CLAIMS

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

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

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

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

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

5. The air supply system according to any one of the previous claims, wherein the air supply system comprises one or more turbochargers, each turbocharger comprising a turbine driven by an exhaust gas flow from the combustion engine and a compressor for generating a compressed scavenging air flow to the combustion engine.

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

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

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

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

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

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

12. A vessel comprising a hull, a combustion engine and the air supply system according to any one of the previous claims.