

THE FUTURE OF ENERGY: NUCLEAR FUSION

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Today we live in a world struggling to kick its fossil fuel addiction and feed its growing appetite for energy. We can all agree that climate change is real and we need to find a cure immediately. The future of energy isn't fossil fuels or renewable energy, it's nuclear fusion. Humanity is closer than ever in harnessing the nuclear power of the sun. We are close to solving the mystery of Fusion power that keeps the sun going. Nuclear energy is very dense, reliable and with sufficient research, cost effective.

The two main ways to harness nuclear energy are fission and fusion. Fission involves bombarding heavy isotopes of uranium and plutonium with neutrons to break them apart in-turn producing energy. Fusion however is one of the holy grails of science. It offers a near limitless, pollution free, cheap source of energy. Fusion involves heavier isotopes of hydrogen atoms fired into a plasma where extreme temperatures overcome the repulsion and forces them together. Fusion produces about four times the energy produced when an atom is split in conventional nuclear fission. Four main ways to perform fusion have emerged. They are Inertial confinement fusion, Magnetic confinement fusion, Magnetized target fusion and Subcritical fusion. The most popular is the magnetic confinement fusion which involves a donut shaped torus magnetic cage called a Tokamak to trap the plasma.

An international consortium of countries has pooled in 18 billion euros to construct the world's first fusion reactor Iter in France. Nuclear fusion as a power source has never been given the necessary funding to bear fruits, but it's the one physically possible solution to our energy needs with no obvious downsides. If we perfect this technique, the world will forever be changed. Well within our lifetime we are potentially looking at unlimited energy.