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Nuclear: Trawsfynydd site could pioneer Rolls-Royce mini reactor

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Wylfa nuclear power project





Could a new nuclear power site come to Wales?

There is a "pretty high probability" that Trawsfynydd could be the site of the UK's first small nuclear power station, says the company hoping to build it.

Engineering giant Rolls-Royce wants to build a network of mini-reactors, a third of the size of current stations.

It hopes to strike a deal with the UK government within the next year.

But it says the site of the old Gwynedd reactor ticks all the boxes to pioneer the technology.

If it goes ahead it would also be one of the first small modular reactors (SMRs) in the world.

Meanwhile, a leading industry figure - who is leading the company decommissioning the old Trawsfynydd and Wylfa stations - told BBC Wales that nuclear power must be part of the energy mix if more electric cars are to be seen on our roads.

How would SMRs work?





The BBC's Roger Harrabin explains how small nuclear reactors might work - using bags of rice

SMRs are far cheaper and faster to build than large nuclear power plants as they're built off-site and then assembled at the locations.

Each would operate for 60 years and would provide 440 MW of electricity, according to Rolls-Royce, which is enough to power Cardiff, Swansea and Newport combined.

Some question whether the SMR model will prove economically viable even taking into account the potential for selling the design and technology to other countries.

Rolls-Royce chief technology officer Paul Stein said the nuclear physics would be exactly the same as with large scale projects but at the fraction of the cost.

"So radical is the cost reduction that we're now in the territory of having nuclear power at the price of wind," he said.



Rolls-Royce said it has been working on developing its SMR programme since the 1990s

Although it would take less time and use fewer construction workers, the company would be building more of them, with plans for up to 16.

The project aims to have the first power generated within eight to 10 years.

"There's a pretty high probability" that Trawsfynydd could be the first, said Mr Stein.

'Pros and cons'

"With so-called brownfield sites - where there has been a nuclear reactor, we know the local population is happy, there is a skilled local population that used to run the plant, there's a grid connection and the seismic condition of the site," he added.

"All those are ticks in every box. And Trawsfynydd is a great first site for the SMR. Right now the jury's out, there are a number of great sites around the country but two of the three sites are in Wales."

Around 200 people are currently employed at Trawsfynydd and a small nuclear reactor, SMR, could result in up to 600 jobs in the area according to the Snowdonia Enterprise Zone.

Rolls-Royce cannot put an exact figure on it yet but it hopes 40,000 people across the UK would be employed in building and operating them.

Local councillor Elfed Roberts said good quality work was needed in the Trawsfynydd area but it had to be right.

"We have to look at it carefully," he said. "Any work is welcomed in this area - especially for our young people - but we have to balance it with safety. We need to do more homework and decide very carefully after looking at the pros and cons."

Rolls-Royce also believes it could build an SMR at Wylfa.

But the idea of SMRs at Wylfa has been rejected by energy company Horizon, which is looking to build a full-scale nuclear power plant on Anglesey.

What is going on at Trawsfynydd now?



Trawsfynydd's two reactors began production in 1965

BBC Wales was given exclusive access to Trawsfynydd to see the decommissioning process.

- It stopped generating electricity in 1993 and 99% of the waste from the site had been transferred within two years.
- The remaining material is classed as "intermediate level" and "low level" waste.
- The intermediate level material at Trawsfynydd is being taken from underground storage.
- It's then washed, encased in metal, covered in concrete and stored in a facility at Trawsfynydd until a more permanent solution is found.

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Angharad Rayner - behind her a vehicle is being operated remotely to retrieve waste cladding from underground vaults

Angharad Rayner, site director, said: "We work 12 hour days at this plant throughout the week and get about two boxes processed each week."

The UK government is currently planning to create a Geological Disposal Facility where radioactive material will be stored underground.

Gwen Parry-Jones, who is from Anglesey, is the chief executive of Magnox, the company responsible for the decommissioning of older nuclear plants including Trawsfynydd and Wylfa.

She told BBC Wales she accepted that waste is a concern for people and that the industry hasn't always been as transparent and as open as it could have been but she believed times had changed.

She added that Magnox takes its responsibility seriously in decommissioning Trawsfynydd, which includes lowering the size of the reactor towers, to make sure it's safe and able to be put to future use.

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Ms Parry-Jones was appointed as the chief executive of Magnox in March 2019 having previously been a director at Horizon Nuclear Power with responsibility over the development of Wylfa Newydd.

That project has been mothballed due to construction costs though the planning process for it is continuing.

Ms Parry-Jones argues that nuclear offers zero carbon electricity which is more reliable and more storable than renewables and is greener than gas.

"What I see [with the nuclear industry] is zero carbon electricity, so if we want to electrify cars, to electrify our heating, we're going to need to get our electricity from somewhere and for me nuclear power is part of that answer," she said.

Opponents of nuclear power however believe it is inherently dangerous, the legacy of radioactive waste is a price not worth paying and that the focus should be on cheaper, safer renewables.

ROLLS-ROYCE

An artist's impression of how a SMR would look

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