

Direct Conversion of Nuclear Energy into Electricity

Open Power Association

On *January 19, 2016* Open Power has filed an Italian Patent Application regarding an apparatus for direct conversion of nuclear energy into electricity and cogeneration of thermal energy *from general LENRs*, in particular from *a new kind*.



We wish to thank prof. Fabio Cardone and dr. Francesco Celani for the interesting discussions, from complementary viewpoints on the subject LENR, as representative of many researchers with which we had exchanges of views, and that it would be impossible to mention here explicitly.

According to the policy of the Association, new discoveries have to be patented to assure a free circulation of information, with free licences to selected partners; some royalties will guarantee scientific updating.

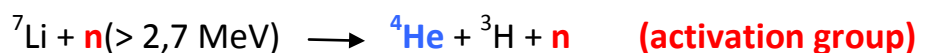
In such a way industrial partners will agree about an **ethical** behavior regarding the diffusion of related benefits to mankind.

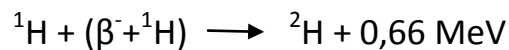
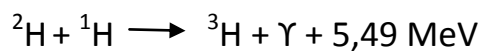
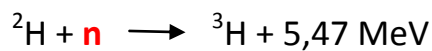
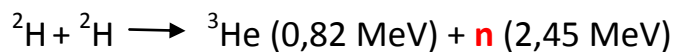
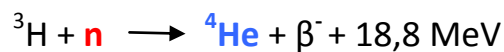
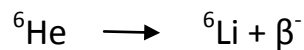
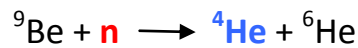
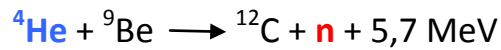
The major items of the claims are:

- an activation of the fuel mixture by an adjustable neutron gun;
- a cycle of **exothermic** reactions involving **Li-Be-H** to promote secondary neutron emission, **enhancing** reaction rate under magnetic field control, to provide α and β rays emission;
- a separation of charged particles by a three electrode capacitor, under an adjustable electric potential, and gas pressure control; then, a system for extracting electric current is available from well-known technology;
- a system for removing the generated thermal energy is provided;
- a system for capturing unused neutrons (previously moderated), by a boron layer, with removal of secondary thermal energy is also provided;
- a system for preventing any emission of radiation in the external environment is finally provided.

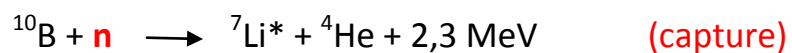
Several kinds of neutron guns are available from well-known technology; a simple sinergy Americium-Beryllium is proposed, owing to the easy production of neutrons **without energy supply**, with a proprietary system for control the emission rate.

The **exothermic** new **Li-Be-H** cycle is based on the reactions in the following, to promote the joint production of α and β particles from lithium, by neutron activation; the α particles activate beryllium (as a **well-tried** multiplier) to produce secondary neutrons, which in turn act on both lithium and hydrogen isotopes to furtherly develop α and β particles:





Unused neutrons are involved, in a separate region, in the following

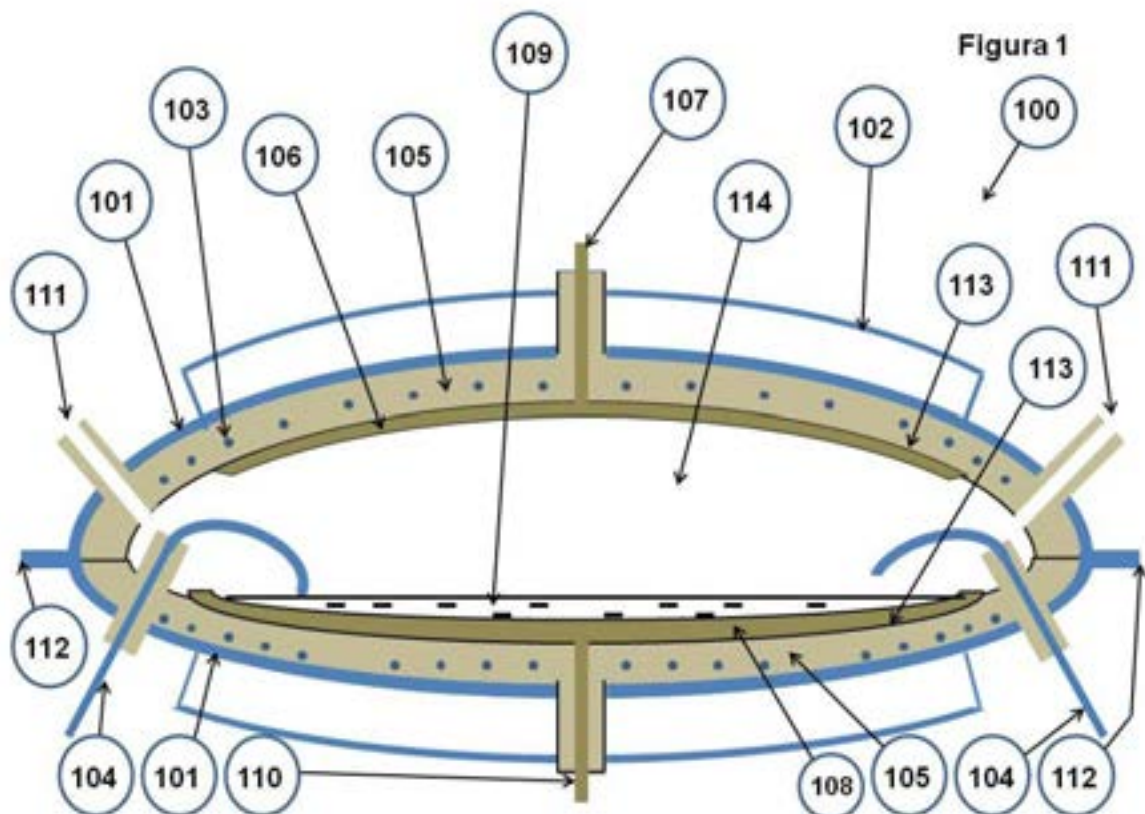


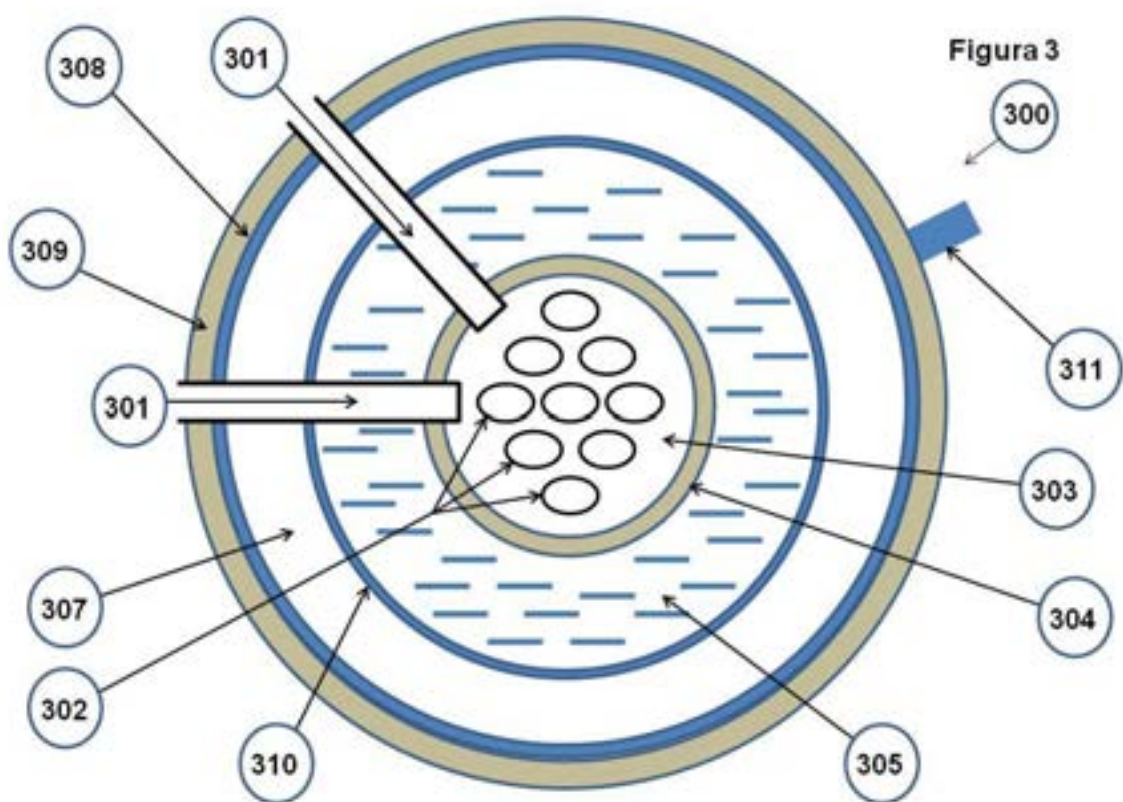
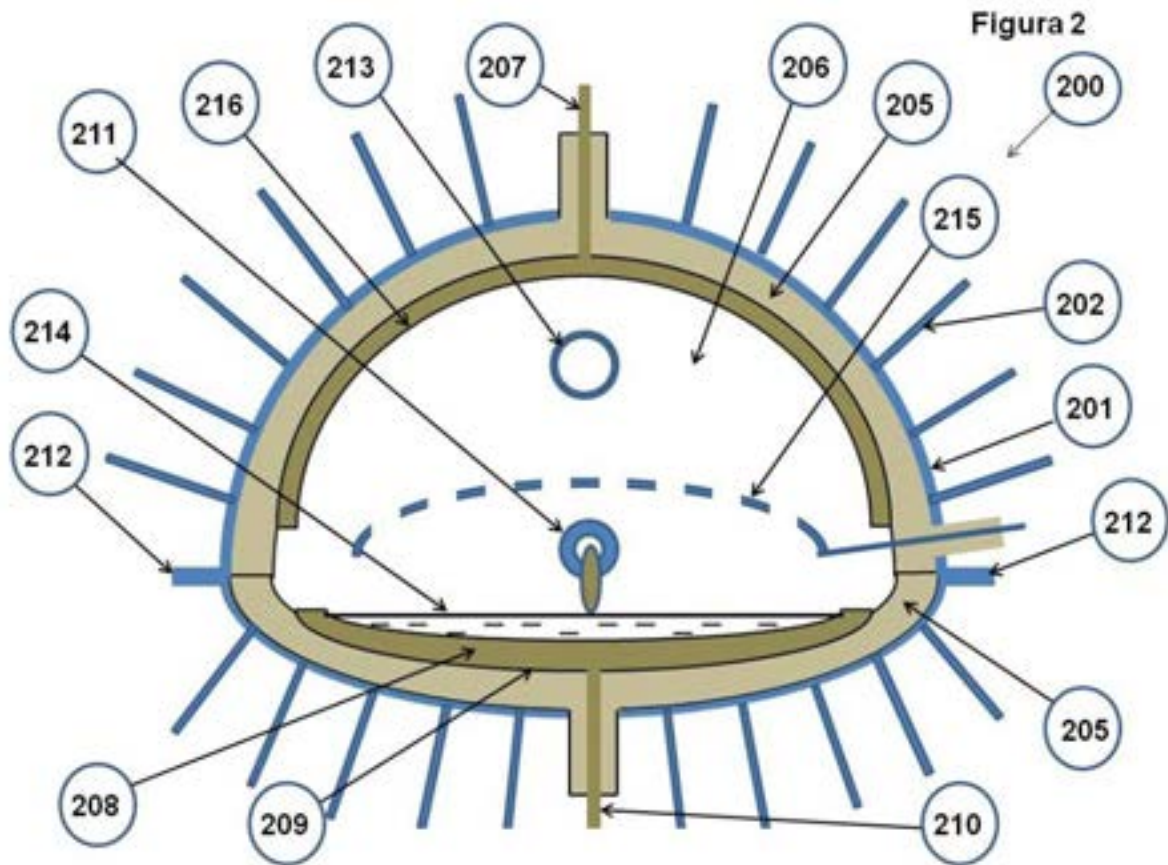
The charge separation is performed in the three electrode capacitor, by acting both on the grid electrode potential and the gas pressure, to prevent α radiation from reaching the upper electrode, and promoting the β one travelling.

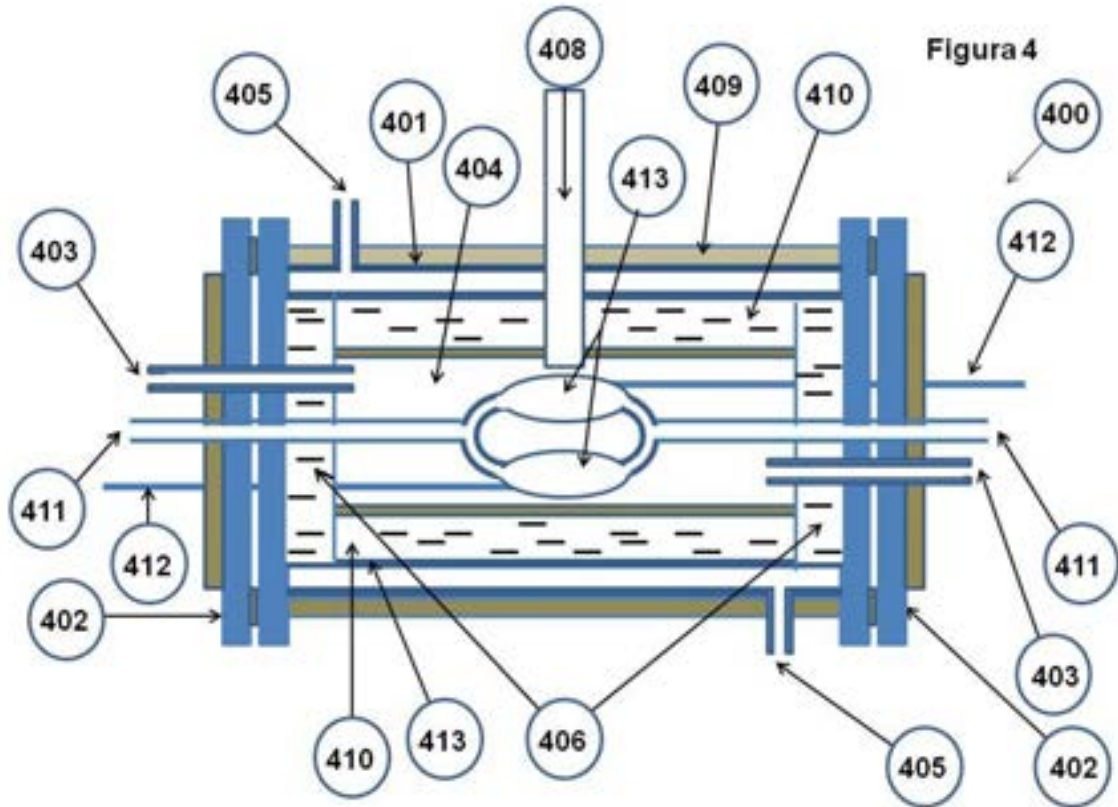
Indeed, since 1913 (Henry Moseley , *"The attainment of high potentials by the use of radium"*, Proceedings of Royal Society A, vol 88, p.471,1913) it is known that β radiation emitted by **naturally radioactive isotopes** may be employed for direct producing electricity from nuclear decay reactions; the related technology is today well available up to the commercial level (*Betacell* devices); in our application the natural decay **is simply substituted by a more efficient neutron activated one**, and a regulation mechanism is added.

The following pictures show some sections of the device.

For the detailed description, and **more embodiments**, the reader is sent to the attached complete text of the Patent Application.







We hope soon more researchers will furtherly develop the exposed ideas.

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