

Press Release July 20, 2022

Grid stability technology, without the need to generate power, comes into operation at Uniper's Killingholme site

- Dedicated grid stabilisation technology, without the need to generate power, comes into operation at our Killingholme power station site.
- Uniper will be the biggest provider of dedicated inertia and voltage control, delivering services up to 2026 under Phase 1 of National Grid ESO's Stability Pathfinder, when this technology also becomes operational at Uniper's Grain site later this summer.
- Grid stabilising services will be delivered by Uniper to National Grid ESO, enabling the introduction of more renewable generation onto the system.
- Investment in these innovative solutions demonstrates Uniper's ongoing commitment to meeting the challenge of a net zero carbon future.

Uniper UK Limited Compton House 2300 The Crescent Birmingham Business Park Birmingham B37 7YE www.uniper.energy

For further information please contact:

Sonia Luck Senior PR Manager T: +44 121 329 4404 M: +44 797 616 8356 E: Pressoffice.uk@uniper.energy Out of hours Press Office: 0121 329 4567

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Custom designed, rotating grid stability technology, has come into operation at our Killingholme power station site in Lincolnshire.

Uniper is now delivering its dedicated grid stability services to the British electricity system operator National Grid ESO.

This solution, developed by working closely with Siemens Energy, will make an important contribution to maintaining a stable power system, by keeping the electricity supply at the required frequency as more renewable generation comes online.

Uniper appointed Siemens Energy in 2020 to install and commission two synchronous condenser units at Killingholme. This included the repurposing of two steam turbine generators and installing flywheels at the site. These units are connected to the existing grid connections on site.

The technology will allow Uniper to deliver essential grid stabilising services to National Grid ESO without the need to generate power. Up to now thermal power stations, with their large spinning generators, have provided inertia as a by-product of generating electricity. However, managing grid stability has become more challenging for National Grid ESO as renewable generation is not connected to the grid in the same way and cannot provide inertia.

Uniper was awarded four six-year contracts by National Grid ESO in 2020, to provide inertia services and voltage control to the grid under phase 1 of its Stability Pathfinder at our Killingholme and Grain sites. Once both facilities are online, we will be the largest provider of inertia services under this contract, keeping the electricity system in Great Britain stable.

Mike Lockett, Uniper UK Country Chairman and Group Chief Commercial Officer Power, commented:

"It's a great achievement to see the first of our synchronous condensers become commercially operational at Killinghome. The services we provide to the National Grid ESO will play an important role in helping deliver the UK's net zero ambitions, by maintaining grid stability and security of energy supplies, whilst enabling more solar and wind power to come onto the grid in the future.

Our investment and innovative solutions at our sites, puts Uniper at the forefront of this market. We look forward to the successful delivery of two more synchronous condenser units in the summer at our Grain site in Kent - a further demonstration of Uniper's ongoing commitment to meet the challenge of a zero-carbon future."

Julian Leslie, Head of Networks National Grid ESO, added: "The ESO operates the fastest decarbonising electricity network in the world. These new grid stabilising services are critical for the future management of the network and will help us reach our goal of zero carbon grid operation by 2025.

Building a green system with enough inertia is an engineering challenge for system operators worldwide but technology such as this is helping us to solve this challenge."



Steve Scrimshaw, VP at Siemens Energy UK & Ireland, said: "The UK Energy Strategy puts homegrown renewables, especially offshore wind, at its heart. This is great for the planet. We must ramp up renewables to deliver our net-zero targets. However, the shift to renewables does pose challenges for grid stability.

The intermittent nature of renewable energies, means that grid stabilisation technologies, like synchronous condensers, will play an increasingly important role for a successful energy transition. Through this project we've designed an innovative solution that helps tackle this issue. It's great to see Uniper pioneering this technology.

We need to see more projects that enhance grid stability and resilience if we are to master the energy transition."

Notes to editors:

What is inertia and why is it needed?

The National Grid Electricity System Operator (NGESO) must maintain the electricity system at 50 Hz in order to keep power supplies secure. In the UK, electricity is generated at power stations at the same frequency. Rapid changes in the frequency of electricity can create instability in the system if demand for power exceeds supply, or there is too much power being supplied to the system. If this breaches a certain limit, this can cause equipment and domestic appliances to disconnect or be damaged, as well as power cuts. Inertia in the energy system slows down the rate at which frequency changes, helping the grid to remain stable at the right frequency and voltage level. The more inertia in the system, the slower the change in frequency, which gives the grid operator more time to react and manage system stability effectively.

As we move towards a net zero future and more of our electricity is generated from renewable sources, one of the challenges for the energy system operator is how to replace the inertia services that are, in the main, provided as a by-product of thermal generation. The new and repurposed synchronous condenser units at Killingholme and Grain will consist of a large piece of spinning machinery which connects to the grid but doesn't generate any power. Instead, the mass of the generator, connected to a flywheel rotating 3,000 times per minute, retains kinetic energy, known as inertia, in the electricity system, which helps the grid remain stable at the right frequency and voltage level.

About Uniper

Uniper is a leading international energy company, has around 11,500 employees, and operates in more than 40 countries. The company plans for its power generation business in Europe to be carbon-neutral by 2035. Uniper's roughly 33 gigawatts of installed generation capacity make it one of the world's largest electricity producers.

The company's core activities include power generation in Europe and Russia as well as global energy trading and a broad gas portfolio, which makes Uniper one of Europe's leading gas companies. In addition, Uniper is a reliable partner for communities, municipal utilities, and industrial enterprises for planning and implementing innovative, lower-carbon solutions on their decarbonization journey. Uniper is a hydrogen pioneer, is active worldwide along the entire hydrogen value chain, and is conducting projects to make hydrogen a mainstay of the energy supply. The company is based in Düsseldorf and is one of Germany's largest publicly listed energy supply companies. Together with its main shareholder Fortum, Uniper is also Europe's third-largest producer of zero-carbon energy.

About Uniper UK

In the UK, Uniper owns and operates a flexible generation portfolio of seven power stations, a fast-cycle gas storage facility and two high pressure gas pipelines, from Theddlethorpe to Killingholme and from Blyborough to Cottam. We also have significant long-term regasification capacity at the Grain LNG terminal in Kent, to convert LNG back to natural gas.

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