

## Production of Hydrogen Using an Anaerobic Biological Process

**Track Code:** 66106

**Categories:**

- Agriculture
- Chemical Engineering

**Keywords:**

- Agriculture
- Chemical Engineering
- Clean Energy
- Distillers Dried Grains with Solubles (DDGS)
- Fuel Cells
- Green Technology
- Hydrogen Storage

As ethanol continues to become an integral part of the international energy future, it is critical to continue to increase the overall value and efficiency of ethanol production. Ethanol is an alcohol produced by yeast fermentation from sugars. The products of this biological reaction are carbon dioxide, ethanol, and waste products. Distillers dried grains with solubles (DDGS) are the nutrient by-products, i.e., protein, fiber, and oil, of ethanol production.

Typically used to create livestock feed, Purdue University researchers have discovered that DDGS can produce large quantities of hydrogen with a low-pressure anaerobic process. This method of hydrogen production could be implemented in the near term with minimal cost and impact upon existing operations. This is possible due to the minimal operation requirements and readily available components. It is estimated that this method can add a 15 percent economic value to the DDGS. Additionally, the DDGS protein fraction increases, significantly increasing its use as a feed supplement.

**Advantages:**

- Produces large quantities of hydrogen
- Increases the DDGS use as a livestock feed supplement
- Increases the overall value to DDGS
- Can be implemented at minimal cost

**Potential Applications:**

- Agricultural Industry
- Green Technology

-Clean Energy

**People:**

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**Intellectual Property:**

**Application Date:** November 21, 2016

**Type:** DIV-Patent

**Country of Filing:** United States

**Patent Number:** 10,246,724

**Issue Date:** April 2, 2019

**Application Date:** May 10, 2013

**Type:** Utility Patent

**Country of Filing:** United States

**Patent Number:** 9,506,084

**Issue Date:** November 29, 2016

**Application Date:** May 10, 2012

**Type:** Provisional-Patent

**Country of Filing:** United States

**Patent Number:** (None)

**Issue Date:** (None)

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