PROCESS FOR EFFICIENTLY RELEASING HYDROGEN FROM LIQUID ORGANIC HYDROGEN CARRIERS

A method for hydrogen generation in an efficient and low-cost manner.

Technology Overview

This process is used for generating hydrogen by providing a hydrogen chemical carrier in the presence of an active catalyst in a reactor vessel and elevating the temperature inside the reactor by electromagnetic process to allow a dehydrogenation reaction to generate hydrogen. The active catalyst is derived from metallic, bimetallic multi-metallic compounds. The electromagnetic heating process will preferably be provided by induction heating to operatively heat suitable heating elements, catalyst support and the catalyst itself.

Technology Benefits

- Low-cost liquid hydrogen carrier.
- Even distribution of heat inside the reactor, thus, allowing large scale reactor for dehydrogenation.
- Non-toxic liquid hydrogen carrier.
- Non-flammable liquid hydrogen carrier.
- Efficient hydrogen release from the reactor.

Market Opportunity

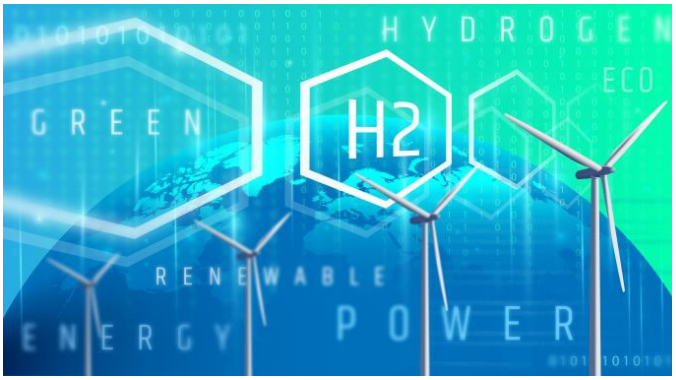
Liquid hydrogen carriers will play a significant role in diversifying world energy supply corridor, transporting hydrogen at scale (>1,000 tonnes of hydrogen transported per day), especially across larger distances. Low carbon footprint, high energy density and easy storage and transportation are important key factors for this type of applications. Amongst all liquid hydrogen carriers (LOHCs) are regarded as promising technology. LOHCs can be transported using existing petro-chemical infrastructure. To release hydrogen from a LOHC, heating is required. Inductive heating can utilise renewable energy sources thus, making the process of hydrogen extraction very efficient.

Project status

South African patent granted in May 2019 (ZA2018/04822).

Technology was tested and demonstrated on the lab-scale.

Looking for a licensee or technology development partner.



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