

Is Fusion Still an Illusion?

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Last night, the movie “Oppenheimer” won the best picture award at the Oscars. The movie is about the man who helped design how the U.S. split an atom, a process known as nuclear fission. Although the immediate purpose of that experiment was to create the atomic bomb, the subsequent harnessing of that experiment provided a resource for creating energy through the proliferation of nuclear reactors. France uses nuclear reactors to provide 65-70% of its energy but the problem with the greater use of nuclear plants is that they create a by-product known as radioactive waste that is life-threatening. Accidents at nuclear power facilities have wreaked havoc in most cases and most governments have decided to forego the broad use of these devices because of the costs and the risks.

For years, scientists have been attempting to take the next step: nuclear fusion, or the combining of atoms to produce energy. This process does not create lethal by-products and combines two elements (deuterium and tritium) to produce fusion. These elements are broadly available and low-cost. The problem is that the elements must be heated to millions of degrees before the fusion can occur. How can the temperatures on the surface of the sun be created on Earth? Recently both the U.S. and China have been able to create fusion but only for a short period and only producing a small amount of energy that is less than the amount it takes to create it. Experiment after experiment has only achieved a gradual increase in the amount of time such fusion can exist.

Enter artificial intelligence. Scientists are using AI to help identify irregularities in the experiment to anticipate those irregularities and help to stabilize the test meaning that we may be much closer to creating a viable amount of unlimited energy with no negative effects at least on the environment.

For investors, the advance of this technology has enormous advantages as well as negative omens for existing industries that produce power from both fossil fuels and traditional nuclear power. Like the invention of the steam engine ushered in the Industrial Age so can the commercial development of nuclear fusion have an enormous impact on our lives. Energy users will be the winners and producers of energy except those specializing in nuclear fusion will be the losers.

The fusion illusion is fading as we get closer to the successful commercialization of fusion energy. This ability to produce endless amounts of energy at minimal cost will revolutionize our living standards and produce unusual investment opportunities. Stay tuned!