FINULENT SOLUTIONS
PAR EXCELLENCE, PAR KNOWLEDGE

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THE GREEN COVER

INSIDE THE ISSUE

Nuclear Energy

Nuclear energy is a form of energy released from the nucleus. Even though nuclear energy is not renewable energy, it is recyclable. The heat released by fission creates steam that spins the turbine to generate electricity. Which means nuclear energy uses clean energy.

Atoms4Climate

Image CC: cop26_1113

The International Atomic Energy Agency (IAEA) opened the first nuclear-related pavilion between 8–16 November 2022 at COP27[1]. The #Atoms4Climate pavilion is an event focused on how the nuclear community can address the impact of climate change and combat global warming.

The IAEA runs a series of events on six thematic areas, that is energy innovation, energy, oceans, and water, agriculture, and food security.

The events show facts and initiatives and talk about corporations that bring about the positive impacts of nuclear for climate change. The #Atoms4Climate pavilion also supports the nuclear science and technology community by offering a space for associations, government leaders, academia, civil society, and media to encourage innovative ideas for nuclear science and technology solutions.

[1]COP27- COP stands for the 27th Conference of Parties. Countries that signed the United Nations Framework Convention on Climate Change (UNFCCC) attended the summit. COP27 was held in Egypt's Sharm El-Sheikh in November.

AtomicMinds

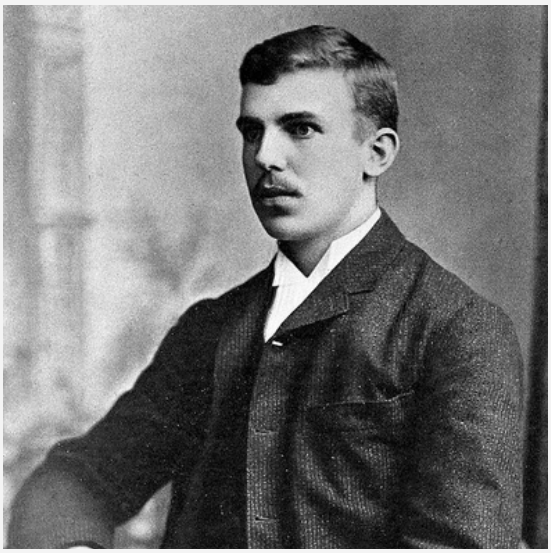


Photo courtesy Flickr

ERNEST RUTHERFORD

The New Zealand-born physicist, Ernest Rutherford is known as the father of nuclear science. Due to his contribution to the theory of atomic structure, nuclear reactors are the heart of any nuclear power plant. Rutherford's atomic model describes the structure of atoms as a tiny, dense, positively charged core called a nucleus.

"NUCLEAR POWER IS ONE HELL OF A WAY TO BOIL WATER." ALBERT EINSTEIN

ED MCGINNIS

McGinnis worked in the U.S. Department of Energy from 1991 to 2020 and currently is the Chief Executive Office of a startup called Curio[1]. He is dedicated to unlocking nuclear energy's full potential and the developments made by Curio are ushering in the second nuclear era to great heights.

[1]Curio is a nuclear innovation and technology development company.

Photo courtesy Curio

NucleiInside

This section dives deeper into the nuclear reactor to show what goes into the making of nuclear fission.

Uranium

A nuclear reactor uses uranium for fuel which processes it into small ceramic pellets and is stacked together into sealed metal tubes called fuel rods. Over 200 of these rods are bundled together down a fuel assembly.

Nuclear Fuel Assembly

A structured group of fuel rods that are long, slender, metal tubes containing pellets that are made of uranium oxide.

Nuclear Fission

During nuclear fission, a neutron collides with uranium atoms that split it. This releases large amounts of energy in the form of heat and radiation. When the uranium atom splits, more neutrons are released which continue to collide with the uranium atoms.

The Coolant

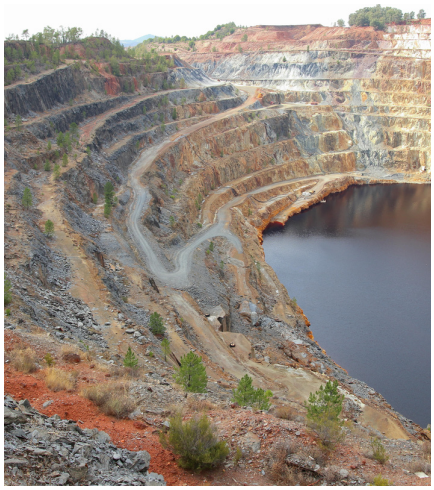
A coolant plays a crucial role in a nuclear power plant because the coolant fluid enters the core at a low temperature and leaves at a high temperature. This high-temperature fluid is directed to conventional thermodynamic components where the heat is converted to electric power.

UraniumVerse

Cigar Lake

Cigar Lake based in Saskatchewan, Canada has the world's top uranium mines. It is famous for having the highest-grade uranium mine with an average grade of 14.69% U3O8[1]. Cigar Lake was commissioned in 2014, it later began its commercial uranium production in 2015. It accounted for 10% of global uranium output in 2021.

[1]U3O8- Uranium oxide



Husab

The Husab open-pit uranium mine in Namibia is owned by Swakop Uranium. It is a partnership between China and Namibia. According to the Nambia Uranium Association, Husab represents China's largest investment in Africa. As of 2021, the operation accounted for 7% of global uranium production.

WHAT IS URANIUM?

Uranium is a heavy metal that is used as a source of energy for over 60 years. It occurs in most rocks in concentrations of 2-4 parts per million and is common in the earth's crust as tin, tungsten, and molybdenum.

With technology constantly improving, there are new inventions that are taking nuclear energy to new heights.

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Uranium is present in low concentrations in rock, soil, and water. It is commercially extracted from uranium-bearing minerals such as uraninite.

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