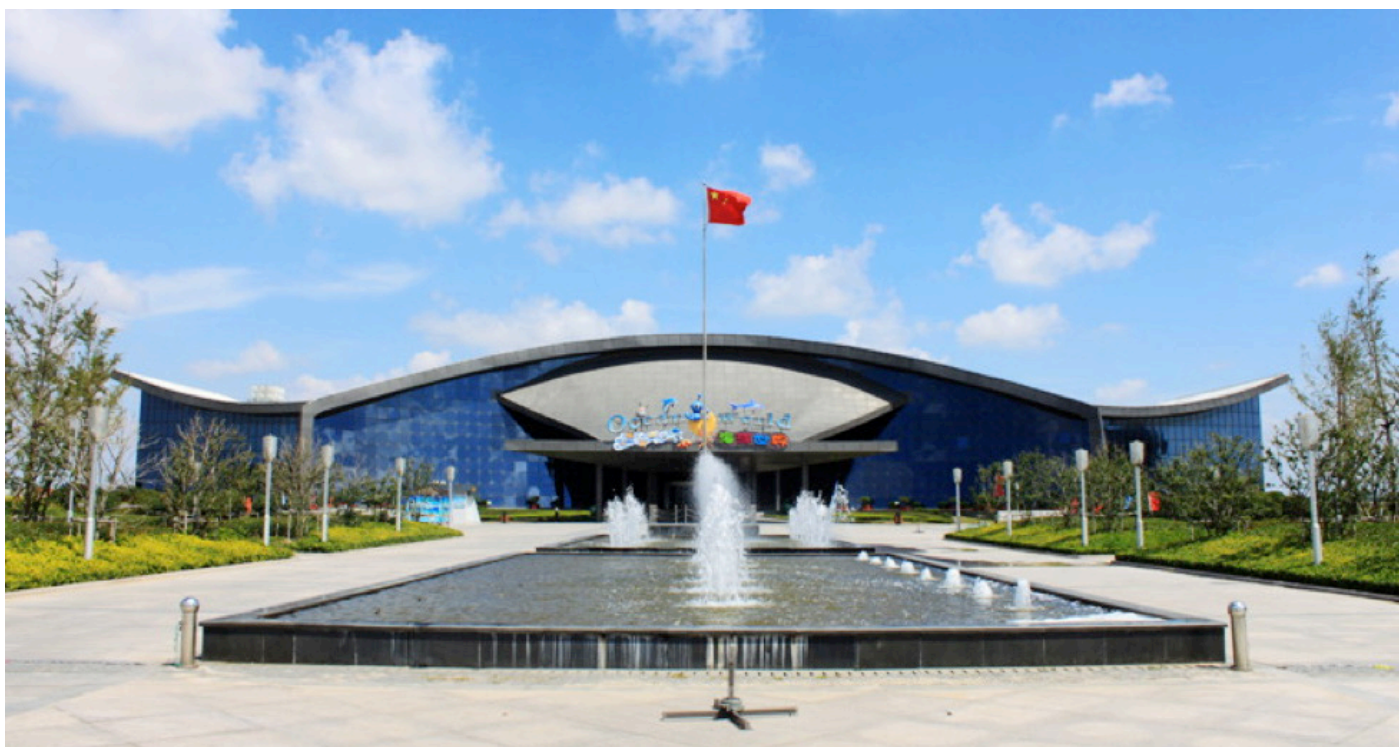
The capacity of seawater desalination system can be customized as per customer's demands. There're mainly 50T, 100T, 200T, 300T, 500T, 1000T specification for customer's choice.



Seawater Desalination System



Site photos of Seawater Desalination Plant in China



(Headquarter in Dafeng, China)



(Site photo of Desalination plant, wind & solar power combined equipment sets)



(Auto-production line of Seawater Desalination Plant in Dafeng, China)