

an acidic state to an alkaline state, achieving an anti-oxidation, anti-aging and beauty health effect, and even eliminating chronic diseases. Furthermore, there are also clinical experiments showing that patients who need to inhale a high concentration of oxygen for an extended period of time would experience lung damage and the lung damage, and they could be ameliorated by inhaling hydrogen.

In addition to healthy uses, the application of hydrogen-oxygen gas also can create hydrogen-oxygen fire to heat or burn, or clean up the carbon accumulated in engine as well.

Generally, hydrogen-oxygen gas is generated through electrolyzing liquid water. However, it's easy to generate high temperature in the electrolyzing process, which will allow the efficiency of electrolyzing to be decreased and cause energy consumption problems. Furthermore, to avoid hydrogen explosions, air-cooling type hydrogen-oxygen electrolysis tank are usually used, which is utilizing fan to cool down. However, if the fan malfunctions, the temperature of the electrolysis tank will be raised, and it's easy to cause hydrogen explosions.

SUMMARY

The invention is defined in the independent claim. Further embodiments of the invention are defined in the dependent claims.

An aspect of the present invention is to provide a gas generator, which electrolyzes liquid water and generates hydrogen-oxygen mixed gas. Meanwhile, the gas generator of the present invention can maintain the quantity of the hydrogen-oxygen mixed gas in the water tank, and cool down the temperature of the hydrogen-oxygen mixed gas as well, to avoid gas explosions.

The present invention provides a gas generator, comprising a water tank and an electrolysis device. The water tank has a first hollow portion for containing electrolyzed water. The electrolysis device is disposed inside the first hollow portion of the water tank for electrolyzing the electrolyzed water to generate a hydrogen-oxygen mixed gas. When the electrolysis device starts to electrolyze the electrolyzed water, the first hollow portion of the water tank and the electrolysis device are filled

What is claimed is:

1. A gas generator comprising:

an electrolysis device for electrolyzing electrolyzed water to generate a gas comprising hydrogen; and

a condense filter coupled to the electrolysis device and for filtering and condensing impurities of the gas comprising hydrogen;

wherein the condense filter has a gas inlet via and a gas outlet via, the gas inlet via is coupled to the electrolysis device for receiving the gas comprising hydrogen, and the gas outlet via is configured to output the gas comprising hydrogen; wherein the gas outlet via of the condense filter is configured to receive a supplemental water to flush the impurities out of the condense filter through the gas inlet via.
2. The gas generator of claim 1, wherein the condense filter comprises a plurality of condense plates, each condense plate has a channel, and the channel of the condense plate is coupled with the adjacent channel of the condense plate to form a circulating channel for the gas comprising hydrogen to flow through, wherein the circulating channel is coupled between the gas inlet via and the gas outlet via.
3. The gas generator of claim 2, wherein an active carbon fiber is disposed in the channel for filtering the impurities of the gas comprising hydrogen.
4. The gas generator of claim 3, wherein a filter material is further disposed in the channel and selected from a group consisting of ceramics, quartz, kieselguhr, meerschaum, and the combination thereof.
5. The gas generator of claim 1, wherein the gas generator is configured for the impurities to be flushed back to the electrolysis device through the gas inlet via.

6. The gas generator of claim 1, further comprising:
 - a cooling device coupled to the electrolysis device for cooling down the electrolyzed water; and
 - a water pump adapted to circulate the electrolyzed water between the electrolysis device and the cooling device.
7. The gas generator of claim 1, further comprising:
 - a water tank having a first hollow portion for containing the electrolysis device; and
 - a humidification device coupled to the condense filter for containing the supplemental water and humidifying the gas comprising hydrogen;
 - wherein the condense filter is capable to receive the supplemental water from the humidification device to flush the impurities out of the condense filter.
8. The gas generator of claim 7, wherein the humidification device comprises a container with a hollow space, a second pipe, and a gas outputting structure, wherein the container is configured to contain the supplemental water, the second pipe is coupled to the container for receiving the filtered gas comprising hydrogen, the gas outputting structure is coupled to the second pipe, the surface of the gas outputting structure has a plurality of vias for outputting the filtered gas comprising hydrogen into the supplemental water.
9. The gas generator of claim 7, wherein the condense filter comprises a plurality of condense plates, each condense plate has a channel, and the channel of the condense plate is coupled with the adjacent channel of the condense plate to form a circulating channel for the gas comprising hydrogen to flow through.
10. The gas generator of claim 7, wherein the level of water of the electrolyzed water to be filled in the first hollow portion of the water tank is higher than 90% of a full level of water of the water tank.
11. The gas generator of claim 10, wherein the electrolyzed water to be filled into

the first hollow portion of the water tank to the level of water thereof to be between 90% and 99.99% of the full level of the water tank.

12. The gas generator of claim 10, wherein the water tank further comprises a pipe for outputting the gas comprising hydrogen and refilling the electrolyzed water into the first hollow portion of the water tank.
13. The gas generator of claim 7, further comprising:
 - a cooling device coupled to the electrolysis device for cooling down the electrolyzed water; and
 - a water pump adapted to circulate the electrolyzed water between the electrolysis device and the cooling device.
14. The gas generator of claim 13, wherein the water pump comprises an inlet pipe and an outlet pipe, the water tank comprises an outlet opening and an inlet opening, the outlet pipe of the water pump is coupled with the inlet opening of the water tank, and the inlet pipe of the water pump is coupled with the outlet opening of the water tank.
15. The gas generator of claim 7, further comprising a nebulized gas mixing tank, wherein the nebulized gas mixing tank is configured to receive the gas comprising hydrogen, and the nebulized gas mixing tank is further configured to generate a nebulized gas to be mixed with the gas comprising hydrogen to form a healthy gas for users to breathe, wherein the nebulized gas is selected from a group consisting of water vapor, nebulized medicinal liquid, evaporated essential oil, and the combination thereof.
16. The gas generator of claim 13, wherein the water pump is coupled to the cooling device and the electrolysis device.
17. The gas generator of claim 16, further comprising a microcomputer controller, the microcomputer controller coupled to the water pump and used to detect the temperature of the electrolyzed water and to control an inputting flow rate and an

outputting flow rate of the water pump according to the detected temperature of the electrolyzed water.

18. The gas generator of claim 16, wherein the temperature of the electrolyzed water to be contained in the electrolysis device is between 55°C and 65°C.