

Sulfuric Acid from Sulfur Updates on Contact Process

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Abstract

Sulfuric acid (H_2SO_4) is the world's largest consumed chemical, with consumption of around 260 MMT (million metric tons) on a 100% acid basis and a growth rate of around 2%. Traditionally, consumption of this chemical is considered as a barometer of a nation's GDP.

The majority of sulfuric acid production (59%) is from burning of elemental sulfur, in a contact process. The sulfur is sourced mostly from oil and gas processing facilities, in which the sulfur is removed from various petroleum or natural gas products.

IHS Markit's Process Economics Program (PEP) last addressed this production technology in PEP Report 84A, *Sulfuric Acid* (June 1985), which covered the manufacture of sulfuric acid from sulfur in new versus old, retrofitted plants, as well as from metallurgical offgases.

This review specifically updates the contact process for the production of sulfuric acid by burning of elemental sulfur. The review examines the developments in this production technology, including advances in catalyst, material of construction, and heat recovery. The process is simulated using Aspen Plus™ software. It focuses on technology basis, raw material and utility consumptions, equipment list, capital cost, along with capacity exponents, and production costs for a 2,000 STPD (short ton per day) of (100% basis) sulfuric acid product.

This review provides insight into sulfuric acid plant process economics, and can be used as a tool for cost estimation for different plant capacities. It will be highly beneficial for planners and producers who are considering the manufacture of sulfuric acid.

An interactive iPEP Navigator module the process is included, which provides a snapshot of the process economics and allows the user to select the units and global region of interest.

The technological and economic assessment of the process is PEP's independent interpretation of the commercial process based on information presented in open literature, such as patents or technical articles, and may not reflect in whole or in part the actual plant configuration. We do believe that they are sufficiently representative of the process and process economics within the range of accuracy necessary for economic evaluations of the conceptual process designs.

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