

ABSTRACT

SEPARATION OF CARBON MONOXIDE FROM GASEOUS MIXTURES
CONTAINING CARBON MONOXIDE AND HYDROGEN

5

The separation energy requirement of a conventional cryogenic process for separating carbon monoxide ("CO") from a gaseous feed (1) containing primarily CO and hydrogen is reduced by an improvement to the process. In the process, CO is scrubbed (101) from a vapour portion of the feed (2) by a liquid methane wash (12) and dissolved hydrogen is stripped (102) from the resultant CO-loaded liquid methane stream (3). The hydrogen-stripped CO-loaded liquid methane stream (5) is sub-cooled (100) and split into at least first and second substreams (7,8). The first substream (7) is expanded and introduced into a CO/methane fractionation column (103) as a liquid feed. The second substream (8) is partially vaporised (100) and introduced into said fractionating column (103) as a two-phase feed. The fractionating column (103) separates the hydrogen-stripped CO-loaded liquid methane feeds (7,8) to provide CO-rich vapour overheads (9) and methane-rich bottoms liquid (10). A "high pressure" CO recycle heat pump stream (22) provides reboil (201) to the fractionation column (103). The improvement consists of providing part of the heat duty required to partially vaporise the second substream (8) by heat exchange (100) of the second substream (8) against an "intermediate pressure" CO recycle heat pump stream (20) of a pressure intermediate that of the CO-rich vapour overheads (9) and the high pressure CO recycle heat pump stream (22).
(Figure 1)