

### Use of LNG cryogenic energy in the separation of light hydrocarbons

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The liquefied natural gas (LNG) often includes the light hydrocarbons heavier than methane, such as ethane, propane and butane, which not only may increase the calorific values of the natural gas beyond specification limits, but also may have greater market values. During the gasification of liquefied natural gas, its cryogenic energy if used efficiently may enable the fractionation of the heavy hydrocarbons from itself with low power consumption. In this study case, the proposed process includes mainly a vapor-liquid separator, a demethanizer, and a fully thermally coupled distillation column (FTCDC). The methane-rich natural gas from demethanizer is re-liquefied using LNG cryogenic energy through heat exchanger, where after its respective cryogenic energy is used to cool the depressurized feed stream funneled to FTCDC. The second methane-rich natural gas, from vapor-liquid separator, after being liquefied is used in the condenser of fractionation unit as coolant. From the proposed processes, liquefied ethane, propane and butane are obtained directly at atmosphere pressure. It is noticed that the proposed process to fractionate the heavy hydrocarbons recovered from LNG sounds economically attractive.