Hydrogen-Hydrocarbon Recovery Process

Summary
An improved method for the recovery of hydrogen and hydrocarbons using a closed-loop gas expander refrigeration system has been designed in order to create new process benefits.

Overview
Air Products is offering for license a patent that details the enhanced recovery of hydrogen and hydrocarbons through a closed-loop gas expander refrigeration system. The separation of gas mixtures containing hydrogen and light hydrocarbons is an important and widely used operation in the refining and petrochemical industries. Many of these gas mixtures contain hydrogen, methane, ethane, and propane, which can best be utilized in pure form. The Hydrogen-Hydrocarbon Recovery Process uses a simple closed-loop reverse brayton gas expander (preferably using Nitrogen) to provide refrigeration for the recovery of hydrogen from hydrocarbons. Some or all of the cooling is provided by indirect heat exchange with the cold gas refrigerant generated in the closed-loop gas expander refrigeration cycle. The process also includes cooling and partially condensing the feed gas to provide a partially condensed feed. The closed-loop method is more efficient at providing cold refrigeration to the system than previous refrigeration methods such as cascade, open-loop, and lean oil absorption. The Hydrogen-Hydrocarbon Recovery Process is a simpler operating process.

Benefits:
- No required refrigeration storage
- Improved efficiency
- Simplified operating process

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<tr>
<th>Priority Patent Number</th>
<th>Title</th>
<th>Status</th>
<th>Application Date</th>
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Closed-Loop Gas Expander Schematic:

Also Offered:
Technology transfer assistance may be provided with a license.

Availability:
All serious inquiries for license will be considered.

For more information on licensing this technology contact:

Jeffrey A. Knopf.
Manager, Licensing and Technology Transfer
Telephone: 610-481-6617
Fax: 610-481-8971
E-mail: knopfja@airproducts.com

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http://www.airproducts.com