INTEGRATED SEAWATER AIR CONDITIONING AND SEAWEED CULTIVATION SYSTEM FOR SUSTAINABLE ENERGY AND RESOURCE RECOVERY

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Agriculture & Animal Science**
» Nutraceuticals
» Other
» Plant Traits
» Transgenics
» **Biotechnology**
» Food
» Industrial/ Energy
» Other
» **Energy**
» Other
» **Materials & Chemicals**
» Biological
» Other
» **Engineering**
» Other

RELATED CASES

2025-127-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The increasing global energy demands and the need for sustainable practices present an opportunity for integrated systems that offer both energy efficiency and resource recovery. This Integrated Seawater Air Conditioning and Seaweed Cultivation System for Sustainable Energy and Resource Recovery addresses these challenges by utilizing the typically wasted cold deep-sea water effluent from a Seawater Air Conditioning (SWAC) system to support the cultivation of seaweed. The SWAC system itself provides highly efficient, low-energy cooling by circulating cold deep-sea water through a heat exchanger to chill a closed-loop coolant.

SUGGESTED USES

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Sustainable, low-energy air conditioning for coastal buildings and complexes, such as hotels, hospitals, and university campuses.

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Commercial-scale seaweed cultivation for use in food, nutraceuticals, biofuels, or as a bioproduct feedstock.

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Coastal resource management projects focused on reducing thermal discharge and promoting marine biomass production.

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Carbon capture and sequestration initiatives by maximizing the rate of seaweed growth in nutrient-enriched water.

ADVANTAGES

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Significant reduction in electrical energy consumption for cooling compared to traditional chiller systems.

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Efficient resource recovery by reusing the SWAC effluent water, which would otherwise be discharged, to fertilize the seaweed farm.

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Increased yield and growth rate of cultivated seaweed due to the consistent supply of cold, nutrient-rich deep-sea water.

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Environmentally friendly operation through reduced electricity use (lower carbon footprint) and the mitigation of thermal pollution in coastal waters.

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Creation of a dual revenue stream from both energy savings (SWAC) and the sale of cultivated biomass (seaweed).

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- SEA-BOARD — A Marine-Derived Structural Panel from Aligned and Densified Seaweed Cellulose Nanofibers
- Probiotic-Mineral Bioformulation Embedded In Seaweed-Derived Polymers For Enhanced Inoculation Of Seaweed Culture Lines

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