A critical discussion about the possibility of directly extracting electric energy from LENR, taking into account the configurations of Rossi, Piantelli, Open Power

Efficiently converting the thermal energy from LENR into electric one is a main problem in the field.
Open Power carried out some experimentations regarding the possibility of directly extracting electric energy from LENR processes, in an electrolytic way:

a) an alternating current, at the watt extent of a few percent of input power, was successfully extracted, by a suitable electronic circuit comprising some resistors and capacitors, from electrolytic plasma oscillations (as previously J. Naudin and R. Mondaini);

b) a copper cylinder around the becker containing the electrolytic solution (during the plasma phase) was found to rise its (negative) potential with respect to ground, up to 50-80 Volt, giving place to a current of a few milliamperes if continuously drained (Eng. M. Di Lecce, personal communication).

Prof. L. Holmlid, (Gothenburg University):

http://www.researchgate.net/publication/281115489_Spontaneous_ejection_of_high-energy_particles_from_ultra-dense_deuterium_D%280%29

approaches the problem from a **new viewpoint**: he reports experimental findings about detection of high energy negative particles coming from ultra dense Deuterium, solicited by pulsed laser.
These particles bring the **main fraction** of nuclear energy produced by Deuterium-Deuterium fusion in his device.
In the Holmlid's process, the amount of emitted protons, alpha particles, neutrons is small, thus allowing for collecting the charged particles in view of a direct conversion of nuclear fusion energy into electric one.

In his work, an ultra dense Deuterium phase is formed by a catalyst based on porous iron oxide doped with Potassium, a typical dehydrogenation catalyst (at Open Power Lab, an experimentation is carrying out, by substituting iron oxide with a **Nickel-Iron mixture, containing Lithium).**

Holmlid employs laser pulses to bring D-D couples, rotating around their common axis with spin=2, to the state s=1, bringing the interatomic distance from 2.3 to 0.56 picometers (giving a superfluid and superconductive phase) at which Deuterium fusion occurs spontaneously, disregarding the temperature demand .

Now it must be recalled the work of R.B.Little:

http://www.google.com/patents/US20140140461

about employing magnetic fields to affect the spins of the fusing atoms to allow the needed intimate contact for fusion, so underlining the importance of spins to assure the compression.

Such an ultra dense Deuterium forms a superficial layer on metal surfaces (not on polymeric ones), linking D atoms in $D_{2\ N}$ chains, owing to electronic shielding.

The nanosecond pulsed laser solicitation (***according to Holmlid, also electrical pulses are suitable***)

brings to the ejection of **instable** fragments of ultradense phase (a few of picometers sized) containing only a very small amount of neutrons, with energies up to 20 MeV, readily decaying into high energy ***negative*** particles, carrying the main fraction of D-D fusion energy to a collector, to be extracted in the form of electric one.
The substantial absence of ejected neutrons must be attributed to the mean free path for neutrons in the ultra dense phase , of a few hundred nanometers.
Concluding, the goal should be to adjust the operating conditions and geometry of the reaction apparatus, to induce a reaction chain promoting the production of chosen kind of ejected particles suitable for direct electric energy extraction, together with thermal one (from non charged particles fraction) in view of a thermal/electric cogeneration process.

A suitable pulsing solicitation, as from Open Power Pat. Appl. , on Deuterium layers in porous Ni/Fe –Lithium matrix (some of Rossi's, Piantelli's reactants), in specific operating conditions and related reactor geometry, might trigger the involved fusion reactions, driving them towards the ejection of charged particles to be collected.

Such a path is actually under experimentation at Open Power Lab.

Ugo Abundo – Open Power Association