

1. What is Cold Fusion?

Most people are familiar with the various types of renewable energy available today, from solar and wind power to biomass and geothermal, which are generally considered safe and effective. Several other methods are being investigated by scientists for generating renewable energy. One of these methods is known as cold fusion, as it involves generating energy by causing a nuclear reaction at room temperature.

History and First Adopters of Cold Fusion

Martin Fleischmann and Stanley Pons claimed to have discovered cold fusion in their research that led up to a public announcement in 1989. This involved liquid electrolysis of heavy water using palladium and platinum electrodes.

Fleischmann and Pons were respected professors with extensive backgrounds in chemical research, but they announced their discovery at a press conference before their research could be peer reviewed. Nevertheless, many in the media and scientific community have been optimistic that cold fusion could provide a significant source of energy that is environmentally friendly and less dangerous than traditional nuclear fission.

Since that time, many scientists throughout the world have shown that nuclear reactions can be made to occur without having to use high temperatures required for hot fusion. This has been demonstrated by the numbers of efforts that produced positive results, accurate scientific measurement methods used, and an ability to discuss easily the results with the worldwide scientific community.

Theory of the Application of Cold Fusion

Fusion is a process in which nuclei join, or fuse, to form a larger nucleus. Because the small nuclei are positively charged, they repel each other, and only nuclei that move quickly enough to have a high kinetic energy actually fuse. Energy is produced due to the difference between the mass of the resulting product nucleus and the mass of the initial nuclei.

High-speed nuclei are ordinarily created through particle accelerators or heating nuclei to extremely high temperatures for hot fusion.

In cold fusion, conditions for the reaction cause fusion at a much lower temperature than was previously thought possible.

Potential Benefits of Cold Fusion

If cold fusion can be scaled up, it could result in numerous important benefits [click on <http://coldfusionnow.org/wp-content/uploads/2012/06/Top-Five-Benefits.pdf>]. First, it would be an extremely clean form of energy. No radioactive materials are used in cold fusion, and there is therefore no dangerous material to dispose of in order to create energy. The process also does not emit carbon dioxide or other harmful gasses. Once the metals needed for cold fusion are no longer usable, they can be recycled.

Cold fusion is also generated by plentiful resources. Hydrogen and deuterium come from water, and the necessary metals are abundant in the earth. As a result, cold fusion can be used for a long period of time. Because these materials do not take up a significant amount of space once they are assembled into cold fusion generators, these generators provide a high energy return compared to the input energy, making them efficient and accessible to a wide variety of businesses and communities.

Finally, cold fusion is a new industry that can positively impact the economy. The installation and maintenance of cold fusion generators could result in new jobs and sources of revenue. Cold fusion may also lead to the invention of new engines for transportation, change the mining industry, and save home and business owners money over time.

The State of Cold Fusion Research

Despite the past controversy surrounding cold fusion, many scientists and companies are still dedicated to researching its potential. The process is also sometimes called by another name, low-energy nuclear reactions (LENR). An industrial association [click on

<https://www.lenria.org/ecosystem>] for LENR is in the process of being organized.

The following examples indicate a few of the companies with websites showing progress in this new area of technology:

A. Leonardo Corporation in Miami, Florida is one of the best-known LENR companies. The Italian scientist Andrea Rossi is the inventor of the E-Cat [click on <https://ecat.com/inventor-andrea-rossi>], a device that is claimed to produce consistent heat using cold fusion principles. In January 2014, the technology was licensed in the US, Russia, and China to promote further research. Rossi has also developed a larger 1MW device designed to power industrial buildings and factories. A one-year test of a 1MW unit was completed in 2016 in Florida, although the results do not appear to have been released to the public. Hydrofusion, LTD [click on <https://hydrofusion.com/>] is a related company located in the United Kingdom and Sweden.

B. Global Energy Corporation [click on <http://www.gec.solutions/home.html>], in Annandale, VA, is focused on the development and commercialization of hybrid fusion-fast fission technology.

C. Jet Energy, Inc. [click on <http://world.std.com/~mica/jetenergy.htm>] in Wellesley Hills, MA. has developed cold fusion devices that are preloaded with hydrogen or deuterium and called “nanors” and “phusors”.

D. Brillouin Energy Corporation [click on <https://brillouinenergy.com/>] in Berkley, CA is developing cold fusion methods and systems to stimulate controlled electron capture reactions with hydrogen.

A great amount of technical background information can be found on the web. A report on Operability and Utility [click on <https://www.lenr-canr.org/acrobat/NagelDJevidenceof.pdf>] was written by NUCAT Energy, LLC.