

CASE STUDY

Project:	Thanet Offshore Wind Farm
Country:	UK
Project value:	Various
Year:	2010
Product:	Automatic Voltage Regulators



Regulators for massive offshore wind farm

The Thanet Offshore Wind Farm, consisting of 100 wind turbines, is located in the North Sea just off the Kent coast. The wind farm has a total output capacity of 300 megawatts, which is enough to supply over 240,000 homes. The output arrives on shore at a sub station, where two Sollatek automatic voltage regulators ensure that only fully stabilised power passes through to the substation control centre.

The Thanet offshore site will, when completed, be the largest operational offshore wind farm in the world. With 100 Vestas V90 wind turbines producing carbon-neutral, renewable electricity.

Owned by Vattenfall, one of Europe's leading energy companies, the wind farm covers an area of 35 square kilometres and is located approximately 12 kilometres north east of Foreness Point, the eastern tip of Kent. Each turbine sits atop steel monopiles sitting in water depths between 20 and 25 metres and rises to 115 metres tall at its highest point.



Source: Wikipedia Thanet offshore turbines



Sollatek AVR3x450

The output from the turbines is fed to an offshore substation constructed by Siemens and currently the largest of its kind in the world. The substation houses two 180 MVA power transformers that then boost the voltage from 33,000 volts to 132,000 volts. Sub-sea cables carry this power to a new onshore high voltage switching station located on the site of the now decommissioned Richborough power station, from where power will be fed into the grid network.

Regulated power output

The two Sollatek Automatic Voltage Regulators (AVRs) regulate the supply to the control equipment and ancillary appliances of the onshore substation. The new substation houses an auxiliary 11,000 volts to 400 volts step-down transformer that feeds the Sollatek 3-phase AVRs, each of which is rated at 450 amps per phase.

The Sollatek AVRs regulate the 400 volts three phase supply into the site's LVAC distribution board but only one AVR will be in operation at any one time, with the other acting as a switchable back up.

All Sollatek AVRs employ high performance solid state technology, which not only makes them ultra-fast at correcting voltage variations but also much less expensive than other stabiliser technologies that use mechanical systems. The compact design also means that they are virtually maintenance free and offer a longer operational lifetime.

Leading technology

By using microprocessor technology, Sollatek AVRs can rapidly detect voltage variations and correct the output to ensure a steady supply. They allow a very wide input range (from -30% to +22% of the nominal voltage level) and have a voltage correction speed of 1250 V per second.

Sollatek are a world leader in the field of voltage regulation and protection, So wherever the electrical supply is erratic or unreliable, Sollatek has the ideal solution for protecting industrial, commercial or domestic installations.



Source: London Array Thanet offshore turbines



Voltright™

The Sollatek AVR Range

The Sollatek range of Automatic Voltage Regulators covers single and three phase applications. From small domestic (250 watt) to large industrial 500kVA applications, single and three phase applications, the Sollatek range of voltage regulators is your solution in the most erratic of power conditions.



AVR single phase

AVR three phase

AVR three phase OI