

INNOVATIVE PATH-BREAKING COLD PROCESS TO MANUFACTURE SULPHONATING AGENTS AND SULPHUR-BASED CHEMICALS

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Manufacture of sulphuric acid and sulphonating agents underwent revolutionary change as a result of the inventive contact process using vanadium pentoxide catalyst in the 1950's. The Single-Contact Single-Absorption process was widely used until the 1970's. The conversion efficiency of SO_2 to SO_3 was restricted to 96.5% resulting in stack emissions of 16 to 20 kgs of sulphur dioxide per ton of acid produced. Global warming and environmental concern prompted further improvement by introducing Double-Contact Double-Absorption (DCDA) process. In the DCDA process, the product SO_3 was absorbed by introduction of Inter-Pass Absorption Tower (IPAT) keeping V_2O_5 contact process unchanged. Thus, the overall conversion efficiency was raised to 99.5–99.7%, thereby reducing sulphur dioxide emissions to below 4 kgs per ton of acid produced. This is today taken as an International Standard as recommended by Environmental Protection Agency of USA. Even so, at the current production level of over 150 million tons of Sulphuric acid per annum, this results into over one million tons of acid rain per year! This acid rain has serious impact on flora and fauna as well as aquatic life. The path-breaking Cold Process invented by Navdeep Enviro and Technical Service Pvt Ltd, Mumbai (India), and for which a patent has been applied at the International Patent Agency in Geneva, is designed to produce sulphuric acid and sulphonating agents with zero emission of sulphur dioxide, which totally eliminates acid rain. This paper outlines the techno economic features of the process, giving cost effectiveness of reduced plant area, lower maintenance costs, and higher cogeneration of steam with lower utility consumption.

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