WITNESSED AND UNDERSTOOD BY M. Hackett
DATE Nov. 21, 2003

QUARTERLY PROGRESS REPORT

Report Title:	Field Demonstration of a Membrane Process to Separate Nitrogen from Natural Gas: Eighth Quarterly Progress Report
Type of Report:	Quarterly progress report
Reporting Period:	July 1, 2003 through September 30, 2003
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DOE Award Number:	DE-FC26-01NT41225
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Subcontractors:	None
Other Partners:	ABB Lummus Global
Project Team:	Project Officer: Anthony Zammerilli Contract Specialist: Keith L. Carrington

Disclaimer

Abstract

The original proposal described the construction and operation of a 1 MMscfd treatment system to be operated at a Butcher Energy gas field in Ohio. The gas produced at this field contained 17% nitrogen. During precommissioning of the project, a series of well tests showed that the amount of gas in the field was significantly smaller than expected and that the nitrogen content of the wells was very high (25 to 30%). After evaluating the revised cost of the project, Butcher Energy decided that the plant would not be economical and withdrew from the project. Since that time, Membrane Technology and Research, Inc. (MTR) has signed a marketing and sales partnership with ABB Lummus Global, a large multinational corporation. MTR will be working with the company's Randall Gas Technology group, a supplier of equipment and processing technology to the natural gas industry. Randall's engineering group has found a new site for the project at a North Texas Exploration (NTE) gas processing plant.

The plant produces about 1 MMscfd of gas containing 24% nitrogen. The membrane unit will bring this gas to 4% nitrogen for delivery to the pipeline. The membrane skid is being built by ABB. NTE has ordered the required compressor and MTR is making the membrane modules. The membrane skid is scheduled to be completed by December 29. Our target is to have the unit installed and optimized by mid-January.

Table of Contents

Introduction

The natural gas specification for inert gases is less than 4%. On this basis, about 17% of known U.S. reserves of gas are subquality due to high nitrogen content. Some of this gas can be brought to pipeline specifications by dilution with low-nitrogen-content gas; some is treated by cryogenic condensation and fractionation. Nonetheless, about 1.0 trillion scf of known reserves are currently shut in.

This project covers the first demonstration of a new membrane technology to treat this otherwise unusable gas. The objective of this project is to develop a membrane separation process to separate nitrogen from high-nitrogen-content natural gas. To demonstrate the process, a proof-of-concept plant is being built at a North Texas Exploration (NTE) gas field in Texas/Oklahoma.

Experimental

No experiments were performed during this reporting period.

Results and Discussion

A contract has been signed with NTE to install a 1 MMscfd membrane nitrogen removal system at the gas field. The unit will upgrade 24% nitrogen gas to the pipeline specification. Work to date is summarized below.

- NTE and ABB have prepared the site and ordered the required compressors. NTE will cover these costs.
- ABB has designed and ordered the membrane skid. ABB will cover the cost of this unit.
- MTR is manufacturing the membrane modules. ABB will cover the costs of the first set of modules. DOE funds will be used to supply replacement modules installed to allow the first modules to be removed and autopsied on a regular basis.

Conclusions

The system is expected to be completed by December 31 and installed and fully operational by mid-January.

References

None cited.

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