WAVE-POWERED DESALINATION SYSTEM USING A MULTI-CYLINDER ROTARY CRANKSHAFT PUMP

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BRIEF DESCRIPTION

This invention is a wave powered desalination system and, in particular , a wave powered desalination systems with a low speed, high pressure rotary pump.

SUGGESTED USES

This invention can be used as an ocean wave-powered desalination systems for coastal disaster recovery (e.g. after a tsunami, coastal flooding, hurricane, etc.). During such disaster recovery situations usually rely on shipments of water or diesel fuel to produce drinking water because the grid and water infrastructure may be down or contaminated. Accordingly improved, efficient desalination systems can be useful to provide desalinated water for everyday use and/or consumption are needed.

ADVANTAGES

This a wave-powered desalination system uses a novel, multi-cylinder rotary crankshaft pump to convert oscillating forces or moments from a wave energy absorber into high pressure flow compatible with a reverse osmosis (RO) membrane for desalination. The multi-cylinder rotary crankshaft pump is advantageously capable of operating at low angular velocities, and includes double acting cylinders that can adjust the flow rate by turning either side of the cylinders “on/off”. This new rotary pump is also unique in that it provides high pressure flow with the low speed input forces from ocean waves. Previously, no rotary pump existed that could produce the high pressures that RO desalination requires (e.g., ~800 psi) at the low speeds of ocean waves (e.g., 4-25 rpm) or other low speed oscillatory forces (e.g., 4-60 rpm); all high pressure rotary pumps surveyed could only operate in the thousands of rpm reliably.

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

desalination

CATEGORIZED AS

» **Environment**

» Other

» **Engineering**

» Engineering

RELATED CASES

2021-112-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Linear/Angular Position Stabilization & Control Of An Underwater Robotic System