CLAIMS

1. A hydrogen generator comprising

a reaction chamber for containing a reagent,

a supply water tank,

at least one water conduit tubing, the water conduit tubing comprising a water conduit tubing inlet being fluidically connected to the supply water tank and a water conduit tubing outlet,

at least one water dispenser, the water dispenser comprising a water dispenser inlet being fluidically connected to the water conduit tubing outlet and a surface with a plurality of water outlet channels,

the at least one water conduit tubing, and the at least one the water dispenser are provided inside the reaction chamber,

a water pump,

an electric power supply,

a controller being adapted to activate the water pump for transferring water from the supply water tank, to the at least one water conduit tubing, to the at least one water dispenser, and to the reaction chamber for interacting with the reagent in the reaction chamber to generate hydrogen gas, and

at least one hydrogen collector, the hydrogen collector comprising a surface with a plurality of gas inlet channels for receiving the hydrogen gas,

the at least one hydrogen collector is provided inside the reaction chamber,

wherein

the water conduit tubing further comprises an electrically conductive material, and

the controller is further adapted to activate the electric power supply for providing an electric current to the water conduit tubing being provided in the reaction chamber such that the water conduit tubing serves as a heater for increasing a temperature of water in the water conduit tubing and for increasing a temperature of the reagent inside the reaction chamber.

2. The hydrogen generator according to claim 1, wherein at least one portion of the reaction chamber is electrically conductive, and the electrical current flows through said portion of the reaction chamber.

~~3. A hydrogen generator comprising~~

~~a reaction chamber for containing a reagent,~~

~~a supply water tank,~~

~~at least one water conduit tubing, the water conduit tubing comprising a water conduit tubing inlet being fluidically connected to the supply water tank and a water conduit tubing outlet,~~

~~at least one water dispenser, the water dispenser comprising a water dispenser inlet being fluidically connected to the water conduit tubing outlet and a surface with a plurality of water outlet channels,~~

~~the at least one water conduit tubing, and the at least one water dispenser are provided inside the reaction chamber,~~

~~a water pump,~~

~~an electric power supply,~~

~~a controller being adapted to activate the water pump for transferring water from the supply water tank, to the at least one water conduit tubing, to the at least one water dispenser, and to the reaction chamber for interacting with the reagent to generate hydrogen gas, and~~

~~at least one hydrogen collector, the hydrogen collector comprising a surface with a plurality of gas inlet channels for receiving the hydrogen gas,~~
~~the hydrogen collector is provided inside the reaction chamber,~~

~~wherein~~
~~the water dispenser further comprises a heater for heating water in the water dispenser.~~

~~4~~3. The hydrogen generator according to one of claims 1 to ~~3~~2, wherein
the water conduit tubing comprises a coiled tube that surrounds the water dispenser.

~~5~~4. The hydrogen generator according to one of claims 1 to ~~4~~3, wherein
the hydrogen generator comprises a plurality of water dispensers.

~~6~~5. The hydrogen generator according to one of claims 1 to ~~5~~4, wherein
the hydrogen generator comprises a plurality of hydrogen collectors.

~~7~~6. The hydrogen generator according to claim ~~6~~5, wherein
the hydrogen collectors are provided symmetrically around a corresponding water dispenser.

~~8~~7. The hydrogen generator according to one of claims 1 to ~~7~~6 further comprising

- a pressure sensor for measuring pressure of hydrogen gas,

- a temperature sensor for measuring temperature in the reaction chamber,

wherein the controller is further adapted to activate the water pump according to a measurement of the temperature sensor and to regulate pump rate of the water pump according to a measurement of the pressure sensor.

~~9~~8. The hydrogen generator according to one of claims 1 to ~~8~~7, wherein the reaction chamber comprises a housing that comprises a thermal insulating material.

~~10~~9. The hydrogen generator according to one of claims 1 to ~~9~~8, wherein the reaction chamber comprises a housing that comprises a thermal conductive material.

~~11~~10. The hydrogen generator according to one of claims 1 to ~~10~~9, wherein the reaction chamber comprises a housing with a doughnut shape.

~~12~~11. The hydrogen generator according to claim ~~11~~10, wherein the reaction chamber comprises a fan that is provided in a central hollow part of the doughnut shape of the housing for cooling the reaction chamber.

~~13~~12. An energy power supply device comprising a hydrogen generator according one of claims 1 to ~~12~~11, the hydrogen generator further comprising

- a cooling coil for receiving hydrogen gas from a reaction chamber and for reducing temperature of the hydrogen gas, and

- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and

a fuel cell module for converting the hydrogen gas to electrical energy.

~~14. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

~~- a water pump for transferring water from the supply water tank to the reaction chamber,~~

~~wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the energy power supply device further comprises an impurity filter to remove impurity from the hydrogen gas.~~

~~15. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

~~- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the hydrogen generator further comprises a fan for reducing temperature of the cooling coil.~~

~~16. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

~~- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

a fuel cell module for converting the hydrogen gas to electrical energy,

wherein the cooling coil is provided inside the water tank.

17. An energy power supply device comprising

a hydrogen generator comprising

- a supply water tank,
- a reaction chamber, and
- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,

the hydrogen generator further comprising

- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and
- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and

a fuel cell module for converting the hydrogen gas to electrical energy,

wherein the cooling coil, the buffer tank, and the water pump are provided inside the supply water tank.

18. An energy power supply device comprising

a hydrogen generator comprising

- a supply water tank,
- a reaction chamber, and
- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to

~~contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the buffer tank and the supply water tank are provided by a single integrated tank.~~

~~19. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

~~- a water pump for transferring water from the supply water tank to the reaction chamber,~~

~~wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the energy power supply device further comprises a connector for removably attaching the fuel cell module to the hydrogen generator.~~

~~20. The energy power supply device according to claim 19, wherein the connector comprises a press-fit connector.~~

~~21. The energy power supply device according to claim 20, wherein the press-fit connector comprises at least one insertion member and at least one receiving member for attaching to the at least one insertion member.~~

~~22. The energy power supply device according to claim 20 or 21, wherein the at least one insertion member is removably attached to the fuel cell module and the at least one receiving member is removably attached to the hydrogen generator.~~

~~23. The energy power supply device according to claim 20 or 21, wherein the at least one insertion member is removably attached to the hydrogen generator and the at least one receiving member is removably attached to the fuel cell module.~~

~~24. The energy power supply device according to one of claims 20 to 23, wherein the at least one insertion member further comprises a channel for transmission of hydrogen gas from the hydrogen generator to the fuel cell module.~~

~~25. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,

the hydrogen generator further comprising

- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and
- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and

a fuel cell module for converting the hydrogen gas to electrical energy,

wherein the energy power supply device further comprises a connector for removably attaching the supply water tank to the reaction chamber.

26. An energy power supply device comprising

a hydrogen generator comprising

- a supply water tank,
- a reaction chamber, and
- a water pump for transferring water from the supply water tank to the reaction chamber, wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,

the hydrogen generator further comprising

- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the energy storage device further comprises a fan for cooling the fuel cell module.~~

~~27. An energy power supply device comprising~~

~~a hydrogen generator comprising~~

~~- a supply water tank,~~

~~- a reaction chamber, and~~

~~- a water pump for transferring water from the supply water tank to the reaction chamber,~~

~~wherein the reaction chamber is provided to contain a reagent for interacting with the water to generate hydrogen gas,~~

~~the hydrogen generator further comprising~~

~~- a cooling coil for receiving the hydrogen gas from the reaction chamber and for reducing temperature of the hydrogen gas, and~~

~~- a buffer tank for separating the hydrogen gas from any water that is mixed with the hydrogen gas, and~~

~~a fuel cell module for converting the hydrogen gas to electrical energy,~~

~~wherein the energy power supply device further comprising a housing for enclosing the hydrogen generator and the fuel cell module, the housing comprising at least one opening for drawing external air into the housing for cooling the cooling coil and/or the reaction chamber.~~