

Method and apparatus for production of energy through fusion of He_2^3 to Be_4^9 .

Extract.

A Method and Apparatus, which the merger of He_2^3 with Be_4^9 is effected by means of pulsed which the merger of He_2^3 with Be_4^9 is accomplished by means of pulsed electric high-voltage discharges formed by plasma from He_2^3 and He_2^4 in a reactor system, Where merger occurs from a cathode-tip, with Be_4^9 containing, in a plasma formed in the Vortex. The, because of the occurring mass-defective, photon generated energy is in the reactor walls is transferred to a conventional ic cycle process.

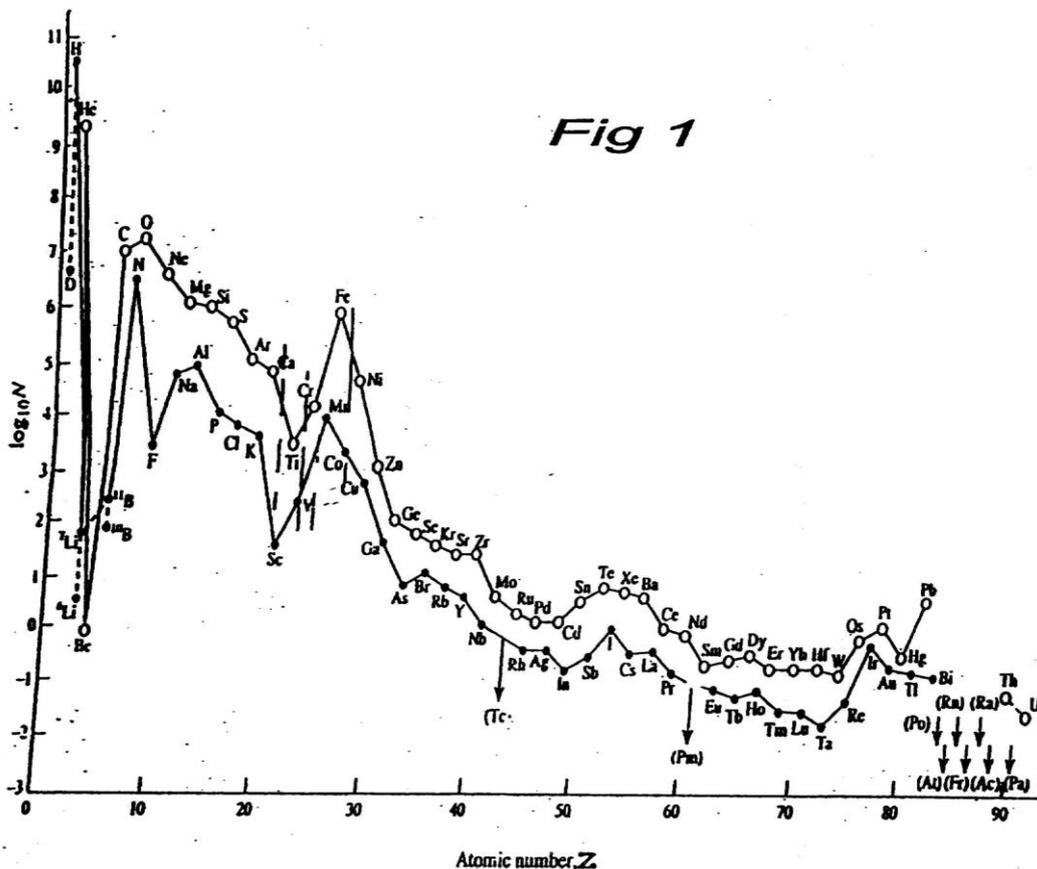
Subject.

Fusion He_2^3 with Be_4^9 is a totally clean nuclear process with a large mass defect and therefore very high energy density, whose product He_2^4 is, according to the reaction: $\text{He}_2^3 + \text{Be}_4^9 \rightarrow 3\text{He}_2^4$.

This process offers the right alternative for the thermo-nuclear fusion processes; whose research and development work, (Tokamaks). billions devoured, and what has not been successful, and what, and probably never will be successful.

Summary.

The elements: Li, Be and B are relatively very scarce in our Universe, Be by a factor of 10^{10} relative to H and He. See Figure 1.



The reasons are not the interpretations, which brings the classic astronomy forward. Inventor discovered in 1999 and 2000 that this, light 'elements very easy to merge with other elements such as Mg and Al, and also to some other isotopes. These fusion processes run off easily, if plenty of free electrons are present in the process space, which is readily realized in electron-discharge reactors with plasma of H therein. Said fusion processes absorb free electrons in the above reaction. The mass defects that occur are such that commercial energy recovery was possible. Energy 'ovenunities' * from 5/1 to 15/1 were achieved and certified by an onhankelijk laboratory. Fusion processes He_2^3 are possible with each with each of the elements Li, Be and B; these reactions are typical nucleotide synthesis reactions; The last two reactions are the most interesting, because they directly produce hot gases, which makes heat exchange easy.

Description.

(a) Background.

In patent applications made by inventor, namely Nr. 1030700 Title: 'Fuel for internal combustion engines and gas turbines applied thereto annexed nuclear merging component' and Nr. 1030724 Title: "Method and Apparatus for the production of. 'Fractional' Hydrogen and of photon energy, "playing the elements: Li, Be and B is a crucial role, as is the case in this invention. The thermo-nuclear fusion '-' processes: $\text{H}_1^1 + \text{H}_1^1 \rightarrow \text{H}_1^2 + e_1^0$, and of: $\text{H}_1^2 + \text{H}_1^3$ require a temperature of $\approx 2 \times 10^7$ °K during operation. In order to have at these conditions under control plasma are exotic and thus expensive constructions are required.

The process of this invention makes use of the "Vortex 'formation in the plasma, which actually means the automatic formation of a fluide mechanical boundary and because of the so-called "Potential flow" from the vortex "oogwal" outward, can withstand extreme temperatures do not touch the reactor wall. This mechanism that offers nature, eliminates the need for very strong magnetic fields, as required by the Tokamaks. This natural mechanism is plenty of experience in the merger processes of Mg with Be and Al with Be, the inventor for several years in operation. The process of this invention requires a temperature of $\ll 2 \times 10^7$ °K.

(b) Process Analysis

With an operating temperature 5×10^4 °K OK this fusion process can continuously operate under the following conditions:

- (a) that the components to this process may be in-fed freely. continuously
- (b) that the pressure / density of the plasma is held within certain limits.
- (c) that electrons are pulsed by the He_2^3 gas.

Of that "light" elements are only certain isotopes reactive, relatively easy merger with He_2^3 , which an extra 'neutron' have to the core. This "neutron" has a specific orientation, which only occurs in these three 'light' elements.

These isotopes are stable at all mentioned 'light' three elements. These isotopes also constitute the main component in the composition of these elements, such as these are found in nature.

Li is for 92.6% Li_3^7 ; Be is for $\approx 96\%$ Be_4^9 and B is for $\approx 81,5\%$ B_5^{11} .

In the following fusion reactions are noted, which are possible between He_2^3 and each of the isotopes: Li_3^7 , Be_4^9 and B_5^{11} , as well as the calculations of the acting "mass defect":

$$\text{Li}_3^7 + \text{He}_2^3 \rightarrow \text{B}_5^{10} + \text{m.d.}; 7,0160 + 3,0160 \rightarrow 10,0129 + \text{m.d.} = 0,0191 =$$

$$\text{Be}_4^9 + \text{He}_2^3 \rightarrow 3\text{He}_2^4 + \text{m.d.}; 9,0122 + 3,016 \rightarrow 3 \times 4,0026 + \text{m.d.} = 0,0204 =$$

$$\text{B}_5^{11} + \text{He}_2^3 \rightarrow \text{N}_7^{14} + \text{m.d.}; 11,0093 + 3,0160 \rightarrow 14,0031 + \text{m.d.} = 0,0222 =$$

$$1,91 \times 10^{-5} \times 9 \times 10^{16} \approx 17,2 \times 10^8 \text{ kj / gr. atom (a)}$$

$$2,04 \times 10^{-5} \times 9 \times 10^{16} \approx 18,4 \times 10^8 \text{ kj / gr. atom (b)}$$

$$2,22 \times 10^{-5} \times 9 \times 10^{16} \approx 20 \times 10^8 \text{ kj / gr. atom (c)}$$

Reaction (b) is preferable due to the fact that it produces 3 atoms at 1 reaction (c),

which the energy produced roughly one third to bring per gram-atom, ie more gas with a lower temperature.

Of tens of thousands of degrees to several thousand degrees in the plasma around the 'oogwal' of the plasma-Vortex.

We present example that set a 'oogtval' diameter of 1 cm at a given plasma density and we assume a constant C_p/T and starting with a temperature of 5×10^4 °K of the He_2^3 gas, then, the temperature on a diameter of 9 cm: $1/9 \times 5 \times 10^4$ °K 5.550 °K.

However, we show a 3x volumetric expansion to the plasma by means of a taper-shaped reactor space, then results in a temperature of $\approx 1,850$ °K ($P/\rho = RT$).

A reactor diameter of 16 cm would produce a temperature of $\approx 1,040$ °K, which is a good design value for the application of, for example a steam turbine cycle system (Carnet).

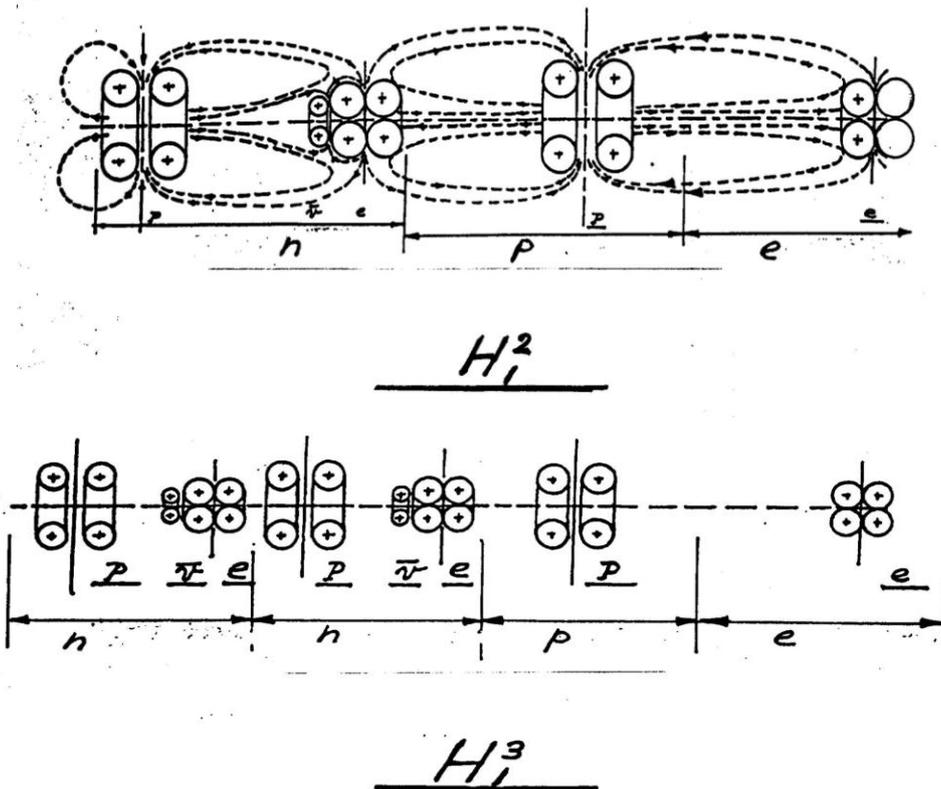
He_2^3 is an extremely important isotope; its value more than any other element (opinion of inventor).

The "clean" and safe reaction of this invention, which provides a high energy / atom, although somewhat lower than in the processes found this place in the Sun, is the best alternative for the thermo-nuclear impasse, in which the physics community now and eye apparently to remain blind. Also, the implementation of the process of this invention are well-sale, especially by a factor of 20X as compared to what is thought to be thermo-nuclear fusion "a la Tokamaks" will cost.

In inventor's book: "Fluidurn Continuurn Universalis" (FCU), Part I, Chapter 4, the Fluid dynamic constitutions of the "Water Substances" and the "Heliums" are as these manifest themselves covered in the Aether **.

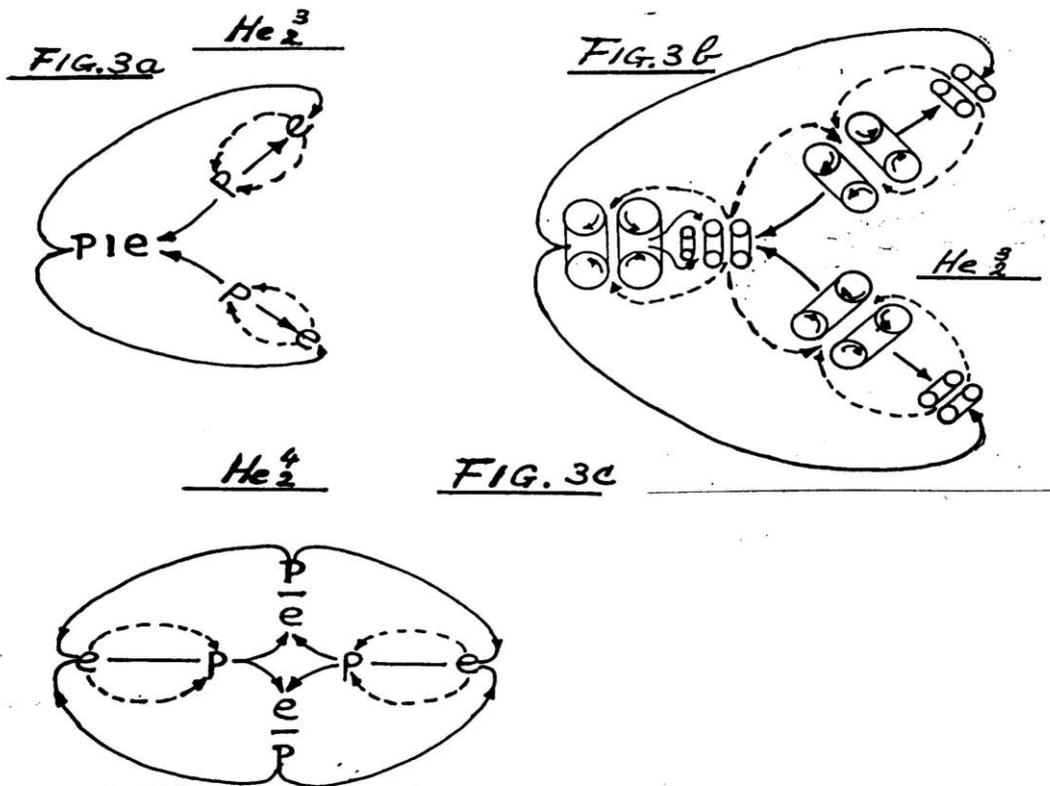
In Figure 2 the fluide dynamic constitutions of Deuterium, and Tritium H_1^2 , H_1^3 are displayed.

FIG.2



Herein are: n: neutron; p: proton; e: electron; v: anti-neutrino.

The dashed lines with arrows indicate the ether-currents between the "vortex entities" = 'particles' to. With Tritium, H_1^3 we see that the chain of "particles" has become very, What is an indication for in-stability. In Figure 3 being fluid - dynamic constitutions of Helium-3 He_2^3 and Helium-4, He_2^4 included.



These constitutions make clear that the Helium-3 constitution 'high-energy', because of the spatial extent of the aether-movements and the constitution of Helium-4, Figure 3c, is particularly compact and is consequently also "low-energy".

The designations for the "Vortex entities" = 'particles' are the same as in Figure 2 Figure 3b is a detailing of Figure 3a; it shows the vortex rings with their directions of rotation.

The drawn streamline its higher energy than the dashed lines indicate the lower-energy currents (Attn 'particles' there is always some flow field energy dissipation to the shambolic 'Brownian motion' in the Aether); See inventor 's book FCU, Part II, various chapters, eg "Energy Maintenance through Gravitation".

Another fusion reaction, which has been published, the

"Deuterium --Helium-3 'reaction: $H_1^2 + He_2^3 \rightarrow He_2^4 + H_1^1 + m.d.$; This has an even higher mass-defect: $2,0141 + 3,0160 = 4,0026 + 1,0008 + m.d.$

This gives: $md. = 0,0267 \text{ gr. / Gr. atom}$ at the value $m.d. = 0.0204 \text{ gr. / Gr. atom}$ for the process of this invention.

However, the reaction of this invention has advantages in the technical implementation, viz.

Thereof, (1) the "plasma-Vortex" process with a "pulsed" ignition from an cathode, Be_4^9 component which continually brings forth a unique way, directly in the said 'vortex' ".

(2), the ignition of the process of this invention is much easier than with the Deuterium + Helium-3 process, and (3), the operating temperature is such that no very exotic structures and materials are needed. He_2^3 is scarce on Earth, However, it is abundant on the Moon and hence proposals involve He_2^3 , seem to be China, by means in the planning their space program for ashes decade, (date: 2017+).

Most He_2^3 is now obtained from "breakdown" of H_1^3 using $\beta =$ emission.

(H_1^3 is used in the production of nuclear weapons, the 'half-life of 12 years).

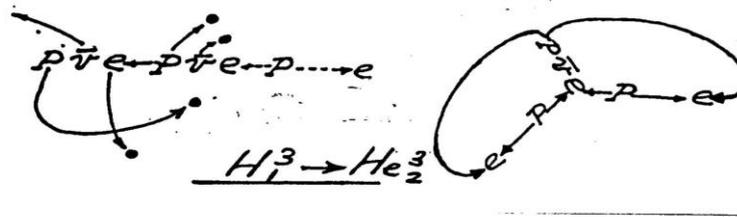


FIG. 5

Figure 5 shows the β emission mechanism of H_1^3 and the formation of He_2^3 therefrom. The reader was watching it on the arrows in Figure 5a, showing the motion directions of the "particles" and points, which the locations where these "particles" are thrown after the beta emissions; one of the anti-neutrinos flies off and dissipates ordinary kinetic aether energy.

Figure 5b is the result; arrows herein represent the aether-currents of protons electrons Weather, As also shown, the Figures 3a, -b

(c) and Technical Description of the figures.

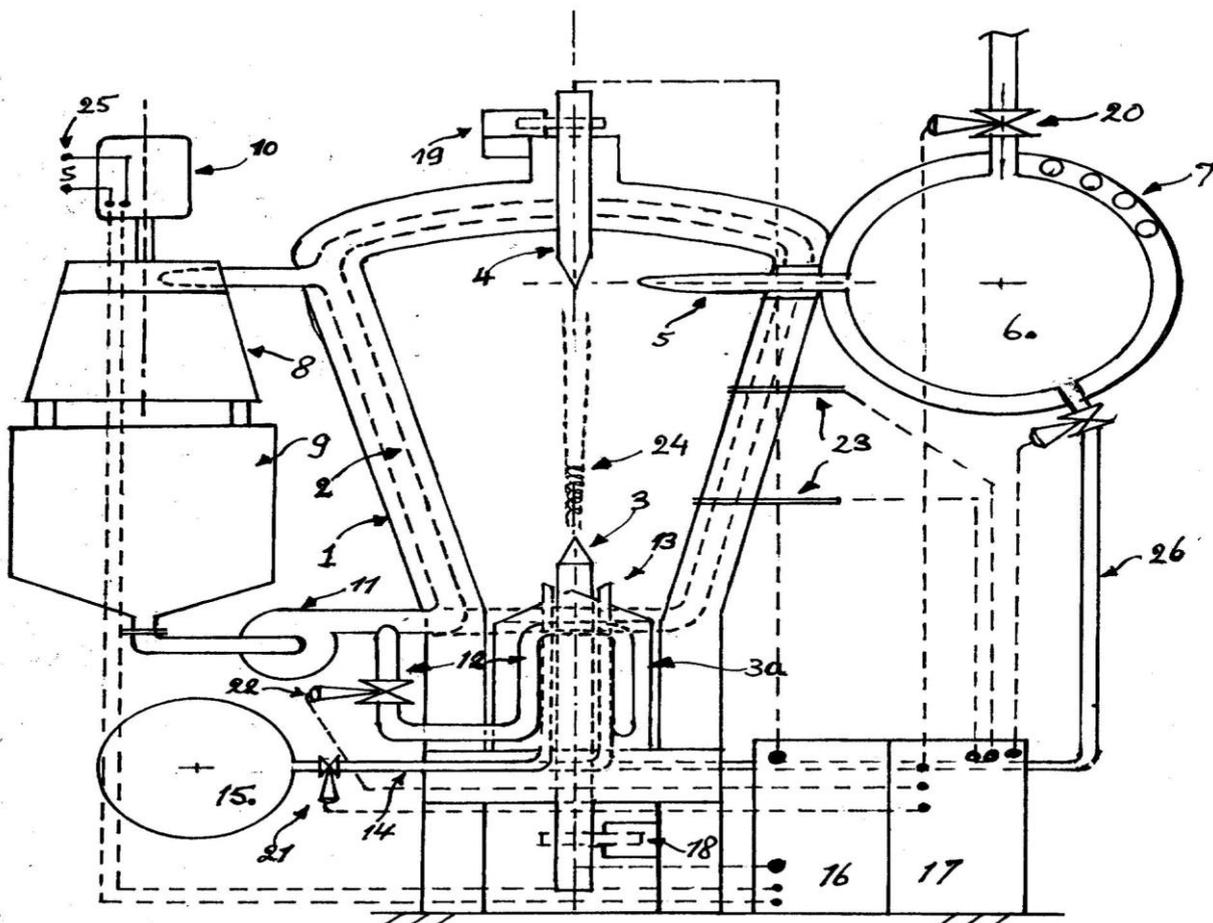


FIG. 4

Figure 4 shows cross-section of a reactor-system for this technology, as well as cross-sections and

views of corresponding attributes.

Herein are: (1), the thick-walled reactor with cooling channels, (2) therein, in which refrigerant evaporates. (3), as is the tip of the cathode, which is from the "cathode-body, (3a) can be screwed by means of actuation of the drive (18).

The anode is indicated by (4); This is move-able by means of a screw thread, which is driven by (19).

One or more tangential outlets reactor, (5) are directly connected (inlets) with accurnulátor-cylinder, (6), which is a variable-exhaust-valve, (20) and cooling channels (7) in the wall; (7) are connected to the cooling-channel circuit, (2).

(8) shows an expansion turbine in which the energy of the evaporated cooling liquid is converted into mechanical energy in the electric generator, drive (10).

(9) shows the condenser of the thermo-dynamic and cooling circuit (11), the controllable feed pump.

(12) indicates the cooling channels in the cathode body, (3a) at; the flow through is adjustable with tap (22).

The outlets (two or three) for Helium-3 in reactor, (1) are indicated with (13), The Helium-3 supply comes via line (14) and valve (21) of container (15).

The electrical equipment is housed in the housing, (16), and the "control" in the housing, (17).

(23) gives fiber optic plots (24) shows the "plasma vortex" (25) take-off point of electricity.

In housing, (16) are included: DC storage, digital wave-shaping, variac on transformer (high voltage) and "pulser"; the DC power storage is fed by a portion of the proceeds of generator (10). via the same direction (26) is a reflux' pipe, causing gas and plasma which still contains He_2^3 is "recycled."

Both components, Be_4^9 and He_2^3 arise from the point of the said cathode, in which above the root point of the "vortex" is; A vortex will always be ready to form after electron-prevail in the on-start of the reactor, due to the fact that free-moving electrons always spiraling in fields, in an atomic matrix, as well as in gas / plasma.

(d) Operation.

Good experience gained by merging with Be_4^9 and Mg_{12}^{24} in the hydrogen plasma. This latter process is a subject of an application for patent by the inventor, under the title: "Nuclear-Transmutations'

, In the latter process, particles Be_4^9 and Mg_{12}^{24} be from the hot cathode surface wiped off and sucked away in the gas / plasma-fusion Vortex and there has, at which additional electrons play a role; these were absorbed in the fusion reaction and they also bring about the movement of the merging components to said anode.

Simulair be, in the process of this invention, the components up to the process relied on both the location of the point of the cathode, where Be_4^9 He_2^3 particles and atoms come together and be sucked into the vortex oogwal where any merger can take place at sufficient temperature and additional kinetic energy (due to the electro-magnetic field) ,which then causes large energy-growth and expansion (>> 3 times the volume at the same pressure (because of gas that 3-atoms in place of 1-atom gas, and because of the increase of temperature, which is held by the arranged around the reactor in control cooling system).

The "recycling" of the gas / gas mix is important to increase the economy of consumption of He_2^3 . The power supply of Be_4^9 takes place by evaporation of the tip of the "long screw", which consists of: or a metal-alloy, with a high percentage therein Be_4^9 , Be_4^9 , or can be in a laid-finished surface of a material by means of a new technology: "infusion-coating '

This material, which condenses on the throat walls, measurement have good dielectric properties, such as for example, Uranium (the skin of the B-2 bomber has thereon a layer of uranium oxide.

With proper choice of materials, the electro-conductivity of the cooling walls remains low, which is particularly important for the startup, which minimize leakage current may occur.

The reactor has a tapered shape, which responds to the increase of the specific volume; (gas /

plasma motion velocity in the direction of the anode does therefore not add much, what the odds for fusion in the vortex increases .

If the reactor is started on a slightly above atmospheric pressure level, then when setting pulsed DC (with a cathode-anode distance of 18 cm) at 12,000 volts, a low amperage occur, and the gas-mixture of He₂³ and He₂⁴ between cathode and anode will be warm.

Due after 1 minute, the voltage at least 14,000 volts to bring decisive "will" occur; a vortex will form and the temperature in the vortex oogwal area will quickly rise into the tens of thousands of degrees.

The pressure in the reactor rises, it remains more below a set value, with valve, (20) would be opened, something because cooling circuit was activated by means of the start of adjustable circulation pump (11).

After some time an equilibrium will be reached, wherein the reflux flow; (26) to full power is continuously enter any gas from left-over valve (20).

Beryllium is continuously available at the tip of cathode, (3) by intermittent activation of worm-drive, (18). Anode point, (4) which can be withdrawn via actuator, (19); which makes the vortex (24) over; which hence increases the number of fusion events per unit of time.

Pulsing by means of the digitally acquired voltage characteristic is extremely important; the shock-wave impact with the spiraling of the electrons 'oogwal' of the vortex are cause for the presence of sufficient kinetic energy; which fusion is possible. The "reuxen 'causes most He₂³ atoms average about 10-30x pass through vortex (24); the aim is to very little of the precious He₂³ lose through valve (20).

*) Energy'overunity ': the quotient: energy produced by benodige energy;

***) Aether: the non-material substance of the Fluidum Continuum with which our Universe is filled, its density depending upon location. The physical properties of the ether are as follows:

(1) Homogeneity; (2) Consistent Heid; (3) Friction Statelessness; (4) Compressibility, Behold, inventor's book; FCU, Part I, Chapter 1.1.1

Conclusions.

1 A method with which the fusion of He₂³ is achieved, consisting of the following operations using Be₄⁹ :

(a) continuously bringing both of the reaction components involved in a reactor-system, in which a cathode and an anode are included, wherein said cathode to both said components are produced.

(b) applying a variable electro-magnetic field with certain characteristic between said cathode and anode, so that a plasma-vortex is formed, wherein said fusion has taken place.

(c) applying a cooling system around said reactor and associated components, which also functions as an evaporator.

(d) applying a conventional thermodynamic cycle process, with components: turbine, condenser, adjustable feed pump and mentioned under (c) evaporator system.

(e) application of an electric generator, which in addition to usable electric power also in the electrical energy required for the operation of said reactor-system, as well as for the associated control equipment, provides for.

2 A method, as under (1), wherein the production of Be₄⁹ to said cathode takes place from the tip of a screw thread, which consists of a material having good dielectric properties, in which the Be₄⁹ is allied and samengesinterd, or injection coated "in the surface of said material.

3 A method as in (2), wherein said material is uranium oxide (U₂ O₅ .UO₃).

4 A method, as under (1) and (2), wherein said screw thread, consisting of the said material, Be₄⁹ to which has been added, is driven in continuous ofperiodiek, controlled, for the addition of reaction required for the fusion- Be₄⁹ .

5. A method, as in any of the preceding claims, wherein said anode is movable by means of a drive and can be retracted during operation, the extension of the plasma vortex, which exists between the cathode and anode. During operation

6 A method, as in any of the preceding claims, wherein a gas-accumulator is connected to said reactor system.

7 A method, as in (6), wherein the volume of said gas-accumulator least 6 times the volume of said reactor system.

8 A method, as in (6), wherein in the wall of said gas-accumulator cooling channels are provided, which are connected to the cooling-system / evaporator of said reactor system.

9 A method, as in any of the preceding claims, wherein said gas-accumulator a reflux conduit has connected thereto, in order to lead into the supply line of the He_2^3 . Evolved gas back-mix of the He_2^3 .

10 A method, as in any of the preceding claims, in which has attached thereto, by which the pressure can be kept. Below and above certain values

11. one method, as in any of the preceding claims, wherein the supply of He_2^3 is determined by a precision-controlled dosing valve.

12 A method, as in any of the preceding claims, wherein the high-voltage of said electro-magnetic field, a square-wave voltage, or a different lapse of time, but with a steep increase to the maximum amplitude.

13 A method, as in (12), wherein said high-voltage, a digitally created time-characteristic, with due observance of the requirement in claim (12).

14 A method as in any of the preceding claims, wherein the electricity produced by electric generator said first power required for the operation of the electro-magnetic field, for the "control" and drives of cranes and electrodes is taken .

15 apparatus, in which, and with which the fusion of Be_4^9 with He_2^3 is effected, and wherein the resultant thermal energy is converted into electrical energy, consisting of the following parts:

(a) a reactor containing an anode and cathode therein, which are spaced from each other, which distance can be varied by means of actuators

(b) a gas accumulator, Wherein produced He_2^4 can be received, along with not yet transposed He_2^3 .

(c) a reflux - pipe with valve near said accumulator to back the leadership of the majority of the gas-Mixture.

(d) a supply container for the He_2^3 which via a controllable metering valve to a ormore inlets near the tip of said cathode is connected to.

(e) cooling channels in the walls of reactor and gas-accumulator, which also function as an evaporator, which vapor of the refrigerant, which is under pressure, supplying to

(f) an expansion turbine, the axis of which drives an electric generator. Electricity fusion process and useful usage.

(g) a condenser, which condenses the spent steam from said turbine; (this can be any water-cooled condenser).

(h) a feed pump which is provided to said pressure coolant.

(i) electrical components: battery (ies), ICs, digital waveform builder, amplifier, variac, a transformer, pulser circuit connected to the cathode and anode.

(j) pressure and temperature probes in said reactor, regulating which: coolant circulation pump, He_2^3 dispensing valve, rate of addition of Be_4^9 , control valve for the cooling of cathode body, reflux-cranes and He_2^4 exhaust valve, on the basis of measured pressure controls, while the coolant temperature measurement ciculatie also regulates

(k)-fiber option ends for visual observation of the plasma-Vortex.

Devices 16 as in (15), wherein said reactor is a volume far-cave-using taper exhibits in the direction of the anode.

Devices 17 as in (15) and (16), wherein the reactor cross-sectional area near the anode (at right angles to the center line of the plasma-vortex) at least 3 times as large.

18 Apparatus, as in (15), (16) and (17), said outlets in the anode region of said reactor are, on the

periphery thereof, which are connected to said gas-accumulator.

19 Apparatus, as in (18), said outlets tangential stabbing from the reactor in accordance with the rotation direction of the plasma / gas.

20. Apparatus, as in (15), wherein said anode can be retracted by means of a screw mdrijving.
Largely from said reactor

21. Apparatus, as in (15), wherein said cathode has a screw-motion according to the axis, which is driven, the movement of which the melting of the material of the screw-corridor along with Be_4^9 precisely compensates.

22. Appmaten, as in (15) and (21), wherein said cathode has also discharge outlets at the tip thereof, near the consumable material, for the addition of He_2^3 , the spot of which Be_4^9 also will be released.