14. The process according to claim 13, wherein the hydrocarbon gas and liquid at the first separation unit (120) of the first separation cycle having a CO_2 content up to 90 mole% and the CO_2 content of said hydrocarbon gas is lowered to 50% mole and under prior to delivering the said hydrocarbon gas to the second separation unit (125) of the second separation cycle.

15. The process according to claim 14, wherein the hydrocarbon gas and liquid is brought into contact with the semi-permeable fluid separation membrane (156) disposed at the first separation unit (120) during the first separation cycle under controlled pressure, temperature and flow rate such that a portion of CO_2 is selectively dissolved and diffused through the semi-permeable fluid separation membrane (156) resulting in enriched fraction of CO_2 on one side of the membrane (156) and depleted fraction of CO_2 remains on the other side of the semi-permeable fluid separation membrane (156).

~~16. The process according to any one of claims 12 to 15, wherein the pressure and temperature of the hydrocarbon gas and liquid are monitored and controlled by~~ a controller (161) ~~linked to the first separation unit (120) and the second separation unit (125).~~