

Synergistically Integrated Natural Gas Reforming Biomass Fast Hydrolysis Process

Track Code: 65061

Categories:

- Chemical Engineering
- Green Technology

Keywords:

- Biomass
- Chemical Engineering
- Clean Energy
- Energy
- Fuel Cells
- Green Technology
- Hydrocarbons

For the past 150 years, society has relied on fossil fuels for both illumination and energy generation. Continued consumption of fossil fuels has led to an increasingly large amount of carbon dioxide gas released into the atmosphere. A proposed alternative would be the use of hydrocarbons made from biomass, an essentially carbon neutral source of energy. While hydrocarbons are released into the atmosphere, an equal amount is captured from the atmosphere by biomass growth. Unfortunately, the two major processes for the conversion of biomass to liquid fuels, fermentation and gasification, are both extremely inefficient at large scales.

Researchers at Purdue University have developed a highly efficient process to generate liquid hydrocarbons from biomass hydrolysis. For this process, liquid hydrocarbons (bio-oil) are generated from a fast hydrolysis process using a variety of biomass sources. This process ideally has a residence time of about two seconds. The hydrogen for the hydrolysis is provided from a syngas derived from a natural gas reforming process. This technology provides a 1.6 times greater yield of liquid hydrocarbons and has better energy efficiency than current methods (fermentation and gasification). The current design allows for a significantly smaller plant size, resulting in hydrocarbon production that is both low cost and highly efficient.

Advantages:

- Better yields than current methods
- Lower cost and higher efficiency

Potential Applications:

- Green technology
- Clean energy
- Liquid hydrocarbon production

People:

- Agrawal, Rakesh (Project leader)
- Singh, Navneet

Intellectual Property:

Application Date: August 27, 2008

Type: Utility Patent

Country of Filing: United States

Patent Number: 8,217,210

Issue Date: July 10, 2012

Application Date: March 5, 2008

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

Application Date: August 27, 2007

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

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