CLAIMS

1. An air supply system ~~(100)~~ for supplying air to an outside of a hull ~~(201)~~ of a vessel ~~(200)~~ holding a combustion engine, the air supply system ~~(100)~~ comprising:
   - one or more air discharge units, ADUs, for releasing compressed air to an outside of the hull ~~(201)~~ below a waterline of the vessel ~~(200)~~,
   - a pump ~~(30)~~ for generating a first flow ~~(f1)~~ of sea water,
   - an injector ~~(40)~~ comprising a first inlet ~~(42)~~ for receiving the first flow ~~(f1)~~ of sea water from the pump ~~(30)~~, a second inlet ~~(41)~~ for receiving a second flow ~~(f2)~~ of gas from the combustion engine, an outlet ~~(43)~~ for discharging a third flow ~~(f3)~~ of gas to the ADUs ~~(20)~~, and an expansion portion ~~(44)~~ arranged downstream of the first inlet ~~(42)~~ and the second inlet ~~(41)~~ and upstream of the outlet ~~(43)~~, wherein the injector is configured to mix the first flow ~~(f1)~~ of sea water and the second flow ~~(f2)~~ of gas into the third flow ~~(f3)~~ of gas and the expansion portion is configured to expand the third flow ~~(f3)~~ of gas to increase the pressure of the third flow ~~(f3)~~ of gas discharged from the injector ~~(40)~~ through the outlet ~~(43)~~,

   wherein the air supply system ~~(100)~~ is configured to evaporate the first flow ~~(f1)~~ of sea water using thermal energy from the combustion engine so that the third flow ~~(f3)~~ of gas is enriched with steam from the first flow ~~(f1)~~ of sea water.

2. The air supply system ~~(100)~~ according to claim 1, wherein the gas of the second flow ~~(f2)~~ is an exhaust gas from the combustion engine.

3. The air supply system ~~(100)~~ according to claim 1, wherein the gas of the second flow ~~(f2)~~ is scavenging air for the combustion engine.

4. The air supply system ~~(100)~~ according to any one of the previous claims, wherein the first flow ~~(f1)~~ of sea water is evaporated in the injector ~~(40)~~ by thermal energy from the second flow ~~(f2)~~ of gas.

5. The air supply system ~~(100)~~ according to any one of the previous claims, wherein the air supply system ~~(100)~~ comprises one or more turbochargers ~~(10)~~, each turbocharger ~~(10)~~ comprising a turbine ~~(10A)~~ driven by an exhaust gas flow from the combustion

engine and a compressor ~~(10B)~~ for generating a compressed scavenging air flow ~~(f4)~~ to the combustion engine.

6. The air supply system ~~(100)~~ according to claim 5, wherein the air supply system comprises one or more waste heat recovery element(s) ~~(16)~~ arranged in the compressed scavenging air flow ~~(f4)~~ downstream of a respective compressor ~~(10B)~~ of the one or more turbocharger(s) ~~(10)~~ and configured to increase the temperature of the first flow ~~(f1)~~ of sea water by heat exchange with the compressed scavenging air flow ~~(f4)~~ before the first flow ~~(f1)~~ of sea water is received by the first inlet ~~(42)~~.

7. The air supply system ~~(100)~~ according to any one of the previous claims 5 or 6, wherein the air supply system ~~(100)~~ comprises one or more boilers ~~(17)~~ arranged in the first flow ~~(f1)~~ of sea water configured to increase the temperature and/or evaporate the first flow ~~(f1)~~ of sea water by heat exchange with exhaust gas from the combustion engine before the first flow of sea water ~~(f1)~~ is received by the first inlet ~~(42)~~.

8. The air supply system ~~(100)~~ according to any one of the previous claims, wherein the air supply system comprises a changeover valve ~~(13)~~ arranged to open and/or close the second flow ~~(f2)~~ of gas from the combustion engine.

9. The air supply system ~~(100)~~ according to claim 8, wherein the air supply system ~~(100)~~ comprises a flow control device ~~(12)~~ arranged to control the second flow ~~(f2)~~ of gas from the combustion engine.

10. The air supply system ~~(100)~~ according to claim 9, wherein the flow control device ~~(12)~~ is an orifice or a control valve.

11. The air supply system ~~(100)~~ according to any one of the claims 8 to 10, wherein the air supply system ~~(100)~~ comprises a non-return valve ~~(14)~~ configured to prevent gas from flowing back from the injector ~~(40)~~.

12. A vessel ~~(200)~~ comprising a hull ~~(201)~~, a combustion engine and the air supply system ~~(100)~~ according to any one of the previous claims.