

Claims

1. A system for recovering natural gas liquid from a gas source (210), comprising:
 - compression means (206) for increasing the temperature and pressure of the
 - 5 fluid from the gas source;
 - cooling means (230) for cooling the fluid from the compression means;
 - at least one gas/gas heat exchanger (204), fluid from the cooling means
 - flowing from a first inlet to a first outlet;
 - at least one separator (208) for receiving the fluid from the first outlet of the
 - 10 gas/gas heat exchanger (204) and separating liquid from the gas;
 - the gas from the separator being directed to expansion means (206) for
 - reducing the temperature and pressure of the gas;
 - the aqueous part of the liquid from the separator and/or the gas from the
 - expansion means being directed to the gas/gas heat exchanger (204) where it
 - 15 flows therethrough from a second inlet to a second outlet for cooling the fluid
 - flowing between the first inlet and first outlet;
 - wherein injection means are provided between the cooling means and the
 - gas/gas heat exchanger for saturating the gas with a liquid agent;
 - characterised in that the liquid agent comprises an evaporant and an
 - 20 antifreeze agent; and
 - a recovery vessel (240) is provided downstream of the second outlet, the
 - antifreeze agent being recovered therein for injection into the fluid from the gas
 - source upstream of the first inlet.

2. The system according to claim 1 wherein the expansion means and compression means are provided by respective sides of a turbo expander.
 3. The system according to claim 1 or 2 wherein the evaporant is water.
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4. The system according to any preceding claim wherein the antifreeze agent is monoethylene glycol or monopropylene glycol.
 5. The system according to any preceding claim wherein the separator is provided
- 10 with a heater for de-emulsifying the liquid in the separator.
6. The system according to claim 5 wherein the heater is located in a separate vessel which receives liquid from the bottom of the separator, warms the liquid, then returns the liquid to the separator.
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7. The system according to any preceding claim wherein the cooling means is a seawater or air cooler, which does not significantly change the pressure of the fluid.
 8. The system according to any preceding claim wherein the gas/gas heat exchanger
- 20 comprises a series of heat exchangers and/or a multi-section heat exchanger comprising independent compartments within the same closure.

9. The system according to any preceding claim wherein the liquid separated in the separator comprises an aqueous part and a condensate, the condensate comprising hydrocarbons which are directed to an outlet for further treatment, the aqueous part comprising the liquid agent.

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10. The system according claim 9 wherein the condensate from the separator is spiked into a surge vessel, provided for separating gas, water and oil at low pressure, the condensate being directed through a column of material through which gas from the surge vessel passes in the opposite direction to strip off C3-
10 components from the condensate and recover heavy ends from the gas.