Claims

1. An individual self-contained breathing apparatus of closed cycle for underwater submergence comprising

- an air system, including a compensatory cylinder with compressed gas, a reducer and a manometer;

- a regenerative device including reactors with cartridges with an oxygen regenerating agent;

- a gas analyzing system, including sensors for determine the partial pressure of oxygen and carbon dioxide, the sensors are embedded between the reactors with cartridges with an oxygen regenerating agent and a breathing bag;

- a breathing circuit including a face mask, a space under the face mask, another breathing bag, a valve for releasing pressure in the breathing circuit;

- connecting air ducts for connecting the breathing circuit to the regenerative device and the air system; and

- CO2 (carbon dioxide) cylinders for additional regeneration of carbon dioxide to oxygen, the cylinders connected to air ducts leading to the breathing bag.

2. The individual self-contained breathing apparatus according to claim 1, characterized in that the total number of the reactors with the cartridges with the oxygen regenerating agent varies from 1 to 6.

3. The individual self-contained breathing apparatus according to claim 1, characterized in that the reactors with the cartridges with the oxygen regenerating agent comprise an agent that chemically converts carbon dioxide gas into oxygen.

4. The individual self-contained breathing apparatus according to claim 1, characterized in that the cartridges with the oxygen regenerating agent comprise as an agent that chemically converts carbon dioxide gas into oxygen, the agent is chosen from a group of: Li2O2, Na2O2, K2O2, KO2, Rb2O2, Cs2O2, MgO2, CaO2, SrO2, BaO2, LiO2, NaO2, KO2, RbO2, CsO2, Mg(O2), Ca(O2)2, Sr(O2)2, Ba(O2)2 or superoxide ferratesKO2 mixed with CaO.

5. The individual self-contained breathing apparatus according to claim 1, characterized in that the cartridges with oxygen regenerating agent are replaceable cartridges.

6. The individual self-contained breathing apparatus according to claim 1, characterized in that the cylinder with compressed gas may contain one of the gases being a mixture selected from the group: oxygen-nitrogen mixture, oxygen-helium mixture, oxygen-neon-helium mixture, oxygen-nitrogen-helium mixture, oxygen oxygen-neon mixture, oxygen-nitrogen neon mixture and oxygen-nitrogen-neon-helium mixture.

7. The individual self-contained breathing apparatus according to claim 1, characterized in that the amount of the cylinders varies from 1 to 6.

8. The individual self-contained breathing apparatus according to claim 1, characterized in that the air system, the gas analyzing system, the regenerative device, the breathing circuit, the connecting air ducts being enclosed in a housing.

9. The individual self-contained breathing apparatus according to claims 1-8, characterized in that the another breathing bag occupies the space inside the housing.

10. The individual self-contained breathing apparatus according to claim 1, characterized in that the apparatus is a monoblock construction.

11. The individual self-contained breathing apparatus according to claims 1-10, characterized in that the housing is configured to be a helmet shaped or rounded.

12. The individual self-contained breathing apparatus according to claims 1-11, characterized in that the face mask has a full face mask configuration.

13. The use of the apparatus according to claims 1-12 for recreational diving, technical diving, professional diving or rescue purposes.