

Nuclear fusion power generation to achieve post-solar energy



Overview

Scientists are working to replicate fusion on Earth as a means to generate electricity for the power grid. Fusion energy would provide the benefit of a lasting power source that doesn't produce greenhouse gases or significant amounts of long-lived radioactive waste.

Nuclear fusion power generation to achieve post-solar energy



[China's 'artificial sun' reactor shatters major fusion limit](#)

China's nuclear fusion reactor, dubbed the "artificial sun," has breached a major fusion limit by firing plasma beyond its usual operational

Nuclear Fusion in Sun: How the Ultimate Sun Power

Learn how nuclear fusion in the Sun powers energy generation, making it a sustainable and enduring sun power source for billions of years.



Fusion power

In fusion, two light atomic nuclei combine to form a heavier nucleus and release energy. Devices that use this process are known as fusion reactors. Research

[Fusion energy: a sustainable pathway to meeting future](#)

Fusion energy holds immense promise as a sustainable and virtually limitless solution for power generation. Fusing light nuclei, particularly deuterium



Fusion Energy in 2025: Six Global Trends to Watch

The study explores how fusion could contribute to the future electricity mix under diverse policy, cost and technological assumptions. In the lowest capital cost scenario of US \$2.8K/kW in

Nuclear Explained

The articles and videos on this page offer easy-to-understand explanations of major topics in nuclear science and technology. The many peaceful uses of nuclear technology have a beneficial impact on



Nuclear Technology Review 2025

The Nuclear Technology Review 2025 covers the following select areas: nuclear power, nuclear fuel cycle, decommissioning, environmental remediation and radioactive waste management, fusion

Nuclear Fusion Power

Fusion powers the Sun and stars as hydrogen atoms fuse together to form helium, and matter is converted into energy. Hydrogen, heated to very high temperatures changes from a gas to



[What is Nuclear Energy? The Science of Nuclear Power](#)

What is nuclear fission? Nuclear fission is a reaction where the nucleus of an atom splits into two or more smaller nuclei, while releasing energy. For instance, when hit by a neutron, the

[Bringing Fusion Energy to the Grid: Challenges and Pathways](#)

The private sector has taken notice of this progress, with hyperscalers like Google and Microsoft signing power purchase agreements (PPAs) with fusion startups. However, several major challenges to



Nuclear fuel cycle , IAEA

Sustainable nuclear power needs a sustainable nuclear fuel cycle. The increasing use of nuclear power puts stringent demands on fuel cycle



[International Atomic Energy Agency , Atoms for Peace and Development](#)

The IAEA is the world's centre for cooperation in the nuclear field, promoting the safe, secure and peaceful use of nuclear technology. It works in a wide range of areas including energy



Nuclear Explained

Nuclear science and technology are often used in the study and preservation of valuable cultural objects. These objects include everything from paintings, clothing and musical instruments,



Nuclear Explained

Nuclear fusion is the process by which two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.

activities and on understanding the behaviour of



Fusion Energy

It charts a clear path for federal support to the growing fusion energy industry, identifying critical science and technology gaps and defining the milestones



Nuclear technology and applications , IAEA

The IAEA assists its Member States in using nuclear science and technology for peaceful purposes and facilitates the transfer of such technology and knowledge in a sustainable manner to

Fusion reactions take place in a state of



[Five Reasons the Clean Energy Transition Needs Nuclear Power](#)

Nuclear energy ranks among the cleanest power sources when assessed across its entire lifecycle. Lifecycle analyses consider every stage - from uranium mining and fuel fabrication

Fusion energy: Pathway to abundant power

Nuclear fusion is the energy source of stars, including our sun. It occurs when two atomic nuclei, such as hydrogen isotopes, combine to form a



[Scientific, technical publications in the nuclear field , IAEA](#)

The IAEA is a leading publisher in the nuclear field. Its more than 9,000 scientific and technical publications include international safety standards, technical guides, conference proceedings and

[Back to the future: Revisiting the perspectives on nuclear fusion and](#)

Against the backdrop of the revival of the discussion on the role of nuclear fusion in carbon-free and secure energy futures, this paper revisits nuclear fusion technology and its state of



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