Study of separation methods for hydrogen chloride from the chlorinated silane solutions

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In the closed cycles of some chemical processes, a necessity arises to recover vaporized mixture containing hydrogen(H2) and hydrogen chloride(HCl). Polysilicon production is a prime example. Silicon is the only major feed and also product. Sometimes hydrogen and hydrogen chloride are needed to make-up for the system balance. Some different of chlorosilane compounds(CSs) are generated after producing polysilicon. Among them, trichlorosilane should be recovered as much as possible. Generally the vapor mixture consists of chlorosilanes and hydrogen, hydrogen chloride. Hydrogen can be easily separated from chlorosilanes, but hydrogen chloride is not. There are two general solutions to separate HCl from CSs. One method is distillation and the other is desorption. Each method has a number of advantages. In this study, we directly compared in two methods by simulation.