عنوان مقاله:

Energy Cost Minimization and Data Reconciliation

محل انتشار:

پنجمین کنگره بین المللی مهندسی شیمی (سال: 1386)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Gas separation plant was studied for energy analysis because it consumed high energy. This plant consists of three main distillation columns (demethanizer, deethanizer and depropanizer) and ten heat exchangers. First of all, the process values are needed to be measured and collected. The simulation used for this research because there were not enough measured data to apply energy saving technique. The commercial software, Aspen Plus, was used to figure out the unmeasured values. Grand Composite Curve (GCC) and Column Grand Composite Curve (CGCC) were plotted in order to study the integration between the columns and the process. To modify the process, retrofit techniques such as inspection and integration were presented. Three alternatives were proposed and the results showed that the largest energy saving (alternative number three) was 26.14 % of total energy consumption. This alternative was done by adding side reboiler at the deethanizer column which used hot stream as the background process to recover the heat. The consequent results would be energy saving on both the cooling tower load and the main reboiler duty of the deethanizer column. The process modifications were based on the possibility of changing existing plant. Data reconciliation is the technique for ensuring the reliability of measurement. This plant contained 20 measured and 170 unmeasured variables. Based on the energy and material balance, 30 reconciled variables were given.

کلمات کلیدی:

Pinch analysis, Energy cost, Data Reconciliation, Retrofit