

THE ANATOMY OF A NUCLEAR POWER STATION

There have been many debates surrounding nuclear power but how much do we really know about how it is produced? Let's take a look inside a nuclear power station to find out more.

1

NUCLEAR OVERVIEW

Around 20% of the UK's electricity is generated by nuclear power - a source which is growing in popularity across the world, as it has lower greenhouse emissions and is more reliable and efficient.



2

THE NUCLEAR PROCESS

Nuclear power is generated in much the same way as fossil fuels energy. Below we explain the nuclear process in a pressurised water reactor from start to finish.

STEP 1

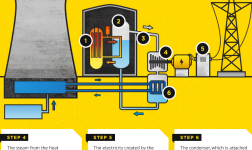
Enriched uranium is arranged into bundles in rods which are submerged in water inside a pressurised vessel. An external pressure ensures the water always remains in a liquid state.

STEP 2

Nuclear fission occurs in the rods, generating heat which passes through into the steam generator. Control rods are inserted in between the bundles to control the pace of the reaction.

STEP 3

Water is constantly pumped through the reactor to collect heat. A heat exchanger then takes water from the system and uses it to create steam.



STEP 4

The steam from the heat exchanger is used to spin a turbine at high speed. The spinning turbine, connected to a generator, creates electricity.

STEP 5

The electricity created by the turbine and subsequent generator is then pushed out to the electrical grid. Remaining steam is pushed to a condenser.

STEP 6

The condenser, which is attached to a cool water source and cooling tower, converts the steam back to water which is pushed back into the steam generator to continue.

3

THE MOST POWERFUL REACTORS

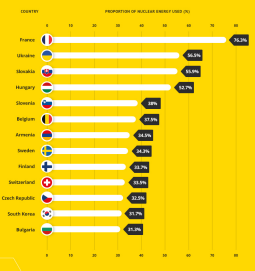
Below are the world's current most powerful nuclear power stations listed by output.



4

NUCLEAR POWER AROUND THE WORLD

We list below the top countries that derive most of their electrical energy from nuclear.



5

HINKLEY POINT C

This new nuclear power station is set to deliver 7% of the UK's electricity.

WHAT?
Hinkley Point C will be the UK's first new nuclear plant in 30 years. It will power around 5 - 6 million UK homes with safe, affordable, low-carbon electricity.

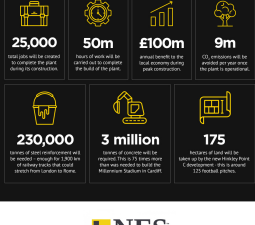
WHEN?
It is expected to begin generating electricity in 2025 and will be capable of generating 3,200GWh. It will be the largest construction site in Europe.

WHERE?
It will be located on the north Somerset coast in the south-west of England. It is being built next to two existing facilities - A and B - Hinkley A has been decommissioned and B is due to be in 2025.

WHY?
The low-carbon electricity will help towards the UK's climate goals and new nuclear makes the UK less reliant on imported energy.

HOW MUCH?
It will cost £1.8bn to build it, which will be financed by the French utility company EDF and Chinese investment, via the CGN group will cover one-third.

KEY STATISTICS



SOURCES

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