Modeling of Steam Stripping Column for Polymer Production with Steam Condensation

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In the polymer production process, most of unreacted monomer should be removed below certain concentration criterion due to legal restriction on its toxicity. Since most of monomers are volatile, steam stripping process can be useful method for monomer removal. In steam stripping, polymer latex and steam contact counter-currently and steam makes volatile mass transferred through the interfacial area easily. Meanwhile, in some steam stripping process, condensation of steam occurs due to the mild operating condition (low pressure and temperature) to avoid the thermal damage to the polymer. In this research, we develop the steady state model for the steam stripping process for the removal of the unreacted monomer using gPROMS simulator. In particular, we focus the steam condensation and reflect it to the model. Through the simulation results, we predict the steam condensation profile throughout the whole column and suggest the proper design and the efficient strategy for the steam usage.