Claims

1. A method for large-scale, air cooled floating liquefaction, storage and offloading of natural gas, the method comprising:
    a) gathering gas from onshore sources and treating the gas on shore by removal of mercury, removal of acid gas, dehydration and removal of C6+ hydrocarbons,
    b) onshore compressing and cooling of the treated gas of step a);
    c) piping of the compressed gas of step b) from onshore to an offshore pipeline end manifold;
    d) piping of the gas of step c) from the pipeline end manifold to an offshore ship-shaped, external-turret-moored vessel;
    e) receiving the gas of step d) on the vessel via a swivel mounted on a turret;
    f) distributing the gas of step e) to three parallel liquefaction trains on the vessel;
    g) liquefying the gas of step f) by methane refrigerant and subsequent flash;
    h) cooling the gas of step g) from compressors by heat exchange with cooling water;
    i) heating the cooling water of step h) to 80°C or higher downstream process heat exchangers;
    j) cooling the cooling water of step i) by heat exchange with air in air coolers mounted on at least three mechanically independent cantilevers, in total extending at least 50% of the vessel length;
    k) recycling the cooled cooling water to process heat exchangers;
    l) providing gas turbine air intakes for liquefaction and utilities located on the opposite side of the at least three mechanically independent air cooler cantilevers;
    m) sending liquid natural gas (“LNG”) that is not completely stabilized to storage tanks;
    n) storing produced LNG in multiple smaller membrane tanks onboard the vessel;
    o) flashing LNG in the storage tanks; and

p) offloading gas to LNG tank vessels while the liquefaction processes are in full production.

2. The method according to claim 1, wherein the gas offloading of step p) is performed via offloading arms located on the side of the ship-shaped, external turret-moored vessel being opposite of the cantilever air coolers.

3. The method according to claim 1, wherein the gas offloading of step p) is performed via parallel offloading.

4. The method of claim 1, wherein the gathering of step a) is from onshore pipeline networks.

5. The method of claim 1, wherein flash gas from the storage tanks is used as fuel gas onboard the vessel.

6. The method of claim 1, wherein water content in the gas received at step e) onboard the vessel is monitored and the incoming gas is dehydrated before introduction into step f) if the water content of the gas is above a preset level.
7. The method of claim 1, wherein the steps are performed in the order listed.