# Designing Underwater Energy Storage Systems

Underwater energy storage systems are a new revolutionary solution for storing electricity over long distances from coastal power plants. In this presentation, we will discuss how they work and how to design them.









## **Types of Underwater Energy Storage Systems**

#### **Gravitational Energy**

Systems Utilize involostatic force to store energy.

### **Thermal Energy Storage**

Systems Used for storing thermal energy generated by wind turbines and solar panels.

### **Gas-based Energy**

Systems by edior storing energy generated by

biomass generators and other renewable

energy sources.

#### **Metal-based**

Batteries Used for storing energy generated by tidal

flows.





## **Advantages of Using Underwater Energy Storage Systems**

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#### **Environmentally Friendly**

No gases or harmful emissions are used, reducing carbon footprint. **Economical** 

Helps save money by transporting energy over long distances.

#### Reliable

Underwater energy storage systems are better protected from adverse external conditions.



### **Key Principles of Designing Underwater Energy Storage Systems**







**Depth and** Location The design of the installation point takes into account the depth, sea currents, and the topography of the seabed in the selected area.

### **Cable Installation** Technology

Cables are installed using special ships and underwater devices.

Marine Challenges me design takes into account marine issues such as corrosion, explosion hazards,

and the risk of damage.





## Technical and Environmental Aspects

1 Immersion Technology The process S used to reduce the temperature during charging and discharging.

Creating a Sealed Container It is sealed to prevent seawater from entering the system.

### **3** Environmental Risks and Management

Environmental issues such as emissions to the sea and risks to the environment need to be monitored to ensure safety.

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## **Projects and Examples of Underwater Energy Storage**

**Experimental Underwater Power Station Project in** Finland The project involves transmitting hydro energy through marine cables to the shore from an underwater hydro location located on the seabed around Karyavuoto.

Haixi Pilot Underwater **Energy Station Project in China** The Haixi pilot project, conducted by the National Ocean Technology Center in the Chinese city of Shenyang.

Stationary **Underwater Power** 

Accumulator

**PowerSprint** Created for hydrogen energy

production.



### **Future of Underwater Energy Storage**

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**Reducing Energy Crosts** ater energy storage will play a crucial role in reducing energy costs and promoting environmental sustainability in the future.

### **Prospects for Further Development**

The future of underwater energy storage is linked to continuous technological advancements to ensure efficiency and safety.

### **Application in Oil and Gas** Industry

The use of underwater energy storage in the oil and gas industry can provide a more efficient process of extraction, transportation, and processing of these natural resources.



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