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Analyzing Fusion Energy 2017

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Abstracts

Fusion power is the power generated by nuclear fusion reactions. In this kind of reaction, two light atomic nuclei fuse together to form a heavier nucleus and in doing so, release a large amount of energy. In a more general sense, the term can also refer to the production of net usable power from a fusion source, similar to the usage of the term "steam power." Most design studies for fusion power plants involve using the fusion reactions to create heat, which is then used to operate a steam turbine, which drives generators to produce electricity. Except for the use of a thermonuclear heat source, this is similar to most coal, oil, and gas-fired power stations as well as fission-driven nuclear power stations.

Aruvian Research brings a research report on the lucrative field of fusion energy – Analyzing Fusion Energy 2017. The research report takes a look at the importance of fusion power in an era where the usage of renewable energy has become a norm.

The report begins with an analysis of the basics of fusion energy, the various stages of development in fusion power, the magnetic concept, the Z-pinch concept, inertial confinement concept and many others. The role of tokamaks are analyzed in the report, along with the physics of fusion reactors. The concept of plasma heating is analyzed so as to provide a better understanding of fusion power. Barriers to the development of fusion power such as nuclear proliferation, environmental problems, and regulatory problems are also analyzed.

A section is dedicated to understanding the fusion fuel cycle in which we look at the D-T fuel cycle, the D-D fuel cycle, the D3He fuel cycle and the p-11B fuel cycle.

The workings of a fusion power plant is analyzed in details including the confinement theories, materials utilized, and economics of fusion power. We also take a look at the pros and cons of fusion power. Further to this, Aruvian’s report also analyzes the

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different types of fusion power available such as nuclear fusion, inertial confinement fusion, inertial electrostatic confinement, laser inertial, amongst others.

Apart from analyzing the role of a tokamak in fusion power, we also provide the profiles of the various tokamaks in use or under research today such as ADITYA, KSTAR, JET, J-60, DEMO, and others. The role of X-divertors is also analyzed. The most famous project in fusion power – the ITER – is also analyzed in-depth, along with the role the US plays in the project. At the same time, we also take a look at EU's Fusion Energy Program.

With the waves its making in the energy industry, it is a given fact that China cannot be far behind when it comes to discussing an emerging technology in the energy industry. Aruvian Research analyzes the fusion power industry in China, as well as in Europe and the United States.

Environmental impact of fusion power and whether or not fusion power is considered to be safe is an issue facing the world today. Aruvian Research takes these topics under consideration and also looks at what is happening in terms of R&D in this industry.

A case study on the FIREX Program and the ongoing efforts to create a fusion-powered spacecraft sets apart this research report on Fusion Power.

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