

Conversion of Natural Gas to Liquid Products: GTL (Gas to Liquids) Project

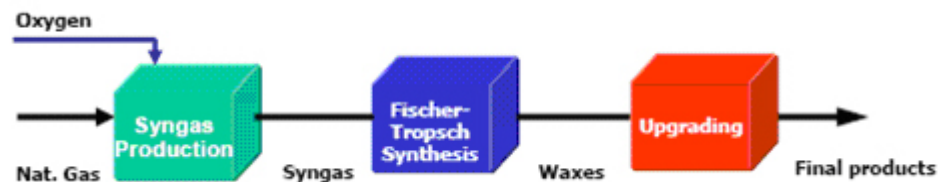
- **Natural gas** has acquired a predominant role among the primary sources of energy, especially for the production of electricity. The lower CO₂ emission per unit of produced energy enhances the role of pillar of **sustainable development**. The diffusion in the mobility market is less immediate but provides, as an additional benefit, the absence of harmful local emissions, especially acid oxides (NO_x and SO_x). Its transformation into liquid fuels improves its usability: between sustainable technological options, Eni has chosen to develop its **own Gas-To-Liquids technology**.
- **GTL technology** permits the large-scale use of natural gas for motor fuel production, in particular diesel, and is of primary strategic interest for all of the major oil companies, making it possible to reduce fuel production costs, reduce the environmental impact of the process and valorise natural gas reserves that would otherwise be difficult to exploit. **Remote gas**, in particular, is a vast resource that is widely distributed across the planet; these reserves could be developed through GTL conversion technologies, which can close the gap between the physical location of resources and markets.



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GTL technology converts **natural gas in liquid hydrocarbons** in three stages:

- the **production of syngas** (a mixture of H₂/CO);
- **Fischer-Tropsch (FT) synthesis** of waxes (paraffins);
- **hydrocracking/upgrading** (HDK) of waxes to distillates or premium lubricant bases.



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- In Eni research and development and engineering of GTL technology has culminated in 2005 with the preparation for the **first BDP - Basic Design Package** for an industrial unit of 36000 bpd.
- In 2006 the program of activities continued with the technology consolidation in the **pilot plant** at Sannazzaro (Pavia), the optimisation of the integration of the first two stages, the definition of the optimal size of Eni GTL module and the preparation of the relative Basic Design Package.



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- This proprietary technology is characterised by an **innovative catalyst** and a **reactor with a proprietary design**. This know-how is protected by more than 60 patents, regarding the catalyst, the reactor and the separation and hydrocracking processes.

