A device and a process for separating methane from a gas mixture containing methane, carbon dioxide and hydrogen sulfide

Abstract:

In a device for separating methane from a gas mixture containing methane, carbon dioxide and hydrogen sulfide, comprising a gas compressor, two or three membrane separation stages downstream of the compressor and a hydrogen sulfide adsorber, comprising a bed of activated carbon having catalytic activity for oxidizing hydrogen sulfide with oxygen, arranged upstream of the membrane separation stages, oxygen content and relative humidity can be adjusted for optimum adsorption capacity of the hydrogen sulfide adsorber by recycling permeate from the second membrane separation stage, which receives the retentate of the first membrane separation stage, to a point upstream of the hydrogen sulfide adsorber.

Fig. 1