() NEXANT SPECIAL REPORTS



Special Reports analyse key issues to provide up-to-date and thorough understanding to support investment decisions and new business strategy.

Henan Coal Chemical Group and Tongliao Jinmei Chemical Industry have announced a joint commercialisation effort to convert coal into MEG via oxalic acid.

Nexant has produced two multiclient reports to explore technology issues and the strategic impact on the global MEG market of this new development from the perspective of opportunities and threats.

Coal to MEG - Technology Evaluation

- Ethylene glycol is an 18.9 million ton global market growing at on average 3.7 percent per year. China accounts for 43 percent of global demand, and over 60 percent of global growth. Today China imports over 5.0 million tons of ethylene glycol, much of which is supplied by the highly competitive ethane-based producers in the Middle East.
- MEG is most commonly derived via ethylene oxidation and hydration. The technology is well-known and available for license from Shell, Scientific Design, etc, and can be built at world-scale, i.e. greater than 500 000 tons per year. Ethylene is mainly derived from the steam cracking of natural gas liquids or heavier paraffinic liquids. There is some interest in Brazil in making ethylene from biomass-derived ethanol and in China investments are under to convert coal into olefins via methanol.
- The concept is not new. During the 1970s and 1980s Union Carbide Corporation amongst others explored routes to make MEG without ethylene. Within a Chinese context making MEG via oxalic acid enables production to be sited close to the mine mouth to exploit the benefits of the coal supply chain. An MTO-based approach could do the same in China, but more steps are involved as in the MTO process, oxygen is removed from the methanol to make the ethylene hydrocarbon and needs to be added back in subsequent steps. The new process is less wasteful in oxygen.

Publication

 Nexant published the Technology Evaluation report in January 2011. The Strategic Impact volume was published in November 2010.

Coal to MEG - Technology Report Scope

For this new process, Nexant investigated and reported on the process design and the chemistries employed in order to develop a view of its cost structure and competitiveness versus major MEG producers. Nexant has considered the implementation of different synthesis gas platforms to better understand the technology implications and cost of process design variations. The current process involves the gasification of coal, practised worldwide, but most notably in China where there is generally access to low cost labour and the capital investment required for large scale investments, typically undercuts USGC investment costs by a considerable margin.

In its technology-focused report, Nexant covered:

- Review of the new coal to MEG process covering gasification, oxylation, reduction steps within a self-sufficient configuration.
- A review of integration options for syngas to MEG with natural gas reforming as well as biomass gasification.
- For each of the above Nexant provided a review of process chemistry, process flow diagrams, capital cost estimate, operating cost estimate and overall cost of production estimate
- Nexant compared production cost for new MEG technology platforms with traditional routes in appropriate commercial locations.
- The analysis is accompanied by a high level market review.
- Nexant provided various appendices with details of conventional MEG processes.

Coal to MEG - Subscription

The **Technology Report** is available for US\$16 000. This analysis is also available combined with our **Strategic Report** on this new route for US\$24 000.

Please contact ChemSystems@nexant.com for a subscription form.

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