

Nuclear Energy

مؤسسة الإمارات للطاقة النووية
Emirates Nuclear Energy Corporation

شركة بركة الأولى ش.م.ع
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شركة نوى للطاقة
Nawah Energy Company



How does it work?

- Nuclear energy is generated by splitting atoms to release the energy held at the core, or nucleus, of those atoms. This process, nuclear fission, generates heat that is directed to a cooling agent—usually water. The resulting steam spins a turbine connected to a generator, producing electricity.

What is Uranium?

- The most common fuel for nuclear power is uranium, an abundant metal found throughout the world. Mined uranium is processed into U-235, an enriched version used as fuel in nuclear reactors because its atoms can be split apart easily.

Where does this happen?

- About 450 nuclear reactors provide about 11 percent of the world's electricity. The countries generating the most nuclear power are, in order, the United States, France, China, Russia, and South Korea.

When did it first happen?

- The idea of nuclear power began in the 1930s, when physicist Enrico Fermi first showed that neutrons could split atoms. Fermi led a team that in 1942 achieved the first nuclear chain reaction, under a stadium at the University of Chicago.
- This was followed by a series of milestones in the 1950s: the first electricity produced from atomic energy at Idaho's Experimental Breeder Reactor I in 1951; the first nuclear power plant in the city of Obninsk in the former Soviet Union in 1954; and the first commercial nuclear power plant in Shippingport, Pennsylvania, in 1957.

Impact on climate change:

- Because operating reactors do not emit any of the greenhouse gases that contribute to global warming, it is considered a climate change solution.
- In the UAE, the introduction of nuclear energy will help our nation to achieve its climate change targets by saving up to 21 million tonnes of carbon emissions every year.

What about radiation?

- There are both natural and artificial sources of radiation that we live with safely every day. Cosmic radiation from the sun is an example of natural radiation. Examples of artificial radiation include medical x-rays and kitchen microwaves.

Are nuclear plants safe?

- The performance records of hundreds of nuclear energy facilities operating in more than 30 countries have demonstrated that nuclear energy is safe. The World Association of Nuclear Operators (WANO) tracks data on plant performance, including safety system performance, fuel reliability and industrial accident rates.

Growth of the industry:

- Nuclear energy is rapidly expanding on a global scale. According to the International Atomic Energy Agency (IAEA), 53 reactors are under construction in 19 countries.

Management of nuclear fuel waste:

- For decades, countries around the world have safely managed used nuclear fuel.
- Once fuel assemblies are removed from a reactor, they are placed in pools at the plant. These pools are lined with concrete and steel. Used fuel pools keep the fuel under water at all times. Cool water circulates through the pool to remove heat. They take about five years to cool down.

What happens next?

- Once the used fuel is removed from these pools, it is stored in special concrete and steel containers called dry casks. These casks can be securely stored on-site at a nuclear energy plant or at an interim or long-term storage facility.