(1) Field of invention and containing the background of the invention:-

This invention is related to energy conversion from environmental heat or atmosphere thermal energy to mechanical/electrical, without the need of fuel, an air-conditioner is running and condensing coil assembly has been enclosed within an insulating enclosure which is filled with refrigerant. Related background arts are heat pump, refrigeration system, thermal power station, and solar heater.

(2) Object of the invention: - there are 6 aspects which can describe the objectives are;

(a) Providing a device which is capable to produce mechanical/electrical energy from environmental or open surrounding heat available in atmosphere.

(b) Providing a device or system for reducing global warming.

(c) A clean energy, electrical or mechanical power generator.

(d) A Sustainable source of energy or green energy (sustainable business)

(e) Improve the efficiency and production capacity of thermal power station.

(f) Providing efficient renewable solar heat to mechanical/electrical energy conversion device.

(3) Statement of the principle underlying the invention: - There is general principle of refrigeration have been taken into account with modifications to design, the basic principle underplaying this invention is pumping in thermal energy into air-tight thermal insulated enclosures or boiling chambers wherein refrigerant liquid boils and evaporated steam propels (drive) turbine and convert thermal energy into mechanical/electrical energy , with thermal heat dissipating through condensing coil of previous stage power generator or system. In the boiling chamber liquid boils and evaporates with the thermal energy sucked from surrounding atmosphere heat and by the first stage system's evaporator coil which is in the direct contact with thermal/heat of open environment and self-generated heat by compressor at first stage power generator system.

(4) General statement of the actual invention:- As shown in the fig. #1 an working air-conditioner's condenser coil has been put in thermally insulated boiling chamber which can handle high-pressure , this chamber is filled with very low latent heat and specific energy known so far refrigerant, now this liquid boils with the thermal heat given by condensing coil of air-conditioner and create high

pressure vapor, and this high pressure vapor propels or drive either a high efficiency gas turbine(to generate mechanical/ electrical energy) or steam engine like reciprocating piston inside a cylinder(like steam engine system) after rotating first turbine this gas goes out from an exhaust valve or exhaust port of turbine(6) and enters (ingress) into condenser coil {7} of the system and it (refrigerant steam)condensate inside the cooling coil (condenser coil) after releasing specific and latent heat it convert into liquid, and this liquid flows back to high-pressure boiling chamber of its respective power generator stage. These cycles keep repeating and we get mechanical/electrical energy on every turbine's rotor shaft, by above process.

A additional reservoir cylinder tank{61} has been fitted to control the pressure of a stage on system , a bi-directional fluid pump{60} pumps in or out the liquid (refrigerant) as per pressure requirement of the system to change boiling temperature of refrigerant .

Note:- above reservoir tank and bi-direction fluid pump is not a part of normal (continuous) operations of the system and required for one time use for adjusting the pressure of the particular boiling chamber or will be used when the pressure of system (power generator stage) need to be changed.

In the preferred embodiment operation of three stages of a power generator is being discussed however there is no restriction for the number of stages we can cascade(joint) further subsequently to the system also refrigerants are being used per **Montreal Protocol** , but for the purposes of installing or manufacturing the system ,device or power generator system based on the phenomenon (principles) of this patent application can use any of the liquid, gas, refrigerants mentioned in list enclosed with this patent application and another patents should not be sought on the mere changes of refrigerants , gas, liquid. All the listed substance shall be covered under the scope of this patent to made, install or manufacture such system ,power generator, device as described under this patent application.

Description of embodiment with reference to drawings; fig.-1, fig.-2, fig.-3,fig-4.

Note :- first stage stand for, a thermal heat pumping device(vaporizing device) +first turbine+first condenser coil. however turbines of second stage have been shown on the drawing sheet of third stage and so on due to restricted conformity of A4 size sheet. But turbine shown with the drawing of stage-3 boiling chamber is part of stage-2 of power generation system.

The figure#1 refrigerator's (AC) compressor{1} filled with refrigerant R-134a (or R-22 , if particular country regulation permits so) with boiling temperature -26.3 °C

running and pumping in the thermal energy sucked by open environment through evaporator coils{2} to condenser coil {3} further this condenser coil {3} is immersed in the liquid refrigerant R-409A{5} (boiling temp. -35.4°C) filled inside boiling chamber {4}, R-409A boils and convert in high pressure vapor which propels and drive(rotates) a gas or steam turbine with alternator which is also enclosed inside thermal insulated high pressure housing {6} , now this wet gas of R-409A refrigerant enters into condenser coil{7} of stage-1 power generator system, condenser coil{7} further immersed in refrigerant {8} Propane R-290 (boiling temp. -42.1°C), Propane boils and convert in high pressure vapor (inside boiling chamber of stage-2) which propels and drive (rotates) a steam turbine with alternator which is also enclosed inside thermal insulated high pressure housing {15} , now this wet steam of Propane R-290 refrigerant enters into condenser coil{16} of power generator stage-2, condenser coil{16}} further immersed in refrigerant {17} R-410A (boiling temp. -51.6 °C & critical temp 106°C), inside the boiling chamber of stage-3, now refrigerant{17} R-410A boils and converted into high pressure vapor which propels and drive(rotates) a steam turbine with alternator which is also enclosed inside thermal insulated high pressure housing {22}, now this wet steam of refrigerant R-410A enters into condenser coil{23} of stage-3 power generator, condenser coil{23} further immersed in next refrigerant{24}. Refrigerant {24} boils and vaporize producing high pressure through the heat exchange from condenser coil {23}, inside the boiling chamber of stage-4 , high pressure steam of refrigerant {24} further drive turbine with alternator {27}.This process can be cascaded to multiple stages until suitable medium for vaporization of liquid refrigerant available. The last stage power generator's condenser coil will be dissipating the heat back to atmosphere and will be cooled with the cold water.

Infect we can take first stage or even second stage refrigerant (first or second refrigerant of the system) of higher boiling temp refrigerant like Decafluorobutane, R-236fa, R-600 and gradually decreasing temp refrigerant for subsequent stages but considering surrounding atmosphere temp where power generation system need to be installed.

Choice of the liquid material may very taking the properties of liquid(as refrigerant) material like critical temperature and pressure, ODP, GWP, TEWI, latent heat of vaporization, specific energy, thermal conductivity(k), glide, material compatibility (chemical activeness ,due to corrosion with metal of system and turbine), viscosity, flammability and toxicity etc . in the consideration also deference between boiling temperature of liquid or more specifically selection of liquid as refrigerant may be done on the consideration of number of stages we are using for a said power

generation station if we are using less stages for a subjected power generation system then difference of boiling temp between two refrigerants may be kept high.

Mathematical Proof of functioning of this system;

A domestic air conditioner(of 1.5 ton) with ordinary efficiency pumps 18270 BTU/hr heat out of room means 5.35 kwh while it consumes electricity 1.87 kwh that also ultimately converting to heat or thermal form is equal to 6385 BTU/h means additional 6385 BTU/h is available at the fins of AC's condenser coils along with that thermal energy sucked (ingress from evaporator coils)from room environment so final calculation of thermal energy dissipating from condenser coils is 24655 BTU/hr . At this moment we have now taken a average, ordinary efficiency (40.1%) device or machine (turbine) to convert thermal energy into mechanical, hence 40.1 % of 24655 BTU/hr = 9886.655 BTU/hr can be converted into mechanical energy without any special procedure or extraordinary apparatus that is 2.896 Kwh. Total power throughput we achieved from environmental energy is 2.896 - 1.87= 1.026kwh is very substantial value out of 1.5 ton machine and this is the calculation in case of using only single stage of power generator or standalone system. If we cascade multiple power generator stages this 1.026kwh energy will be many folds depend upon number of stages of power generator cascaded further subsequently .

We can connect (cascade) many turbine in sequence to previous one's boiling chamber, as shown in drawings , and gas enters (ingress) to turbine from previous boiling chamber then into condensing coil (cooling coils) before finally releasing heat/thermal energy back to environment , like this we can cascade many turbine in sequence and every next system(stage) will produce 5-10 % less energy (due to heat losses and change in enthalpy of vapor during expansion phase of steam inside the turbine housing) respectively to its previous one.

Thus environmental heat produce by solar energy, human devices can be converted into mechanical /electrical energy without the need of fuel. First compressor will get mechanical energy for rotation from turbines in this system.

Secondary configuration for power generation with conventional fuel:-

A modified thermal power generation plant;

This system generates multiple times extra power (electrical or mechanical energy) in comparison to convention thermal power stations fueled with coal or oil , depending upon the number of further stages of boiling chamber and turbine used.

Description of embodiment with reference to drawings; Fig-5,Fig-2,Fig-3,Fig-4

First stage of power generation system (power generator) have a high efficiency boiler which is burning conventional fuel like natural gas or coal petrol or diesel of available choice ,chamber of first stage power generator is filled with Water which boils at 100°C , resultant gas moves gas or steam turbine{44}(enclosed under thermal insulated and airtight enclosure) of highest efficiency available so far. these defused steam after driving(rotating) turbine further propagates towards condenser coil{45} that is immersed under the liquid(refrigerant) of second stage power generator system and transfers its heat to the liquid 'Carbon tetrachloride CCl4- 76.7 °C or ether'{46} filled in the second stage power generator's boiling chamber , that in result boils with the heat given by condenser coil and these gases (steam) propels (rotates) second stage power generator's turbine{15} , further defused steam exhausted (egress) from second stage turbine{15} ingress (enters) to condenser coils {16}(inside third stage boiling chamber) which is immerged under the refrigerant of third stage power generator 'Acetone CH3COCH3' 50.5°C {17} and if we desired to cascade more number of power generator stages we choose 'Ether or Acetaldehyde {24} ' as liquid for forth stage . henceforth we can join or attach number of stages and cascade power generator until suitable material is available for vaporization and steam generation.

In my understanding we can take first stage's material(first liquid boiling in the boiler) as vaporization medium right from mercury 356.9 , second stages' media mod vaporization would be Dowtherm 258, in third stage Phenol 182 and down so on as listed, but viscosity(should be as less as possible), deposit of condensates on the turbine fins and everywhere inside the system, auto ignition point (flammability) of substance need to be checked prior to use for this system. *Hence for prototype we are using water as first medium of vaporization due to its properties of high latent and specific heat.*

This process can be cascaded to multiple stages until available medium for vaporization of liquid for . Choice of the liquid material may very taking the properties of liquid material like critical temperature and pressure of substance(refrigerant), ODP, GWP, TEWI, latent heat, specific energy, glide (in case of zeotropic) ,material compatibility (chemical activeness, due to, corrosion with metal

of system and turbine), viscosity, flammability, toxicity and acoustic velocity etc (preferably ASHRAE A1 or near) in the consideration also deference between boiling temperature of liquid or more specifically selection of liquid as refrigerant may be selected with the consideration on number of stages we are using for a said power generator if we are using less stages then difference of boiling temp between two liquids may be kept high and if we are going to cascade more number of stages choice of liquid substance for next stage will be the nearest low boiling point liquid available in the list enclosed.

Third configuration for power generation with renewable, non-conventional source ,sun heat:-

Description of embodiment with reference to drawings;

A Solar thermal power generation system: Fig-6, Fig-2,Fig-3,Fig-4

Note: considering surrounding atmosphere temp is 15°C

As shown in the Fig. #6 a highest efficiency and high pressure bearable solar water heater have been installed under a glass housing (so that it can work at locations where surrounding temp is less then 0°C also will receive solar team from every direction and regardless the orientation of sun) , using refrigerant Methyl formate (R-611, boiling temp. 32°C) as heat exchange medium instead of water. with incident solar heat it boils and supper heated inside the solar heater's collector before exiting (egress) through upper outlet pipe (thermal insulated), this high pressure vapor propels and rotates a gas or steam turbine with alternator which is also enclosed inside thermal insulated high pressure housing {T} , now this wet gas of R-611 refrigerant enters into condenser coil{C} of stage-1 power generator, condenser coil{C} further immersed in refrigerant {R} Isopentane R-601a (boiling temp. 27.7°C), Isopentane boils and convert in high pressure vapor which propels and run(rotates) a steam turbine with alternator which is also enclosed inside thermal insulated high pressure housing {15} , now this wet steam of Isopentane R-601a refrigerant enters into condenser coil{16} of stage-2 power generator system. Condenser coil{16}} further immersed in refrigerant {17} Ethylamine R-631 (boiling temp. 16.6°C), inside the boiling compression chamber of stage-3 , now refrigerant Ethylamine R-631 boils and converted into high pressure vapor which propels and run(rotates) a steam turbine with alternator which is also enclosed inside thermal insulated housing {22}, now this wet steam of refrigerant Ethylamine R-631 enters into condenser coil{23} which is cooled by spray of cold water and surrounding atmosphere air of 15°C.

But multiple stage of turbines condenser coils and refrigerants can be cascaded further subsequently until suitable refrigerant available and last medium(liquid refrigerant) of solar power generator system will be highest thermal conductivity substance.

Here a calculation must be done prior to selecting vaporization medium as per surrounding and local temp air temp. Because Carnot cycle and energy laws states that heat flows from high temp. to low temp. if chosen a very low boiling temp liquid as last stage medium of solar generator system it will reverse flow the environmental or surrounding high temp. heat back to the system

Below is mathematical example of wrong selection of medium; the boiling points of liquid medium in °C taking environmental tamp as 20°C

30°C ===> 20°C ====> 10°C <=====20°C (surrounding air)

==========>

Here refrigerants of boiling temp 20°C and 10°C will never come to be in liquid form and only first stage will produce power.

Description of drawings:-

Power generator System/ figure/embodiment

X is the temp of first refrigerant and t is deference between two refrigerants boiling points.

1. Air-conditioning compressor with refrigerant of boiling temperature X (here R-134a)

2. Evaporator coil

3. First Condenser coil

4. Boiling chamber of first stage.

5. Refrigerant liquid-1 with boiling temperature (X-t) (here R-409A)

6. Gas/Steam turbine or (Steam engine type) stage1 in power generator station (system)

7. Condensing or cooling Coil -2

8. Refrigerant liquid -2 of boiling temperature (X-t)- t

11. Expansion valve

13. Saturated gas/steam flow towards turbine of Stage 2 turbine of generator system

14. Liquid flow back into boiling chamber from condenser coil of stage2 of generator system

15. Gas/steam turbine or (Steam engine type) of stage 2 in generator system (power station)

16. Condenser coil or cooling Coil of stage 2 of generator system

17. Refrigerant liquid -3 of boiling temperature [(X-t)- t]-t (here R-410A)

20. Saturated gas flow pipe towards steam/gas turbine of stage-3 in power generator system

21. Liquid refrigerant back flow pipe to boiling chamber from condenser coil of stage-3 in power generator station(system)

22. Gas/steam turbine or (Steam engine type) of stage 3 in generator system (power station)

23. Condenser coil or cooling Coil of stage 3 in generator system (power station)

24. Refrigerant liquid -4 of boiling temperature [[(X-t)- t]-t]-t

60,71,90,95,80. Bi-directional fluid pump

61,72,91,96,81. Reservoir cylinder tank of refrigerant (to maintain pressure of each boiling chamber)

Fig#5 Modified thermal power station

44.Gas/steam turbine (first stage) in thermal power station

45. Condenser coil or cooling Coil of stage 1 in thermal power station

46. Refrigerant liquid of second stage in thermal power station

47. Saturated gas flow pipe towards steam/gas turbine of stage-2 in thermal power station

48. Liquid refrigerant back flow pipe to boiling chamber from condenser coil of stage-2 in thermal power station

Fig#6 A Solar thermal power generation system

T. Gas/steam turbine of stage 1 in Solar thermal power generation system

R. Refrigerant liquid of stage 2 in Solar thermal power generation system

[to turbine inlet]. Saturated gas/steam flow towards turbine{15} of Stage 2 turbine in Solar thermal power generation system (from fig.#2)

[from condenser coil]. Liquid flow back into boiling chamber from condenser coil{16} of stage2 in Solar thermal power generation system (from fig.#2)