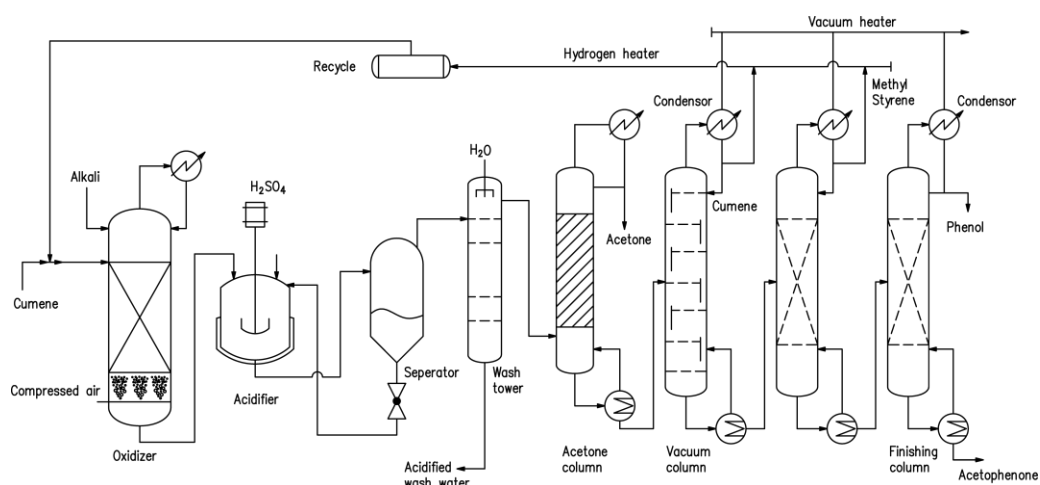


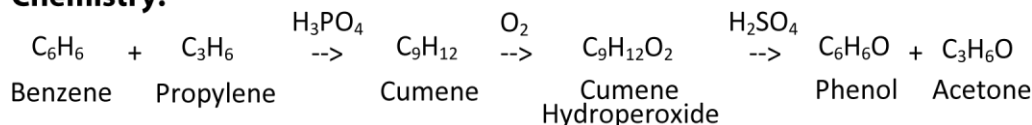
Cumene process: Analysis of Sulfuric Acid in Acetone and Phenol

Because of phenol's commercial importance many methods have been developed for its production. The majority of phenol is made by the cumene process. Phenol is used for the production of bisphenol A (65%) which is used to make polycarbonates. Other products are phenolic resins and cyclohexanol. The production process has three stages. First the production of cumene from benzene and propylene. Second the conversion of cumene to cumene hydroperoxide and the last stage the decomposition of cumene hydroperoxide to phenol and acetone. In this last stage small amounts of sulfuric acid is used to catalyze the reaction. Since the last reaction is very unstable the Cleavage Reactor has to be operated under strict temperature and acidity control with a high level of acetone reflux. To prevent the formation of color bodies and other undesirable by-products, and to minimize corrosion, it is then necessary to remove these traces of sulfuric acid prior to downstream distillation and purification. Therefore accurate and online measurement of sulfuric acid plays an important role in the overall cumene production process.



Schematic: example phenol by cumene process

Chemistry:



Application: Sulfuric acid is titrated with sodium hydroxide.

Typical Range: H₂SO₄: 0-40 ppm (cleavage effluent) and 0-350 ppm in other downstream production stages.

Remarks: In the hazardous environment the Analyzers have to be Ex proof like the ADI2045 Ex or located in an Ex proof shelter. In this case the ADI2016HD and ADI2045TI can be used.