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Ammonia Production by Haldor Topsøe Conventional Technology

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Abstract

Ammonia is one of the most important industrial chemicals used in diverse sectors of the industry. It is used in the manufacturing of fertilizers, drugs, vitamins, explosive, cosmetics, plastic, and fibers. However, the major consumer of ammonia is urea (fertilizer). Worldwide, about 85% of ammonia is used for manufacturing urea.

Ammonia is manufactured from nitrogen and hydrogen mainly by air-methane reforming and steam methane reforming processes. Although ammonia production is now a mature technology, energy-efficient and low-cost production of ammonia is still a major challenge.

Numerous research papers, scientific reviews, technical reports, and companies' patents have been published by academia, industry researchers, and technology licensors. The IHS Chemical Process Economics Program (PEP), too, has prepared technoeconomic analyses of different ammonia technologies periodically, and reported the results in numerous reports—namely, PEP Report 44B, *Advances in Ammonia Technology* (November 2009), PEP Report 44A, *Ammonia* (July 1980), and PEP Report 44, *Ammonia* (November 1968). The current review is the latest report from PEP on the subject of ammonia production. In this review, we present a technoeconomic assessment of an ammonia production process employing the conventional ammonia technology of Haldor Topsøe (Kongens Lyngby, Denmark). We also provide a technical review of the Haldor Topsøe conventional ammonia technology and an ammonia industry update. Lastly, an interactive costing module (iPEP Navigator) is also attached that provides a snapshot of the economics for each process, and also allows the user to select the process, units, and region of interest for individual costing purposes.

This review will be of interest to those who are looking to know about ammonia technologies and their economics. Those readers may be related to the technology or business of syngas and ammonia production.

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