

### AN ELECTROMECHANICAL SYSTEM AND DEVICE UTILIZING GRAVITATIONAL POTENTIAL TO CONDENSE ATMOSPHERIC WATER

#### IITM Technology Available for Licensing

#### Problem Statement

- Existing atmospheric water harvesting technologies are often bulky, electricity-dependent, and unaffordable for rural and lower-class communities.
- Prior inventions lack compactness, simplicity, and affordability, hindering adoption by marginalized populations.
- The need for continuous electricity supply restricts accessibility to water in regions with unreliable power infrastructure.
- Therefore, there is a gap in the market for a **portable, mechanically-operated, affordable, and easily deployable atmospheric water harvesting solution** suitable for rural and lower-class demographics.

#### Intellectual Property

- IITM IDF Ref. 1838
- IN 383867 - Patent Granted

#### Technology Category/ Market

#### Renewable Energy and Sustainable Water Solutions

**Applications-** Remote Communities and Disaster Relief, Off-Grid Living

**Industry-** Renewable Energy Solutions, Water Treatment and Management

**Market-** The global atmospheric water generator market size stood at US\$ 3.3 Bn in 2022, and is estimated to increase at a **CAGR of 16.3% from 2023 to 2031.**

#### TRL (Technology Readiness Level)

TRL - 3: Proof of concept stage

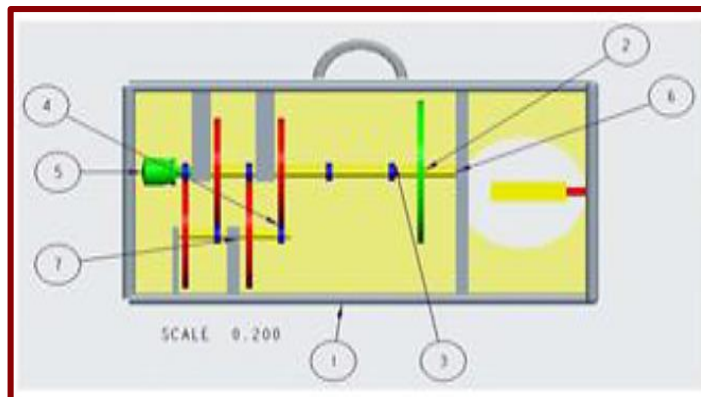


Fig. 1. illustrates a front view of the apparatus.

#### Technology

The invention aims to utilize an electromechanical system to efficiently condense atmospheric water by converting gravitational potential energy.

It involves three main subsystems: a condenser, a generator, and a lifter, with a focus on utilizing thermoelectric cooling and mechanical power generation.

Gravity is harnessed as a consistent power source, with a 40 kg dead mass dropping through a height of 3 meters over 5 minutes to generate electricity via an intermediary gear train.

#### Research Lab

#### Inventors

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### Key Features / Value Proposition

#### 1. Innovative Water Harvesting Solution:

- Offers an innovative electromechanical system harnessing gravitational potential to efficiently condense atmospheric water, addressing the pressing need for sustainable water sources.

#### 2. Affordable and Accessible:

- Achieves functional hepatocyte differentiation in just 14 days, providing a time-efficient alternative to the conventional 28-day duration associated with growth factor-based methods.

#### 3. Reliable and Sustainable:

- Ensures reliability and sustainability by leveraging gravitational power for consistent operation, making it suitable for regions with limited infrastructure and addressing the global water crisis.

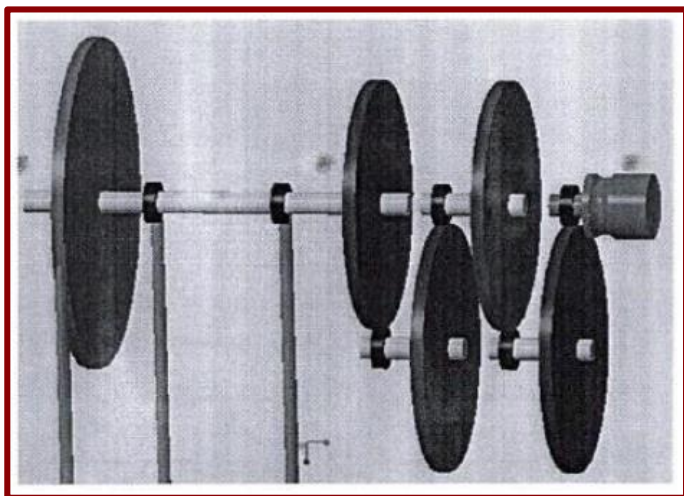


Fig. 2. illustrates a mechanical subsystem.

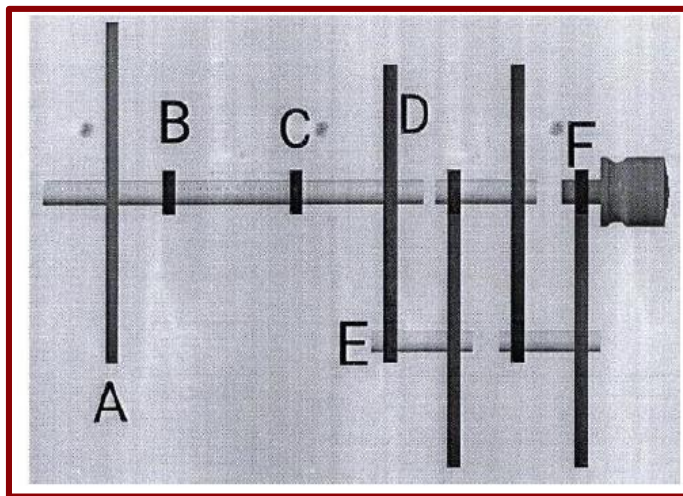


Fig. 3. illustrates a gear subsystem.

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