Prediction of Additive Effect on Flue Gas Desulphurization Using Versatile Process Simulator PRO/II™

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This work equips versatile process simulator with a model for Flue Gas Desulphurization (FGD) considering mass-transfer which is strongly affected by additives with pH buffer effect, so that chemical engineers can take benefit of the process simulator in design works of FGD. To achieve this purpose practical models for equilibrium of electrolyte and a model for mass-transfer coefficient are devised and incorporated into the framework of RATEFRAC® embedded on a process simulator PRO/II™. RATEFRAC® is a rate-based distillation model that can consider heat-transfer and mass-transfer at the same time by assuming boundary films at both of liquid and gas phases. The model successfully predicted that additives with pH buffer effect significantly increase the performance of FGD unit, because concentration of $HSO_3(-)$ at the vicinity of the surface increased. (PRO/II™ and SimSci-Esscor™ are trademarks of Invensys. RATEFRAC® is a registered trademark of Koch-Glitsch,LP.)