

A REVIEW OF NUCLEAR POWER IN ELECTRICITY

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Abstract: A review of nuclear power in electricity has been proposed here. Nuclear power is the conversion of nuclear energy to useable energy, which in this case is electrical energy. Nuclear energy is the energy stored inside of the nucleus of an atom, and it can be released using two methods, nuclear fission or nuclear fusion. In nuclear fission the nucleus of an atom is split into two smaller atoms using neutrons, whereas, in nuclear fusion the nucleus of an atom is forced to combine with another nucleus of a separate atom to form a larger atom. There are several researches in the field of nuclear power in which some researchers have been described here. In order to meet the Administration's goals of energy security and greenhouse gas reductions, nuclear energy must play an important role in the national energy portfolio.

Keywords: Nuclear power, Matlab, Nuclear Reactors, Electricity, Nuclear power Plan

[1] INTRODUCTION

Nuclear power is the conversion of nuclear energy to useable energy, which in this case is electrical energy (EIA, 2015). Nuclear energy is the energy stored inside of the nucleus of an atom, and it can be released using two methods, nuclear fission or nuclear fusion (EIA, 2014). In nuclear fission the nucleus of an atom is split into two smaller atoms using neutrons, whereas, in nuclear fusion the nucleus of an atom is forced to combine with another nucleus of a separate atom to form a larger atom (EIA, 2015). The energy released is then harnessed and used to make electrical power. Although nuclear fusion yields almost four times the energy than that of nuclear fission it is not a method that is utilized. It remains a field of ongoing research because of the difficulty in maintaining a nuclear fusion chain reaction (World Nuclear Association, 2014). In nuclear reactors today, nuclear fission is the only method used, and an example of how nuclear fission works can be seen in Figure 1 (EIA, 2014). In order to generate power, nuclear power plants must successfully convert the energy released from nuclear fission, and they do so in a long tested manner.

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A conventional power plant converts the potential energy of one substance into another form of energy, which is generally mechanical energy or thermal energy. Then this new form of energy is used to produce electrical energy. Through the mechanical energy method, turbines spin using mechanical force produced by the fuel. For thermal energy, water is boiled to produce steam, which is then forced to rotate turbines. The rotation of the turbines produces electricity by changing the magnetic field around the coils it is rotating within. The power grid uses transmission lines to distribute the electrical current produced.

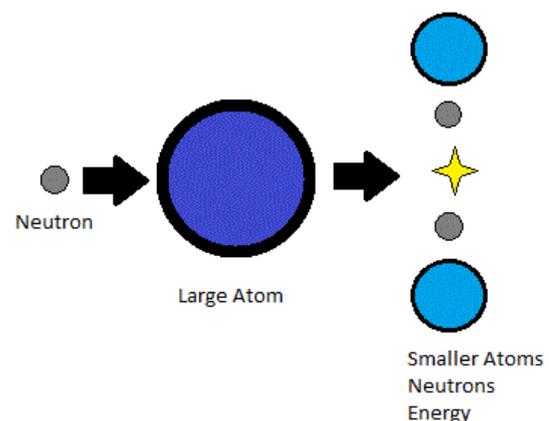


Fig 1 Nuclear Fission