

Improvement of NGL Recovery Energy Efficiency through Complex Distillation Arrangements

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Liquid hydrocarbons recovered from NGL are typically separated into relatively pure ethane (C2), propane (C3), isobutane (iC4), normal butane (nC4), and gasoline products (C5+). This is conventionally done by distilling C2, C3 and C4 from gasoline in sequence and then distilling iC4 from nC4. Because of the large energy consumption, there are numerous configurations and methods known to increase NGL recovery from a feed gas. However, integrating three columns, whose operating pressures are so different, creates many challenges. This work aims to propose several configurations suitable for improving the performance of the depropanizing, debutanizing and deisobutanizing fractionation steps of NGL processing. The results show that the sequence including dividing wall column (DWC) and bottom dividing wall column (BDWC) with top vapor recompression heat pump leads to significantly reduce investment and energy costs over the conventional distillation sequence.

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