

CRYOGENIC SYSTEM FOR REMOVING ACID GASES FROM A HYDROCARBON GAS STREAM WITH SOLID CO₂ RECOVERY

Abstract

A system for removing acid gases from a raw gas stream is provided. The system includes a cryogenic distillation tower. The cryogenic distillation tower has a controlled freezing zone that receives a cold liquid spray comprised primarily of methane. The tower receives and then separates the raw gas stream into an overhead methane gas stream and a substantially solid material comprised of carbon dioxide. The system includes a collector tray below the controlled freezing zone. The collector tray receives the substantially solid material as it is precipitated in the controlled freezing zone. The system also has a filter. The filter receives the substantially solid material and then separates it into a solid material comprised primarily of carbon dioxide, and a liquid material comprising methane. The solid material may be warmed as a liquid and sold, while the liquid material is returned to the cryogenic distillation tower.

Figure 5