

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

## A VEHICLE FOR POWER GENERATION, TRANSMISSION AND STORAGE IITM Technology Available for Licensing

### PROBLEM STATEMENT

- In the present era, there is constantly efforts are being made to increase the use of renewable energy by utilizing various sources such as wind, solar, waves, geothermal, & etc.
- The existing mechanisms & technologies are not **economically competitive**, due to **high cost** & other **cause of environmental damage** by interrupting ocean/sea ecosystems.
- By prior art survey, the conventional combined power generators are deployed remote location like **mid-sea areas** to generate combined power, which may lead to **corrosion of components** of the combined power generators. Further, it is **difficulty** in transmission of generated power & may require **submersed cables** which is **tedious installation** process.
- Hence, there is a need to address above issues.

### TECHNOLOGY CATEGORY/ MARKET

**Category:** Green Technology & Renewable Power Generation, ;

**Technology:** Vehicle for power generation, Transmission, & storage

**Industry:** Renewable Power generation & etc. & Costal Power Plant. **Applications:** Vehicle for power generation, transmission and storage;

**Market:** The global **wave & tidal energy** market is focused to expand at a **CAGR** of **27.4%** during the period from **2023** to **2030**.

### INTELLECTUAL PROPERTY

**IITM IDF Ref. 2432; Patent No: 445378**

### TRL (TECHNOLOGY READINESS LEVEL)

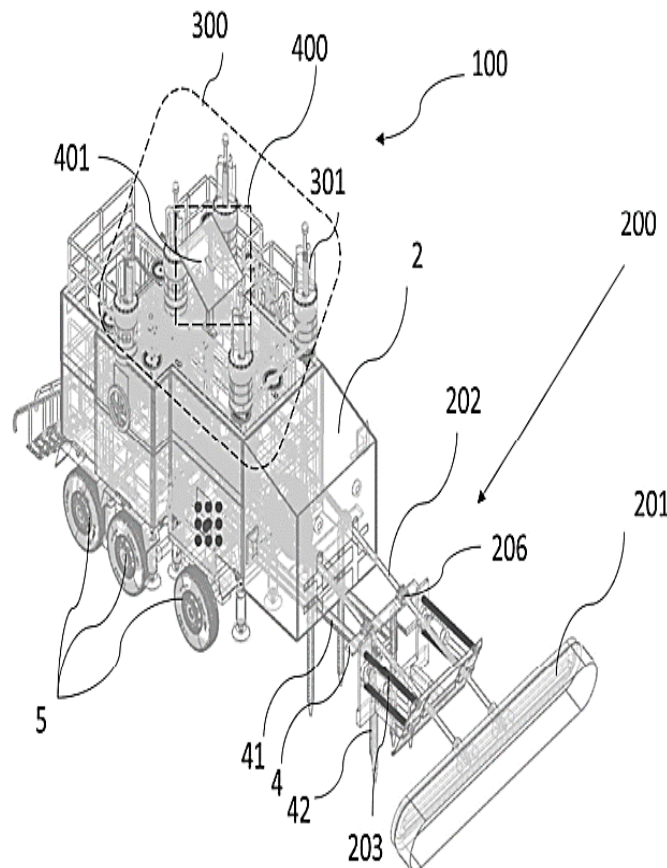
**TRL-2/3**, Proof of Concept formulated & tested

### RESEARCH LAB

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### TECHNOLOGY

- Present Patent describe a **vehicle for power generation, transmission and storage** which includes a **plurality of power conversion units, a gear mechanism, a generator unit** coupled to the **gear mechanism** and a **control unit**,
- The **vehicle 100** comprises a **frame,1, a body,2**, a plurality of **power conversion units 200, 300, 400**, a **gear mechanism, 500**, a **generator unit, 600** & a **control unit,3** shown in **Fig.1**.



**FIG.1:** Illustrates an isometric view of a vehicle for power generation, transmission and storage;

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### KEY FEATURES / VALUE PROPOSITION

#### ❖ Technical Perspective:

1. The control unit **operates** the **gear mechanism** to **regulate power generated** at the **generator unit** based on **operation** of the **first** conversion unit, the **second** conversion unit & the **third** conversion unit.
2. The **first** conversion unit **comprises** a **plate movably** disposed in the first section of the body.
3. The **plate** configured to **engage with tides** at an **on-shore location** & being **operable** based on **wave energy**.
4. The **second conversion unit** comprises a **vertical axis wind turbine** mounted in the second section of the body & being operable based on **wind energy**.
5. The **third conversion unit** comprises a **solar panel** mounted in at least one of the first section and the second section & is being operable based on **solar energy**.
6. The **gear mechanism** comprises a **first gear mechanism** & **second gear mechanism**, wherein said **first gear mechanism** is connected to **first generator** of the generator unit & **second gear mechanism** is connected to a **second generator** of the generator unit.
7. Further the first & second gearing mechanism comprises **first & Second plurality of gears** engaging with the first shaft & second shaft.
8. the generator unit **transmits the generated power** from the first conversion unit & the second conversion unit to a **power grid and/or a battery**.

#### ❖ Industrial Perspective:

9. The vehicle may generate **continuous power** from **tides & wind energy** without substantial interruption in power generation.
10. May also be implemented with **renewable energy sources** capable of rotating a generator.

- Said patent discloses **constructional configuration & functioning** of the plurality of **power conversion units, gear mechanism & the control unit**.
- The **generator unit** is **coupled** to the **gear mechanism** & is configured to **generate power** based on operation of the gear mechanism, from at least one of the first conversion unit & the second conversion unit.
- The **control unit** is communicatively coupled to **one or more sensors** disposed **proximal** to the **gear mechanism** & the **generator unit**.
- The **controller** of the vehicle is configured to:

Receive one or more signals corresponding to the power generated at the generator unit by each of the first conversion unit, the second conversion unit and the third conversion unit;

Operate the gear mechanism to regulate power generated at the generator unit; and

Regulate the power generated at the generator unit to generate highest power generated from the first conversion unit, the second conversion unit and the third conversion unit for continuous power generation, transmission & storage in the vehicle.

- The power unit of vehicle may be an **engine/motor** which may be **driven** by a **battery** and a plurality of **motors electrically coupled to the battery**.

### Images

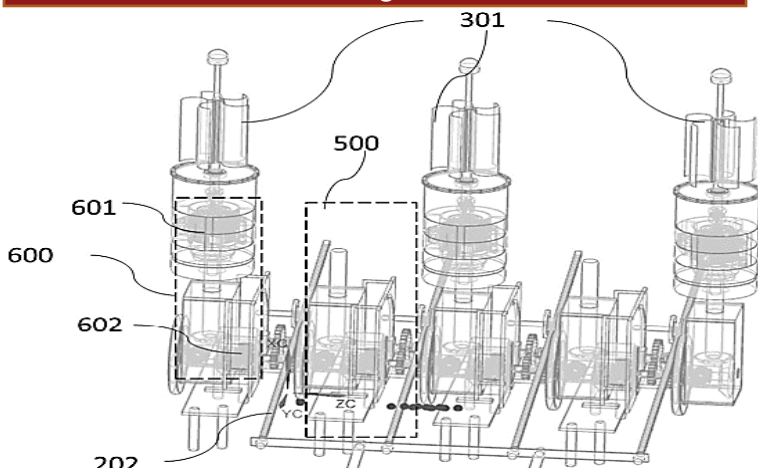


FIG. 2: depicts an isometric view of a generator unit & a gear mechanism connected to the second conversion unit.

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