



The GasTechno™ Process: Monetizing Flared Gas

Gas Technologies LLC is bringing to market the GasTechno™ process, a gas-to-liquids technology for reforming methane and ethane into liquid oxygenate products.

Unlike conventional technology, the process does not require the production of syngas and can be profitable at scales small enough for most gas flaring operations. Extensive modeling estimates show a 30-50% savings in CAPEX and up to 20% savings in OPEX over traditional competitors.

This technology is especially attractive for monetizing associated gas in regions where little or no pipeline infrastructure exists or where CO₂ injection is used for enhanced oil recovery projects.

The Need for GTL Processes

The conversion of natural gas to methanol and other oxygenates is one of the most utilized processes in the chemical industry today. Methanol has long been viewed as an important transport pathway for moving energy from natural gas reserves to the end consumer. Methanol offers many advantages over gaseous and liquefied natural gas products including increased safety and stability and easy integration with the existing infrastructure of the petroleum economy. For example, methanol can be burned in most gas engines and is already used throughout the world as a fuel additive. Methanol is also the most promising fuel for any future hydrogen economy and is a feedstock for countless chemical processes.

The GasTechno™ Approach

Although technology for converting methane into methanol is available today, current approaches predominately use variations of the Fischer-Tropsch process, an indirect process for methanol conversion where high pressure steam is used to convert methane into syngas. These gasses are then converted to methanol. This multi-step approach requires enormous economies of scale to be economically viable. As a result, methanol conversion is not currently possible in remote locations or on anything but the largest gas reserves. In order to make methanol a viable transport pathway for the un-tapped value of stranded gas reserves and associated flared gas, the GasTechno™ process was developed specifically for small scale throughput.

The premise of the technology is to reduce process complexity by avoiding syngas production. The GasTechno™ process uses a single-step reaction where natural gas is injected with oxygen into Gas Technologies' proprietary partial oxidation reactor, partially oxidizing methane and ethane into oxygenates in one step. The reactor is designed to allow the control of the reaction in such a way that optimum kinetic performance is maintained, including influence over product selection. High selectivity is achieved within the reactor and the overall carbon efficiency of the process is comparable to conventional syngas processes. High conversion is also achieved by an *energy efficient recycle*™ process that includes a unique separation scheme for capturing products and side-products with minimal impact to operational expenses of the process. Multiple configurations are available for the production of methanol, formaldehyde (available as formalin), or any combination of the two as desired.

"The only chemical technology for converting natural gas to usable chemical feedstocks is the Fischer-Tropsch (FT) family of processes. These are two-step chemical processes for the production of hydrocarbons and oxygenates such as methanol. FT technology is a complex, expensive and energy intensive method that is only suitable for very large scale processing. . . I have recently become involved with the Gastecho process, and have become familiar with all aspects of the design. . . This Gastecho process has considerable advantages over F-T technology. It requires only one chemical reaction step, not two, so a Gastecho plant would be considerably less complex and require far less capital investment than a F-T plant."

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