



### Industrial Consultancy & Sponsored Research (IC&SR)

## Desalination apparatus and method for obtaining desalinated water for floating platforms, coastal communities and islands IITM Technology Available for Licensing

### PROBLEM STATEMENT

- In the present era, a reliable freshwater supply is indispensable for any members of a sea going vessel, coastal areas or Islands.
- To obtained and keep storage of the fresh water is **tedious & costlier** either in sea vessels or any costal or Island region.
- Therefore, there are a few desalination techniques such as **freshwater generator & osmotic desalination** described, however said techniques suffers from **tedious & costlier process including poor design & construction**, large no. of **membranes** required & **improper** water management & etc.
- Hence, there is a need to address above issues.

### TECHNOLOGY CATEGORY/ MARKET

**Technology:** Desalination apparatus;  
**Industry:** Clean Energy, Waste Management, Water Treatment, others.

**Applications:** Municipal Segment, Water Treatment in Coastal Areas & Islands, & etc.

**Market:** The global **water desalination** equipment market was estimated at USD15.53B in 2022 and projected to expand at a **CAGR** of **9.4%** during the forecast period from **2023** to **2030**.

### TECHNOLOGY

- Present Patent describe about a **desalination apparatus** and a **method** for obtaining desalinated water.
- Said desalination apparatus is used for **monitoring operation parameters** at the desalination water.
- The **desalination apparatus** comprises a vaporization chamber, a hot water pump, a spout management, a condensation chamber, a cold-water pump, a freshwater pump, a desalination management controller, and a power source including associated equipment's.

The method starts with receiving high temperature saline water pumped using a hot water pump through first water inlet. The smart-chart shows said method herein.

**1<sup>ST</sup> step talks about vaporization by sprinkling the high temperature saline water into the vaporization chamber & receiving said water by a condensation chamber;**

**2<sup>nd</sup> step describes about condensing the vaporized high temperature water by circulation of low temperature saline water in the condensation chamber; and**

**3<sup>rd</sup> step describes about obtaining the desalinated water and draining the desalinated water from the condensation chamber.**

### KEY FEATURES / VALUE PROPOSITION

**1. Technical Perspective:** The desalinated water is passed through an **ultra violet (UV) module** for **disinfecting microbes**.

**2. Industrial Perspective:** The operation parameters comprise a **temperature** & a pressure of the high temperature saline water, a temperature & a pressure of the vaporized high temperature saline water, a temperature & pressure of the desalinated water, a flow rate, a level of vacuum in the vaporization chamber, on-board power supply and external power supply.

### INTELLECTUAL PROPERTY

**IITM IDF Ref. 2088;**  
**IN Patent No: 426464 (Granted)**

### TRL (TECHNOLOGY READINESS LEVEL)

**TRL- 4**, Proof of Concept ready & validated

### RESEARCH LAB

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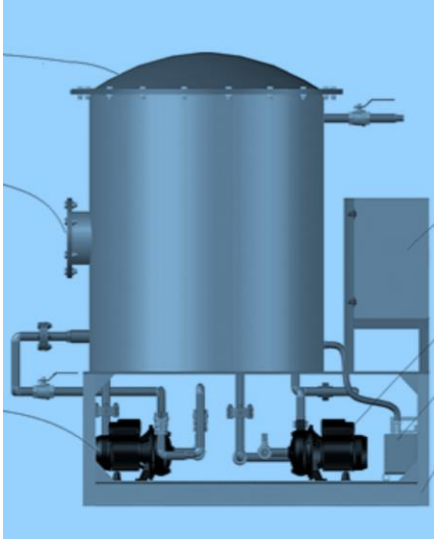
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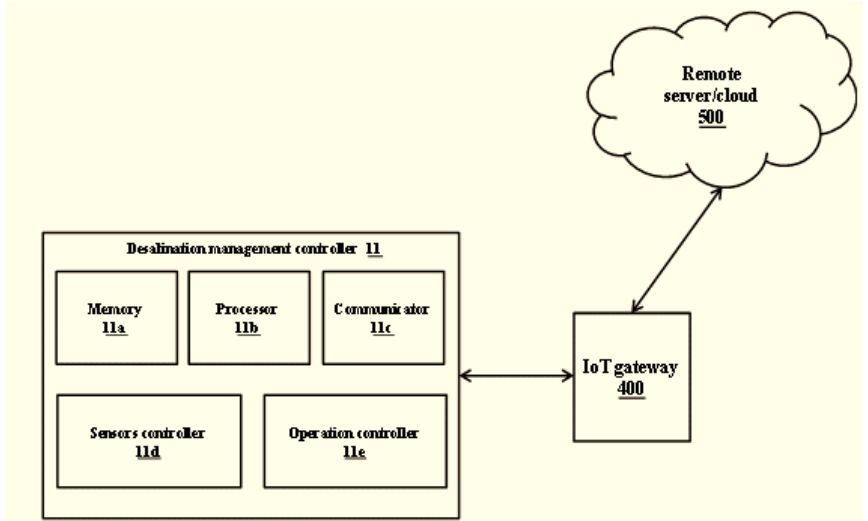
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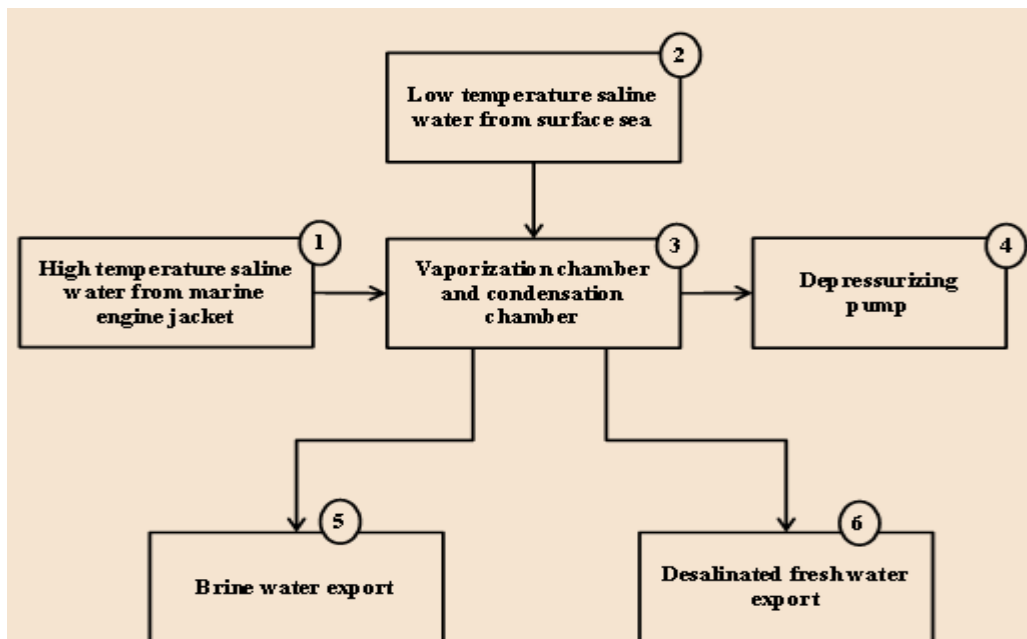
### Images



**FIG. 1a:** Illustrates schematic diagram of a desalination apparatus for obtaining desalinated water from high temperature saline water.



**FIG. 1b:** Illustrates block diagram illustrating a desalination management controller of the desalination apparatus.



**FIG. 2:** depicts schematic illustrating step-by-step process performed by the desalination apparatus for obtaining the desalinated water.

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