Arc reactor Technology: A Review

Sagar Kishor Savale
Zydus Lifesciences ltd

Asian Journal of Biomaterial Research 2017; 4(3):8-14

Review Article

Arc reactor Technology: A Review

Sagar K. Savale*

Received: 22 May 2018 Revised: 26 May 2018 Accepted: 30 May 2018

ABSTRACT

Aim: Arc reactor Technology: A Review. **Objective:**The main objective of this review article to focus on arc reactor is a versatile mode of technology. **Methodology:** Various reports were taken from review or research articles and other online available literature. **Conclusion:** It is a new approach for technology to produce a net gain of energy.**Keywords:** Arc reactor, Fusion reactor, palladium, Energy.

Introduction

The arc reactor is some kind of fusion reactor that has theability to generate an electromagnetic field.The first fusion reactor large enough to produce a net gain of energy. Basically it mashes two isotopes of hydrogen, deuterium and tritium, together at such high energies that they combine into one atom. When they fuse, the reaction produces helium and a free neutron. Critically, helium + neutron has less mass than deuterium + tritium, and the missing mass is converted to energy. That energy can be captured as heat to run a traditional steam-driven turbine (like any other power plant).

Amounts of energy

The ARC planned be tokamak - or donut-shapedsystem.It could generate the same amount ofenergy as muchlarger designs. It will use superconductors madeof rare-earth bariumcopper oxide. The strongermagnetic fieldsgenerated are ableto better contain plasma, allowingthe reactor to besmaller, cheaperand quicker tobuild.

*** Corresponding author,**

Mr. Sagar K. Savale,

M. Pharm(Pharmaceutics), Shirpur, MS, India.

Mobile No: 9960885333,

Email ID: avengersagar16@gmail.com

Arc Reactor with Basic Tools

Lights: Every iteration of the Arc Reactor lights up; a ring of palladium undergoes some kind of arc reaction. **Coils:** The original purpose of the ArcReactor is topowerelectromagneticcoils that prevent shrapnel from entering the heart. **InnerRing/Bracket:** The original purpose of the ArcReactor is to power electromagneticcoils that prevent shrapnel from entering the heart.

Miniature arc reactor

It contains a palladium core. Palladium is damaged by neutrons, so the specific isotope is important. It has electromagnetic coils in a torus and emits blue-white light. It can be built in a cave with tools of moderate complexity. Requires no exotic materials outside what you could scavenge from dismantled conventionalweapons systems. Runs low on power at inconvenient times, meaning it must have some sort of fuel orconsumed charge. Palladium has been proposed as a substrate for cold fusion that does not require hot plasmas and containment toroids, but this concept is pretty widely discredited in the real world. Palladium does, however, have some interesting capture and decay properties. Palladium isotope Pd-103 produces Rh-103 (rhodium) via electron capture.

This means an inner electron is absorbed by the nucleus, merging with a proton to produce a neutron and an energetic photon-a gamma ray. Another isotope, Pd-107, produces Ag-107 (silver) via beta decay, releasing an electron when a neutron turns into a proton.

(This is kind of the opposite reaction as the above.) Now, in real-world physics, the electrons balance the resulting atomic nuclei-silver and rhodium have different numbers of protons from palladium, and the produced/consumed electrons just balance out the proton count so there is no net flow of electricity. To utilize the beta decay of Pd-107 ions as an electron source for the electron capture of Pd-103, thereby producing an electric circuit between two different radioactive isotopes.Pd-103 is very radioactive (17-day half-life) compared to Pd-107 (6.5 million-year half-life) so there would need to be dramatically more of the heavier isotope to compensate for the disparity in decay rates. Since we know the device uses charged particles travelling within a ring of electromagnets, tiny amount of Pd-103 is ionized by an electric arc, which then allows Pd-103+ to be circulated at high velocity within the outer ring of the device. The ionization acts to delay the electron capture step until the atom encounters a free electron, and the high kinetic energy due to velocity increases the chances of electron capture occurring once an electron is encountered. In effect, the radioactive decay of Pd-103 can be started, stopped, and throttled by the device simply by controlling the ionization and circulation of the Pd-103. The palladium core of the device would most likely be Pd-107, which emits high-energy electrons as it decays into silver. This is a pretty stable isotope that we would expect to be present in the normal (non-separated) palladium. The device's geometry and electromagnetic fields route the high-energy electrons from the Pd-107 core towards the outer ring. There the electrons are captured by high-energy Pd-103 ions. This electron capture process emits gamma rays, which are deflected inward to catalyze the beta decay of the Pd-107 core. Normally, the gamma rays are directed inward to catalyze the device's operation, but they can be directed outward in a concentrated energy beam Electrons project outward from the inner core, and gamma rays project inward from the outer ring. Because this electron/photon counter flow creates a deficit of electrons (relative to protons) in the core, a massive electrostatic potential is developed and the palladium core attracts lower-energy weapon. The ejection of electrons from the core towards the rim of the device produces an electrical cell capable of generating enormous voltage and current. Reactor start-up process: Using external power, Pd-103 is ionized by an electric arc, and accelerated to high velocity in the outer ring. There may also be some externally-powered gamma ray production to jump-start the inner core. The electrical current through an external load relieves the electrostatic charge accumulations that initially slowed the reactions. Pd-107 in the inner core starts to emit high-energy electrons as it decays to Ag-107. The electrons escape the core and are directed by magnetic fields into the outer ring. Lack of electrons creates a net positive charge in the core, which slows further emission (preventing run-away decay) until the electrons can be externally replenished. The electron flow from the inner core to the outer core creates an electric potential difference. When a circuit is created through the suit's electrical loads, the outer ring has an excess of electrons and the inner core has a shortage of electrons. This creates current. In the outer ring, the high-energy free electrons collide with high-energy Pd-103+ions. This causes instantaneous electron capture and gamma ray emission. The gamma rays are deflected inward towards the core, thus catalyzing further electron emission and producing self-sustaining reaction. Note that the reaction is self-sustaining, but very slow while the reactor is idle. The palladium slowly converts to Rh-103 and Ag-107, and the reactor runs out of power when the palladium is fully consumed.

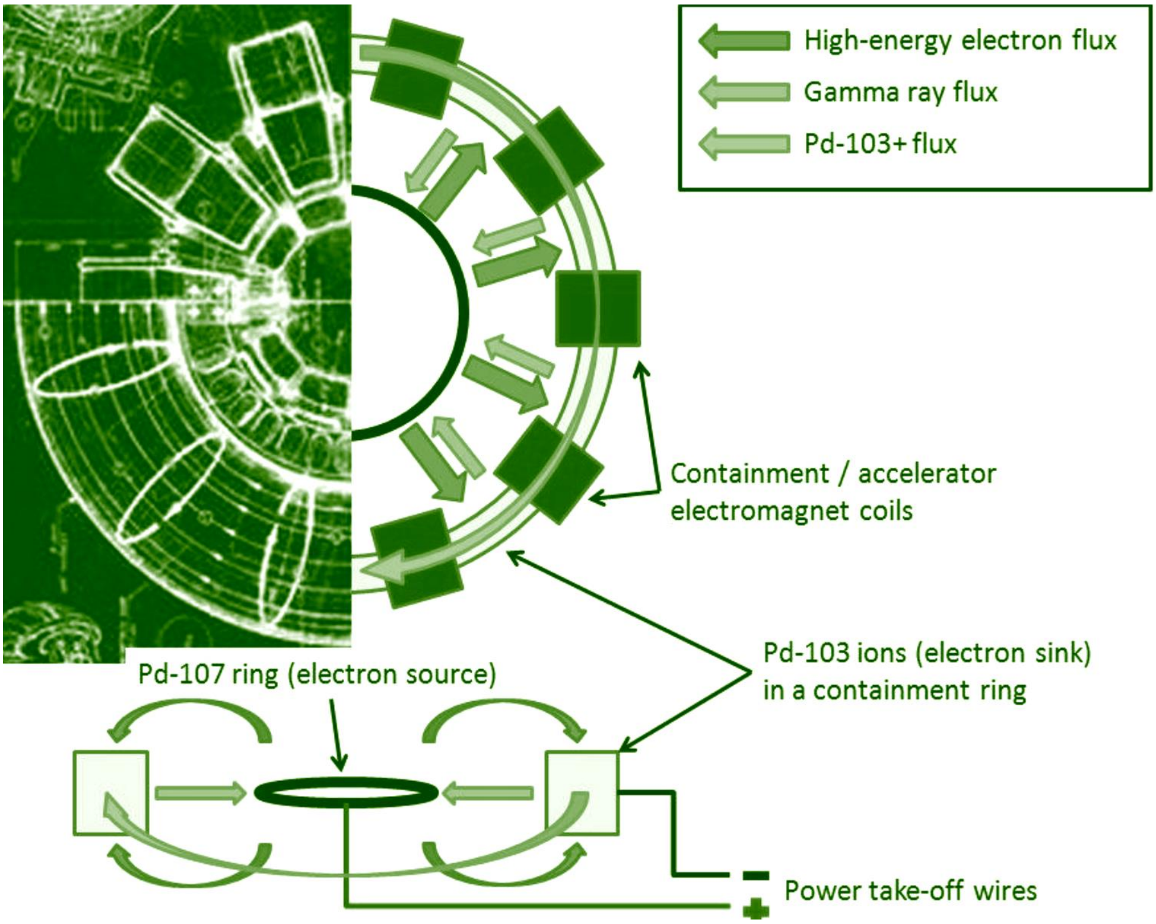

Figure 1: Miniature arc reactor

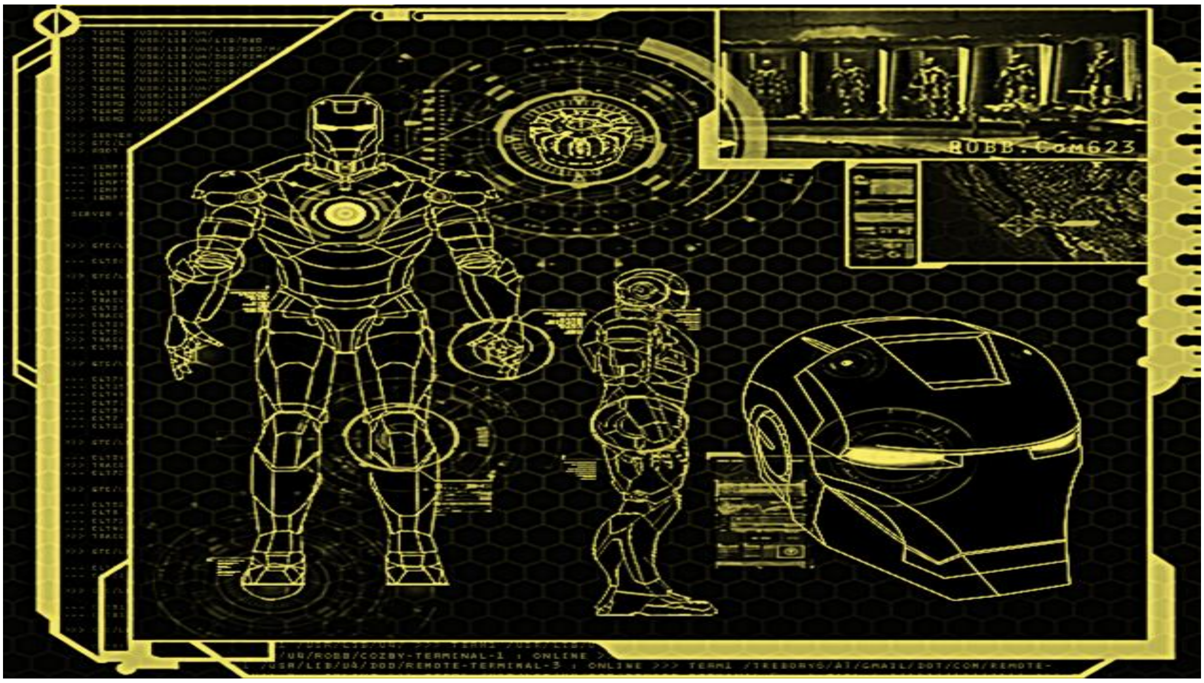

Figure 2: Blue Print of Arc Reactor

Asian Journal of Biomaterial Research 2017; 4(3):8-14

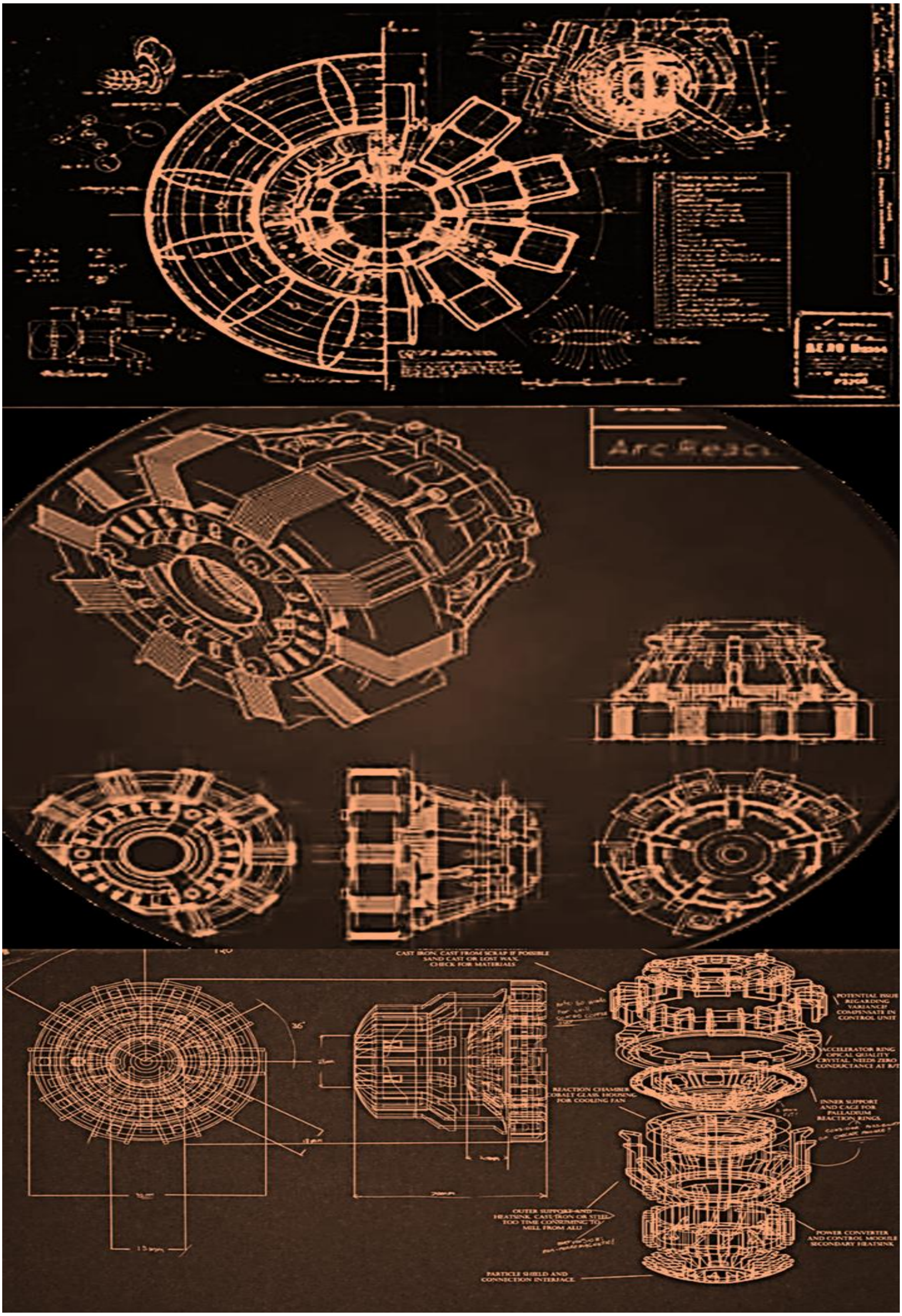

Figure 3: Blue Print of Arc Reactor

Figure 4: Arc Reactor

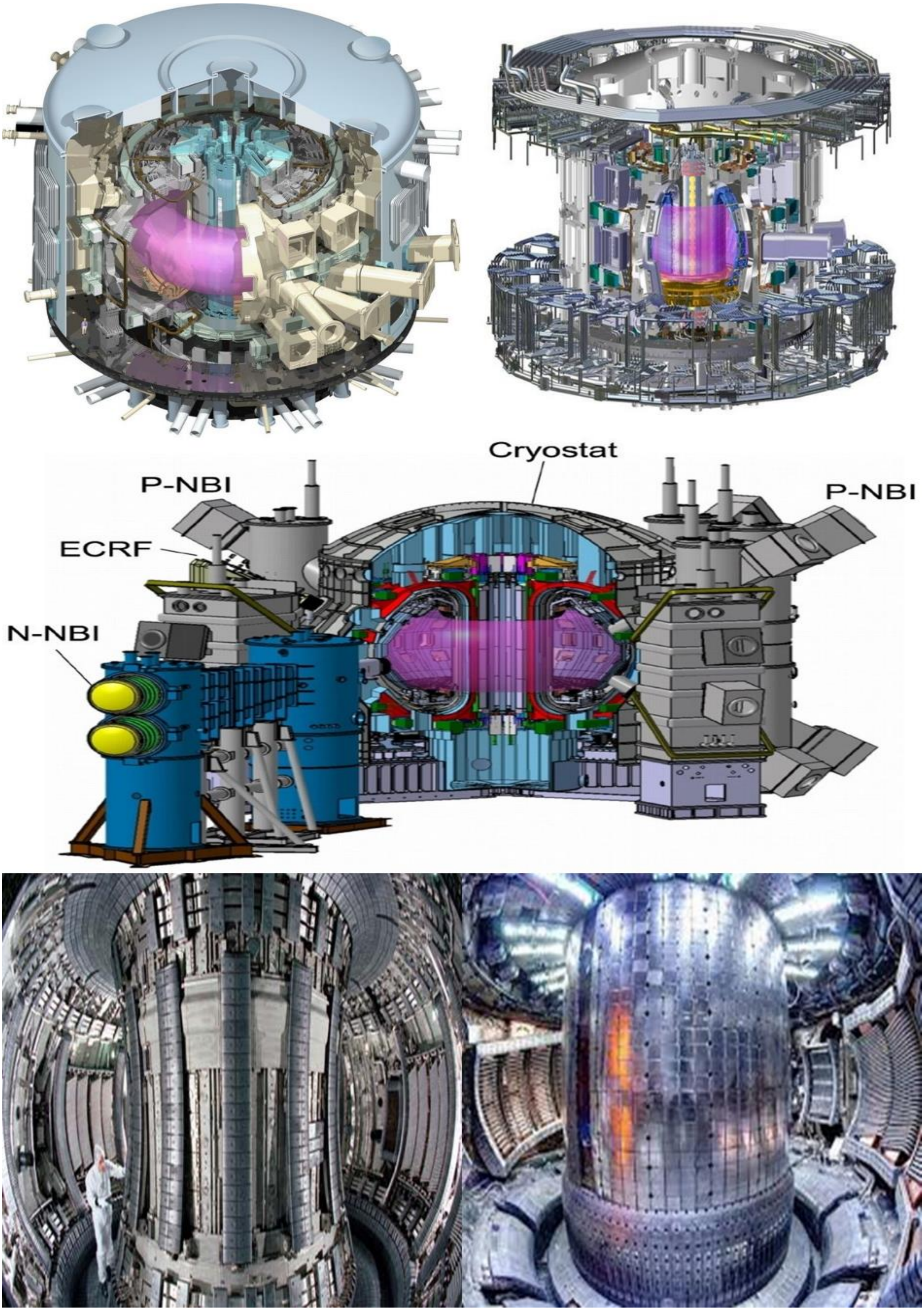

Figure 5: Fusion Reactor

Bibliography

https://www.slideshare.net/sagarsavale1/arc-reactor-technology Assessment Date: 1 April 2014 and Assessment Time: 4:30 pm.

https://www.slideshare.net/sagarsavale1/arc-reactor Assessment Date: 15 May 2015 and Assessment Time: 7 pm.

https://www.slideshare.net/sagarsavale1/plasma-arc-reactor Assessment Date: 28 Feb. 2016 and Assessment Time: 8 am.

https://nanohub.org/resources/13789/download/NIFB_presentation09Apr2012.pdf Assessment Date: 01 June 2016 and Assessment Time: 11 am.

https://en.wikipedia.org/wiki/ARC_fusion_reactor Assessment Date: 16 August 2016 and Assessment Time: 2 pm.

http://www.instructables.com/id/How-to-make-an-Iron-Man-Arc-Reactor/ Assessment Date: 10 October 2016 and Assessment Time: 4 pm.

http://www.arcnuclear.com/uploads/File/arc-100-product-brochure.pdf Assessment Date: 2 December 2016 and Assessment Time: 1 am.

https://en.wikipedia.org/wiki/Arc_reactorAssessment Date: 4 August 2017 and Assessment Time: 6 am.

http://www.ne.anl.gov/activ/pdfs/2012_AdvReactor_Factsheet_Final.pdf Assessment Date: 19 September 2017 and Assessment Time: 8 pm.