

Claude Process For Liquefying Methane

Abstract: Natural gas is predominantly methane. Liquefying natural gas has several advantages, the main one being its transportation ease & safety. Claude refrigeration cycle is the basis of various improvisations for liquefying natural gas. Claude cycle consists of all three processes for liquefying gases. Namely isobaric cooling, throttling and expansion from which work is obtained. Moreover recycle stream is heat integrated with feed stream.

Therefore the flow sheet converged is composed of 1. Mixer 2. Adiabatic compressor 3. Cooler 4. Heat exchangers 5. Splitter 6. Throttle valve 7. Gas-Liquid separator 8. Adiabatic expander

Flowsheet requires three recycle blocks.

Objective is to find what fraction of stream that enters regenerative system is liquefied? The lesser is the temperature before throttling the more is the fraction methane liquefied.

One can also study effect of split ratio on liquefaction process.