Commercial aspects of LENR

low-energy nuclear reactions

Transmutation is transformation of one object into another. In physics, it is transformation of atoms of one chemical element into another atoms. This process usually is result of radioactive decay or nuclear reactions. Reactions on low levels of energy are "low-energy nuclear reactions» LENR.

At present time there are several new technologies of producing of heat energy, which in 2012 reached a serious level. Some authors taking orders from Customers about production for them 1 MW power plants. The most famous group of authors is headed by Italian Professor Andrea Rossi.

The essence of this technology is process of transmutation of nickel into copper with great heat output. Design of the reactor looks simple: Nickel nano-powder is placed in a reactor and saturated with hydrogen under high pressure, then electric filament initiates a reaction, and then the process becomes self-sustaining. Here is no chain reaction or explosion. Also there is no radioactivity.

Selection of nickel is based on the fact that this metal has an affinity for hydrogen, i.e. it is capable to absorb hydrogen into its crystal lattice. This feature is important to create the conditions of low-energy nuclear reactions, since this condition make possible easy dissociation of molecular hydrogen with a very low energy consumption. Read more about closed cycles of dissociation and recombination of hydrogen in articles about my experiments in 2003-2004, organized by "Faraday Laboratory Ltd" and in my Russian patent application # 2004104046 of 11.02.2004.

Application of this technology is heat source to provide hot water and steam for turbine power electrogenerator. On the scale of hundreds of megawatts of power, this technology can replace uranium nuclear power plants. On a small scale, for example at the level of 10 - 1000 kW, this technology can be used to provide heat for home buildings and industrial facilities. The reactor requires periodic replacement of nickel and hydrogen. Designer can calculate the duty cycle of "replacement of cartridge" of reactor to be annually or with less frequency. Cost of produced heat and electricity is several times less than cost of any known fuel power plant. Nickel is inexpensive today but copper cost about two times less than nickel. Expensive “fuel” and non-expensive “wastes” seems to be ordinary situation for us today.

In this article, I'll show you one interesting aspect of commercial application of transmutation.

Among other metals having an affinity with hydrogen, we can see platinum and palladium. It is very expensive "raw material" and it is difficult to build an economically efficient reactor using this “fuel”. Another situation we can get by using cheap "fuel" if we can create the conditions for its transmutation into a more valuable product .

Let’s consider Mendeleev’s periodic table of chemical elements. We can see Iron and Cobalt, two chemical elements are close to each other. Cobalt has a very wide practical application , for example plates of core of electric transformers are made of an alloy of 50 % iron and 50 % cobalt. Average prices of cobalt today is about $25,000 per ton. Iron costs about $ 200 per ton. This "fuel" is much cheaper than this "waste" of LENR, so the transmutation reaction produce value product! You can imagine commercial perspectives of creation of cobalt by transmutation of iron, if we’ll can create special conditions of this low-energy nuclear reactions.

There are serious doubts about possibility of success of this project. Iron is unlike to nickel, platinum or palladium. Iron behaves "very quietly" in respect to hydrogen, i.e. there is no affinity with hydrogen.

There is much more interesting pair of metal: titanium and vanadium. Important factor to use titanium is its affinity to hydrogen. Both nickel and titanium are capable to be saturated with hydrogen atoms. Modern industry use titanium-based hydrogen storages due to this special property of this metall.

From the commercial side, transmutation of titanium to vanadium is profitable. Titanium cost today about $ 1,000 per ton. Vanadium cost approximately $ 50 000 per ton and demand is growing.

Studying the subject, we will find other pairs of materials to be very interesting from a commercial point of view.

Development of research in this area requires creating of a small but high tech laboratory. Investors can contact author of this article to discuss details.

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