

Centrica

CASE STUDY



Gas engine plants support the UK's need for fast-starting flexibility

The rapid growth in renewable energy in the UK has increased the need for flexible power to balance the electricity grid. Wärtsilä has worked closely with energy and services company Centrica to provide the changing market with flexible energy, helping tackle the issues created by intermittent renewables and supporting the transition to a low-carbon energy system.

In the UK, the energy system is becoming increasingly distributed and low-carbon due to the growing share of renewables and old baseload plants closing across the country. This development has been driven by government policies and advances in technology. In 2017, the UK saw the greenest year in its history in terms of energy generation and the government is working towards seeing all of the UK's remaining coal power stations closed by 2025.

“The under two-minute start up time is a rare feature and very important to the UK grid.”

Mark Futyan, Distributed Power Systems
Director, Centrica Business Solutions

“Energy storage technologies and advanced energy management software will become an inevitable part of the power system in shifting and optimising energy within the day. For years to come, there will also be a need for gas powered plants and other flexible generation to ensure power system reliability when renewable energy is not available.”

Bent Iversen, Senior Business Development
Manager, Wärtsilä Energy Solutions.

While the increasing use of renewable power is reducing the country's carbon footprint, these new sources of energy also need sufficient and reliable back up capacity for balancing the grid. One way to do this during peak times is to have power sources that can be switched on rapidly to ensure that the country doesn't shut down.

Wärtsilä has delivered two 50 MW power plants to Centrica, a British multi-national energy and services company. Both these plants, based on five Wärtsilä 34SG engines and running on natural gas, will balance the stability of the grid. The two-minute, fast-starting flexibility of the Wärtsilä solution will aid with local peaks in demand and the inevitable fluctuations in supply from renewable sources. This operational flexibility provided by Wärtsilä ensures that energy is available when the supply from renewables drop.

Centrica's two plants are located in Brigg in North East Lincolnshire and Peterborough in Cambridgeshire. They are the biggest medium-speed engine-based gas power plants in the UK, offering electricity for about 100,000 households in less than two minutes after they've been switched on.

Wärtsilä has delivered engineering, procurement and construction (EPC) for both sites, bringing Wärtsilä's installed capacity in the country to over 250 MW.

Flexible to be stable

Mark Futyan, Distributed Power Systems Director from Centrica Business Solutions believes that fast-response plants are crucial for the country's energy transition.

"As we utilise more and more renewable and distributed power sources, the situation gets increasingly difficult to manage," he notes. "It's a common trend everywhere, but particularly in regions where renewables are prevalent."

Thus, Centrica's strategy recently has been to focus on providing flexibility in order to keep the grid stable. When looking for partners for the Brigg and Peterborough projects, the company wanted to find someone with a solid track record of delivering quality products safely. Wärtsilä, in Futyan's words, ticked all the boxes. "The under two-minute start up time that Wärtsilä's solutions deliver is a rare feature and very important to the UK grid," Futyan says.

"The UK is the leading country in shaping the electricity markets and Centrica is one of its leading operators. Today, renewable power sources provide roughly a quarter of the country's total generation capacity, compared to five percent in 2006, and the share is increasing all the time. To support this trend, fast-starting, flexible generation is essential," adds Bent Iversen, Senior Business Development Manager, Wärtsilä Energy Solutions.

In the same boat

The co-operation between the two companies has been running smoothly throughout the project. According to Futyan, the close collaboration ranges from senior management to staff on the ground.

"We have been working in a shared office at the site and are collaborating well at all levels, including working together on sourcing future investment opportunities."

Futyan notes that the market has changed in the past few years, as many other firms have tapped into the opportunities brought about by the need for flexible energy generation. This has increased competition and brought down power plant operating costs.

CUSTOMER

Centrica

TYPE

Wärtsilä 34SG gas power plant

OPERATING MODE

Fast reserve and balancing markets

GENSETS

2x5 Wärtsilä 20V34SG

TOTAL OUTPUT

2x50 MW

FUEL

Natural gas

SCOPE

EPC (engineering, procurement and construction)

DELIVERY

2018



THE CHALLENGE	WÄRTSILÄ'S SOLUTION	BENEFIT
Balancing the intermittency of renewable power sources	Adding flexibility to the grid with two 50 MW engine-based power plants	Enabling the growing share of renewables
Need for quick responding power supply during demand peaks	Power plant with under two-minute start up time	Stable and balanced grid at all time
Transition towards a low-carbon energy system	Flexible capacity enabling the growing share of intermittent renewables	Greener energy and reduced carbon footprint in the UK