

Abstract

An abstract should be one paragraph of 100-200 words. It summarizes four essential aspects of the experiment or report: the purpose, key findings, main significance, and major conclusions. This information helps readers decide whether they need to read the whole report.

Sample Abstract

This report presents the separation of a 10%mol ethanol-water mixture with a 28-stage distillation column. Both finite and infinite reflux runs were performed, each at a high supply steam pressure (80 Kpa) to the reboiler and at a low pressure (70 Kpa). Murphree and point efficiencies were calculated for the active stages sampled after steady-state operation had been achieved. The values obtained fluctuated greatly because of inaccuracy associated with determining the ethanol composition. Because of these fluctuations, we did not observe an increase in efficiency as steam pressure increased. We also did not observe an increase in efficiency for infinite runs in comparison with the finite runs. Global efficiencies, calculated for each run, ranged from 56% to 88%. Also for each run, mass and energy balances were performed. The significant heat losses obtained were mostly likely because of the absence of insulation and the presence of air drafts near the column. Energy balances over the condenser and reboiler showed actual heat gains from the environment which is unlikely and probably due to error associated with stream enthalpy estimations. For all runs, heat transfer coefficients were calculated for the condenser and reboiler units. Values for the reboiler ranged from 271 to 561 Btu/ft²/hr/deg-F and were higher than the literature range of 160 to 350 Btu/ft²/hr/deg-F. Condenser values ranged from 20 to 83 Btu/ft²/hr/deg-F. Economic analysis performed on the column indicated an increase in net profit of more than \$1.2 million per year using a supply steam pressure of 80 Kpa rather than 70 Kpa.

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