

wherein inside the heat exchanger, the compressed and after cooled BOG is cooled down further by the cold sources from the vaporized LNG and BOG;

wherein the inlet of the expansion valve **6** is coupled with the heat exchanger **3** to receive the cryogenically cooled compressed BOG;

wherein the outlet of the expansion valve **6** is coupled with the flash drum **7**; wherein the cold compressed BOG is expanded via the expansion valve **6**, resulting in the expanded BOG that is close to atmospheric pressure; and

wherein the flash drum **7** receives the expanded BOG, and returns flash gas and LNG recovered to the LNG storage tank **2**.

2. The BOG reliquefaction system of claim 1, wherein the BOG is compressed in the multistage compressor **4** to a pressure range from 30 to 300barg.

3. The BOG reliquefaction system of claim 1, wherein the resultant cold compressed BOG leaves the heat exchanger at a temperature range from -130°C to -155°C, preferably around -150°C.

4. The BOG reliquefaction system of claim 1, further comprising an LNG booster pump **18**, wherein the LNG booster pump **18** is disposed between the LNG storage tank **2** and the heat exchanger **3**, and increases the pressure of the LNG so as to supply the fuel gas with increased pressure.

5. The BOG reliquefaction system of claim 1, further comprising an additional vaporizer **20**, wherein the vaporizer **20** is disposed downstream of the heat exchanger **3**.

6. The BOG reliquefaction system of claim 5, wherein discharge cooling medium from the compressor after cooler **5** is used to heat the vaporizer **20**.

7. The BOG reliquefaction system of claim 1, wherein the expansion valve **6** is a Joule Thomson (JT) valve.

8. A process of reliquefaction of LNG boil-off gas (BOG) **500** comprises:

providing **510** cold BOG from an LNG storage tank, wherein the cold BOG is at close to atmospheric pressure and -160°C;