Cryogenic Natural Gas Plant

Inlet filter separator receives the gas and separates out the solid and liquid contaminants. The gas then enters the amine contactor, where the mixed gas stream is treated to remove any sulfur compounds before entering the contactor. The liquid stream from the bottom of the demethanizer tower contains natural gasoline and an overhead stream that is a noncondensable gas containing ethane. Most of the ethane is recovered by liquid recovery equipment, but a portion of the ethane is vented to the atmosphere to prevent buildup in the plant's process equipment.

Natural gas liquids (NGLs) produced from such a plant may include ethane, propane, butane, and heavier hydrocarbons. These liquids are sent to the stabilizer tower for stabilization. Distillation separates the stabilizer feed separator, which separates flashed vapor from residual water and NGLs that accumulate in the gathering pipeline from the producing field. The receiver vessel. The slug catcher employs gravity to separate hydrocarbon liquids from the gas stream. The liquid stream from the bottom of the demethanizer tower contains natural gasoline and an overhead stream that is a noncondensable gas containing ethane. Most of the ethane is recovered by liquid recovery equipment, but a portion of the ethane is vented to the atmosphere to prevent buildup in the plant's process equipment.

Cryogenic NGL extraction

The purpose of cryogenic extraction is to cool, condense, and absorb into a liquid state the higher-boiling hydrocarbons in the gas stream. This process is typically used to recover propane and propylene from natural gas. Propane and propylene are commonly used refrigerants in this process due to their low boiling points, which allows for efficient vaporization and condensation.

To condensate storage, the gas stream is cooled by applying refrigeration, separation, and compression, ensuring that only vapor enters the gas processing unit. The gas is now “sweet” and the amine liquid is rich. Sweet inlet gas, now saturated with water, leaves the top of the amine contactor. It then passes through the sweet gas scrubber to catch any condensed or carryover amine and water from the contactor. The scrubbed gas then enters the demethanizer, where the higher-boiling hydrocarbons are removed from the gas stream. The purpose of the demethanizer is to recover ethane, propane, butane, and heavier hydrocarbons from the gas stream before it enters downstream processing units.

The liquid stream from the bottom of the demethanizer tower contains natural gasoline and an overhead stream that is a noncondensable gas containing ethane. Most of the ethane is recovered by liquid recovery equipment, but a portion of the ethane is vented to the atmosphere to prevent buildup in the plant's process equipment.

Following inlet separation and filtering, the mixed gas stream must be treated to remove any sour components before final processing and fractionation. This prevents any hydrocarbon components from entering the atmosphere, which could lead to environmental concerns or safety issues.

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