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# Value-Added Products from GTL Plants

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## PEP Report 247E

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Plants

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#### Abstract

In today's environment, in which crude oil prices have dropped to the \$35–45/barrel range and their predictability for the future has become a riskier proposition, the operational economics and functional competitiveness of the gas-to-liquid (GTL) fuels production plants against the conventional crude-oil refineries have been remarkably impacted. As a result of this situation, investments in new GTL ventures have stopped, and many planned GTL plants have been either postponed or momentarily held in abeyance, primarily due to high costs of construction and uncertainty about future oil prices. Nevertheless, in order to partly mitigate the effects of that undesirable economic situation for the GTL industry, global Fischer-Tropsch (F-T) products makers such as Sasol and Shell have taken several types of steps, including enhancement or diversification of the product scope of their F-T plants by installation of additional production facilities for several types of products with the existing fuel-making plants. This step significantly improves the process economics of the F-T plants, even when crude oil is as low as \$40–45/barrel. Those additional products basically act as value-adding products for the conventional fuel products from the GTL plants.

With the above in the perspective, this report presents a comprehensive technoeconomic analysis of the technologies for production of such value-added products, which sell in the market at higher prices than conventional GTL products. The report assesses the technologies and evaluates economics of paraffins, waxes, and lubricant base oil plants built in integration with an existing (preoperating) gas-based F-T plant. It further assesses the capital and operating costs of a combined grassroots plant of GTL, paraffins, waxes, and lubricant base oils. The conventional GTL products are comprised of liquefied petroleum gas (LPG), naphtha, kerosene, and diesel. The summary section of this report also presents explains how the economic profitability of the GTL plant is influenced by the production of paraffins, waxes, and lubricant base oils.

Production economics presented in this report are based on cost data for the US Gulf Coast region only. However, we have included with the report an Excel-based data module—iPEP Navigator, which is accessible on the Process Economics Program (PEP) website as an attachment of this report—to allow our clients to convert the economics of paraffins, waxes, and base oils production in United States to corresponding economics of the same products in five other regions (Canada, China, Germany, Japan, and Saudi Arabia). The data module offers details such as consumption of utilities and raw materials based on the unit weight/volume of products. Clients can input their own unit prices for utilities and raw materials to work out the process economics for those alternative areas.

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