

### Design of concentration of sulfuric acid system using batch distillation process

박성호, 한중훈\*, Krishnadas, 정창현  
서울대학교  
(chhan@snu.ac.kr\*)

In this study, a concentration process of sulfuric acid-water system was designed. Of all kinds of separation processes, batch distillation was taken because of its flexibility in operation and design. Vacuum condition has been applied to meet a tight constraint in terms of environmental and material safety aspects.

Dynamic characteristics of the batch distillation system and vacuum pump were highlighted. Included are pump's capacity, boil up rate, volume vapor flow rate, pressure, temperature, instantaneous/accumulated composition, liquid holdup and heat duty in time coordination. Design of condenser was also stated.

Various conditions were investigated to find out the most proper process. Considering all the design factors (safety, operability, profit, time spec, etc), one specific condition to operate the batch was suggested.