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A Unique System for Stabilizing Gas Hydrates at Low Pressures

Background

Compressed gas storage, liquefied gas storage, underground storage, and adsorption are the conventional mechanisms used to stabilize and store natural gas. These storage methods are expensive and wrought with safety concerns. In addition to these concerns the current storage facilities are inconvenient to the desired market, often located in remote geologic formations or adjacent to natural gas fields. This inconvenient storage burdens producers and distributors with the additional expense of transporting natural gas to users through conventional mechanisms. Unfortunately, these mechanisms require the natural gas to be subject to intense pressures which only increases the economic burden of reaching the market.

As a result of the growing economic burden for storing and transporting natural gas, and the risk associated with the current state of the art, there is an obvious need for a mechanism for stabilizing gas hydrates at lower pressures.

Technology

In use, a water-surfactant-gas system is developed that will capture natural gas in a clathrate matrix within a transportation or storage vessel. Hydrocarbon gases are then pumped into the vessel at pressure. The vessel is subjected to a heat treatment process that will promote the formation of hydrates within the vessel. As hydrate form, the natural gas will form into a solid hydrate which will not impact the efficiency of the natural gas once it is recovered from the solid hydrate.

Uses/Applications

- Provides an alternative mechanism for stabilizing natural gas for transportation or storage

Advantages/Benefits

- Reduces the costs associated with storing natural gas for storage and transportation
- Reduces the risk associated with transportation and storage of natural gas

Licensing Opportunity

Mississippi State University seeks a partner interested in field testing and commercializing this technology.