

### Claims

1. An electric power generation system comprising
  - (i) a reactor for capturing energy released by a conversion of one or more isotopes of one element or more elements of the periodic table to one or more other isotopes of one or more other element(s),
  - (ii) a converter coupled to the reactor that is adapted to convert the captured energy into electrical energy, and
  - (iii) a paramagnetic and excited state mercury-based compound as a source of energy for transmutation of elements and generation of electricity.
2. The system of claim 1, wherein the reactor comprises a nuclear transmutation energy apparatus adapted to provide transmutation of the one or more isotopes of one element or more elements of the periodic table to one or more other isotopes of one or more element(s).
3. The system of claim 2, wherein nuclear transmutation energy apparatus comprises a Paramagnetic and excited state mercury-based compound as a source of energy with target elements which allow transmutation, preferably one or more out of the following group: hydrogen, deuterium, lithium, boron.
4. The system of claims 1, 2 or 3, which is adapted to use the elements H, to U and TRU or any of elements of periodic table, its alloy / compound/ salts present in liquid, gaseous or solid or molten state.
5. The system of any one of claims 1 to 4 comprising an x-ray energy converter for directly converting x-ray emission into electrical energy comprising: one or more electron emitter layers in electrical communication with one or more electron collector layers, wherein the one or more electron emitter layers adsorbs x-rays and emits electrons that are adsorbed by the one or more electron collector layers.
6. The system of claim 5, wherein the one or more electron collector layers are nested concentrically and one or more electron collector layers absorb electrons of different energy.
7. The system of claim 5 or 6, wherein the one or more x-ray energy converter is nested concentrically to collect x-rays of different energies.
8. The system of claim 5, 6, or 7, wherein each of the one or more electrons collector layers are separated by a voltage of between about 15% and about 25% relative to the next electron collector layer.

9. The system of any one of claims 5 to 8 comprising an inverse cyclotron energy converter of any one of claims 19 to 30.
10. The system of any one of claims 1 to 9 comprising power output electrodes connectable to a transformer.
11. The system of claim 10, wherein said power output electrode is connected to an arc chamber, said arc chamber is used to limit the voltage on the said power output electrodes.
12. The system of claim 11, wherein said arc chamber is connected to a capacitor to store energy from said power output electrodes, said arc chamber arcs at a voltage to discharge the capacitor through the said arc chamber.
13. The system of claim 11 or 12, wherein said arc chamber comprises ferrite coil assemblies around the arc chamber to pickup the magnetic field from the arc chamber for conversion to electricity.
14. The system of any one of claims 1 to 13, wherein the released energy comprises one or more out of the following group of types of energy: the energy of charged particles, electromagnetic waves, like gamma-rays, X-rays, light and/or radio waves, heat, potential energy, resting energy, kinetic energy, energetic particles and packets of energy.
15. The system of any one of claims 1 to 14, wherein the charged particles are directed into one or more of the following subsystems for generation of electrical energy: (i) a high-tech transformer which converts the charged particles energy into electric circuit as electricity, (ii) an induction system adapted to convert charged particles energy into electricity, (iii) Electrostatic direct collectors to convert charged particles energy into electricity, (iv) a wiring system to generate a difference in potential or voltage in the wiring used to generate electrical energy, (v) an inductive direct energy conversion system for generation of electricity by the moving charged particles in the magnetic field, (vi) a capacitor to convert the generated charge into electrical energy, (vii) a microwave system, (viii) a direct energy conversion system adapted to capture the captured charged particles to directly convert the energy of the captured charged particles into electric power.
16. The system of any one of claims 1 to 15 which comprises photoelectric receptors, which capture energy of photons of X-rays, gamma rays and/or light and converts the captured energy into electricity.
17. The system of any one of claims 1 to 16 which is adapted to convert kinetic energy into electric energy and comprises (i) a steam cycle system or (ii) a non-steam cycle system.

18. The system of any one of claims 1 to 17 which comprises one or more of the following elements: a chamber, vacuum pump, heating system, crucible to hold elements in solid state, molten state, liquid state, gaseous state and in combination thereof; outlets pipes for gases to be released; inlet pipes for gases to be fed to the system; divertors to exhaust the gases; a cooling system; an electrical generator; a high-tech transformer; an electrostatic direct conversion system; photoelectric receptors; an induction system; a capacitor; a microwave converter system; energy measuring devices; gas measuring devices; divertor ports; a heating system for melting of any one or more elements of the periodic table; an induction heating system; a radio frequency heating system; electric heating coils; crucible to hold any one or more elements of the periodic table in solid state, in gaseous state, in liquid form, in molten state; paramagnetic and excited state mercury-based compound as a source of energy for transmutation of target elements; a shielding system; a blanket; a cooling system; one or more heating system/s; pressure valves to regulate the pressure; a flow meter to regulate the flow of gases and material; a heat exchanger; a steam turbine; a power conditioning unit; an electricity collection coil; a capacitor bank; an electrostatic coil; a ventilation system; a control system; a manipulator system; a shielding system; temperature controller and measuring devices; heat measuring devices; heating arrangements for any one or more elements of periodic table; energy measuring devices; gas measuring devices; safety devices; a steam cycle system and a steam generator; a non-steam cycle system; a CCTV system; a cold wall system; a conversion system of electromagnetic waves into electricity; an ion thruster, which can convert potential energy into kinetic energy; and/or a conversion system of electrostatic motor power and propulsion to convert the potential energy into kinetic energy for the generation of electrical energy.
19. An inverse cyclotron energy converter adapted to be used in an electric power generation system of any one of claims 1 to 18, said converter comprising first and second electrodes forming a tapered cylindrical cavity, the electrodes being in spaced relation forming first and second elongate gaps there between, a magnetic field generator extending about the first and second electrodes, and a charged particle collector positioned at one end of the first and second electrodes.
20. The converter of claim 19 further comprising an electron collector positioned adjacent another end of the first and second electrodes.
21. The converter of claim 20, wherein the electron collector is annular in shape.
22. The converter of claim 20 or 21, wherein the electron collector and ion collector are electrically coupled.
23. The converter of claims 19, 20, or 21, further comprising a tank circuit coupled to the first and second electrodes.
24. The converter of any one of claims 19 to 23, wherein the magnetic field generator comprises a plurality of field coils extending about the first and second electrodes.

25. The converter of any one of claims 19 to 24, wherein the first and second electrodes are symmetrical.
26. An inverse cyclotron energy converter adapted to be used in an electric power generation system of any one of claims 1 to 18, comprising a plurality of electrodes forming an elongate cavity, the electrodes being in spaced relation forming first and second elongate gaps there between, and a magnetic field generator extending about the plurality of electrodes.
27. The converter of claim 26, further comprising an ion collector positioned at first end of the plurality of electrodes, and an annular shaped electron collector positioned adjacent a second end of the plurality of electrodes, the electron and ion collectors being electrically coupled to one another.
28. The converter of claim 26 or 27, further comprising a tank circuit coupled to the plurality of electrodes.
29. The converter of claim 26, 27, or 28, wherein the magnetic field generator comprises a plurality of field coils extending about the plurality of electrodes.
30. The converter of any one of claims 26 to 29, wherein the plurality of electrodes are tapered.
31. A method of converting transmutation energy into electric energy, in particular in an electric power generation system of any one of claims 1 to 18, said method comprising the following steps:
  - (i) capturing energy released by a conversion or transmutation of one or more isotopes of one element or more elements of the periodic table to one or more other isotopes of one or more other element(s),
  - (ii) converting the captured energy into electric energy, and
  - (iii) a paramagnetic and excited state mercury-based compound as a source of energy for transmutation of elements and generation of electricity.
32. The method of claim 31 comprising a step for directly converting x-ray emission into electrical energy.
33. The method of claim 31 or 32, further comprising the step of decelerating charged particles.
34. The method of claim 31, 32, or 33, further comprising the step of collecting the charged particles once a substantial portion of their kinetic energy is converted to electric energy.
35. The method of any one of claims 31 to 34, further comprising the step of conditioning the electric energy converted from the ion energy to match existing power grids.