

With the closure of the last coal-fired power station in the UK, it raises questions about how old fossil fuel infrastructure can be repurposed. One option is to use them to store energy from renewables. The UK's last coal-fired power station is shutting down for good. As of 30 September 2024, the turbines at the Ratcliffe-on-Soar power plant in Nottinghamshire will fall silent while smoke and steam will cease to belch from the chimney and cooling towers that dominate this part of the landscape.

The power station, which has been operating since 1967, is to undergo a two-year decommissioning and demolition process. It's a symbolic moment, marking the UK's journey to decarbonisation and net-zero. For centuries, coal was the main source of energy in the UK, powering steam engines and much of the country's electricity. By the 1960s, nearly 90% of the UK's electricity came from coal. Now, for the first time, the UK will not use any coal to generate electricity.

It's unclear what the Ratcliffe-on-Soar site will become. Suggestions include housing a prototype fusion reactor or some other green industry. **However**, the question of what to do with closed fossil fuel plants will continue. One option is to turn old fossil power plants into battery storage sites.

Renewable energy sources like wind and solar are the mainstay of the net-zero transition. They don't emit greenhouse gases, so replacing fossil fuels like coal and gas brings us closer to net-zero emissions. The share of energy from renewables is increasing. According to a report by the International Energy Agency, renewables will generate 33.5% of global electricity this year and could account for 41.6% by 2028. However, renewable sources are intermittent and less controllable, unlike coal and gas plants, which can be turned on and off at will.

To some extent, the intermittency problem can be managed by having a diverse selection of renewable sources. Countries are also investing heavily in energy storage. When a lot of electricity is generated but not needed, it can be stored for later use. Battery energy storage systems (BESS) store excess electricity, ready to be discharged when demand is high.

For many decades, the most important form of energy storage was pumped hydropower. However, hydropower won't be enough for the renewable era. That's why many countries are turning to battery energy storage systems (BESS). A BESS site is simply an array of large batteries. Excess electricity from renewable sources can be stored in these batteries and used when demand rises.

All of this explains why one of the UK's defunct coal plants is being turned into a BESS site. Near Ferrybridge in West Yorkshire sit the remains of three coal-fired power plants. The third station, Ferrybridge C, was closed in 2016. Now, energy company SSE is building a BESS on the site. It will have a capacity of 150 megawatts, enough to power 250,000 homes. Construction began in 2023, and the first batteries arrived in 2024.

Building a battery array on an old coal-fired power station has advantages. First, there's already a grid connection there. **Also**, the site has materials and infrastructure that can be reused, reducing the need to import many materials apart from the batteries. More of these projects will be needed to achieve the UK's

decarbonisation goals. According to a report, the UK had 4.7 gigawatts of battery storage capacity in 2023. But the UK will need storage of between 29 and 36 gigawatts by 2050 to meet its targets.

Many more BESS sites are planned. In 2024, plans were approved for new BESS facilities in various parts of the UK. Disused power stations are a tempting option for BESS development because of their existing infrastructure. SSE is already building a second BESS at Fiddler's Ferry in Cheshire, which closed in 2020.

Nevertheless, not all former fossil fuel power stations are suitable for BESS. It depends on the location. Some may be more suited to wind farms or charging sites for electric vehicles. Many former fossil fuel power plants around the world are being repurposed for batteries. In Germany, a coal plant is being turned into a green energy hub. In Australia and Nevada, old coal plants are being converted into battery storage facilities.

The more projects like these come online, the better the technology will become, improving efficiency and ensuring a stable electricity supply after all fossil fuel plants are shut down for good.

1. Synonym Search:

Find synonyms for the following words from the text.

Closing down

Convert, reuse

Irregularity

Pollutants

Facilities

Shift

2. True or False: State if the following sentences are true or false based on the text. If false, correct the statement.

1. The last coal-fired power station in the UK will be shut down by September 2025.
2. The intermittency of renewable energy sources is one of the major challenges of the net-zero transition.

3. The battery energy storage system (BESS) at Ferrybridge C can power 100,000 homes.
4. There are no plans to convert former fossil fuel power stations into energy storage sites.

3. Fill in the blanks: Complete the following sentences with the appropriate words from the text.

1. The last coal-fired power station in the UK is set to undergo a two-year _____ and _____ process.
2. Renewable energy sources like wind and solar are key to achieving _____ emissions.
3. Battery energy storage systems (BESS) store _____ electricity to be used when demand is high.
4. The site of the Ferrybridge C power station will house a BESS with a capacity of _____ megawatts.

4. Comprehension Questions: Answer the following questions in complete sentences.

1. What is the significance of the Ratcliffe-on-Soar power plant shutting down?
2. What is the intermittency problem with renewable energy sources?
3. How are disused coal plants being repurposed in the UK?
4. Why is the construction of battery energy storage systems (BESS) increasing?

5. Paraphrasing: Rewrite the following sentences from the text using different words.

1. The UK's last coal-fired power station is shutting down permanently, ending an era.
2. Renewable energy is intermittent, meaning it is not always available when needed.
3. Battery energy storage systems help store surplus electricity for future use.

7. What's the Meaning of the Following Connectors?

However,

Also,

Nevertheless,

8. Summary:

Write a short summary of the text in 4-5 sentences.