CLAIMS

1. An electric power generator (EPG) comprising at least a first electrode (11) and a second electrode (12), wherein the electric power generator comprises an active material between said electrodes (11,12), said active material comprising at least one oxygen-containing compound selected from the group consisting of MgO, ZnO, $ZrOCl_2$, ZrO_2, SiO_2, Bi_2O_3, Fe_3O_4, Al_2O_3,TiO_2, BeO, CaO, Ga_2O_3, In_2O_3, GeO_2, SnO_2 and PbO_2, wherein the particle size of the oxygen-containing compound has an average diameter in the range from 10 nm to 40 µm and wherein a thickener additive selected from the group consisting of agar agar, xanthan gum, methyl cellulose, and arabic gum is absent and wherein the at least one oxygen-containing compound or a mixture thereof is in an amount in the range from 50% to 100% (w/w) with respect to the amount of the active material.

2. The electric power generator (EPG) of claim 1, wherein a cellulose compound as a thickener agent is absent.

3. The electric power generator (EPG) of claim 1 or claim 2, wherein the at least one oxygen-containing compound selected from the group consisting of MgO, ZnO, $ZrOCl_2$, ZrO_2, SiO_2, Bi_2O_3, Fe_3O_4, Al_2O_3, TiO_2, BeO, CaO, Ga_2O_3, In_2O_3, GeO_2, SnO_2 and PbO_2 or a mixture thereof is in an amount in the range 50-80% (w/w) with respect to the amount of the active material.

4. The electric power generator (EPG) of any one of claims 1-3, wherein the at least one oxygen-containing compound of the active material has particle average diameter in the range from 5 nm to 40 µm, preferably in the range of 15 nm-10 µm, more preferably 20 nm-5 µm.

5. The electric power generator (EPG) of any one of claims 1-3, wherein the at least one oxygen-containing compound of the active material has particle average diameter in the range from 10 to 200 nm, preferably in the range of 15-100 nm, more preferably 20-40 nm.

6. The electric power generator (EPG) of any one of claims 1-5, wherein the at least one oxygen-containing compound of the active material is MgO, in the range from 50% and 100% (w/w), preferably in the range of 50% and 80% (w/w) with respect to the amount of the active material.

7. The electric power generator (EPG) of any one of claims 1-5, wherein the at least one oxygen-containing compound of the active material is ZnO or ZrO_2.

8. The electric power generator (EPG) according to any one of claims 1-5, wherein the active material comprises MgO, ZnO, ZrO_2.

9. The electric power generator (EPG) according to any one of claims 1-8, wherein the active material comprises also at least one plasticizer additive.

10. The electric power generator according to claim 9, wherein the at least one plasticizer additive is selected from the group consisting of siloxanes, Carnauba Wax, Naphtalene, PVDF, Parylene, PTFE, FEP, PDMS, aqueous based polymers and bio-polymers.

11. The electric power generator according to any one of claims 1-10, wherein the oxygen-containing compound contains coordinated water in the range from 0.5% by weight to 7.5% by weight with respect to oxygen-containing compound, preferably from 0.5% to 3.5%, more preferably from 0.5% to 1.5%.

12. The electric power generator (EPG) according to any one of claims 1-11, wherein said electrodes are made of the different materials in form of powders or metal foils.

13. The electric power generator (EPG) according to any one of claims 1-11, wherein said electrodes are made of the same material.

14. The electric power generator (EPG) according to Claim 12, wherein said first electrode (11) is made of copper and wherein said second electrode is made of aluminum.

15. The electric power generator (EPG) according to Claim 13, wherein said electrodes are made of copper.

16. The electric power generator (EPG) according to Claim 13, wherein said electrodes are made of aluminum.

17. The electric power generator (EPG) according to Claim 13, wherein said electrodes are made of graphite.

18. The electric power generator (EPG) according to Claim 12, wherein said electrodes are made of a material selected from a group consisting of metals, alloys and carbon-based materials.

19. A power generator module (PGM) characterized in that it comprises a plurality of electric power generators (EPGs) according to any one of the claims 1-18, wherein said generators are connected in parallel or in series.

20. An electric circuit (EC) comprising an EPG according to any one of the Claims 1 to 18, wherein said circuit (EC) also comprises, a capacitor (C), a resistor (R_L) and a switch (SW) and wherein:
- in a first switching state, said switch (SW) connects said capacitor (C) in series with said EPG; and
- in a second switching state, said switch (SW) connects said capacitor (C) in series with said resistor (R_L).

21. An electric circuit (EC) comprising an PGM according to Claim 19, wherein said circuit (EC) also comprises, a capacitor (C), a resistor (R_L) and a switch (SW) and wherein:
- in a first switching state, said switch (SW) connects said capacitor (C) in series with said PGM; and
- in a second switching state, said switch (SW) connects said capacitor (C) in series with said resistor (R_L).