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## Patent Search

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### Inventor

| Name                     | Address  | Country |
|--------------------------|--|---------|
| Sk. Subhan Alisha        | Assistant Professor, Dept. of CE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202 | India   |
| R. Vivek Vardhan         | Student, Dept. of CE, Vishnu Institute of Technology, , Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202           | India   |
| M.Pavani                 | Student, Dept. of CE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202             | India   |
| Y.Joshua                 | Student, Dept. of CE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202             | India   |
| A.Dhana naga Sai Lakshmi | Student, Dept. of CE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202             | India   |
| N.Chandrasekar           | Student, Dept. of CE, Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202             | India   |

### Applicant

| Name                           | Address  | Country |
|--------------------------------|--|---------|
| Vishnu Institute of Technology | Vishnu Institute of Technology, Sri Vishnu Education Society, Vishnupur, Bhimavaram, Andhra Pradesh 534202 | India   |

### Abstract:

The present disclosure relates to compositions and systems, and provides a water hyacinth biodiesel production process (100) configured to serve as raw material for extraction and biodiesel production. The water hyacinth biodiesel production process (100) includes a water hyacinth feedstock (102), a harvesting stage (104), a dryir (106), and a grinding stage (108). The water hyacinth feedstock (102) is configured to serve as raw material for oil extraction and biodiesel production during continuc operation, thereby providing a non-edible biomass feedstock for renewable fuel production while addressing water hyacinth infestation and improving aquatic ecosy: biodiversity.

**Complete Specification**

Description: TECHNICAL FIELD

[001] The present invention relates to renewable energy and sustainable waste management, and more particularly to a WATER HYACINTH CONVERTING AN ENVIRONMENTAL NUISANCE INTO SUSTAINABLE BIOFUEL AND ECO-FRIENDLY PRODUCTS through sequential harvesting, drying, grinding, solvent-based oil extracti transesterification of invasive aquatic biomass.

BACKGROUND

[002] The field of renewable energy and sustainable waste management has seen significant development in recent years, driven by the dual imperatives of reducing dependence on fossil fuels and mitigating the adverse environmental consequences of energy consumption. The growing global demand for energy is typically met by exploitation of fossil fuels such as coal, petroleum, and natural gas. Combustion of these non-renewable resources contributes substantially to greenhouse gas emissions, air pollution, and long-term climate change, creating economic and ecological burdens that conventional energy policy has not fully resolved. The finite nature of fossil fuel reserves further underscores the urgency of developing sustainable alternatives capable of meeting energy demands across transportation, electricity generation, and industrial applications.

[003] Biofuels derived from biological feedstocks have been explored as one category of renewable alternative. However, first-generation biofuel feedstocks, such as vegetable oils and food crops, present significant concerns regarding food security, arable land competition, and water resource consumption. These concerns limit the scalability and social acceptability of edible-crop-based biodiesel programs, particularly in developing economies where food availability is a pressing concern. Accordingly, the identification of non-edible, non-food-competitive biomass sources for biofuel production has remained an active area of technological inquiry.

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