

## Didcot Power Station – Gas Turbine Compressor Cleaner Comparison

RWE owns, operates and maintains a 1440MW combined cycle gas turbine power station at Didcot in the United Kingdom. It commenced commercial operation in 1997.

The power station is configured with 2 modules each with 2 Siemens SGT5-4000F Gas Turbines and 2 Siemens Dual-Casing Condensing Steam Turbines.

A requirement of the operating and maintenance procedure is that the gas turbine compressors are cleaned on a regular basis by a combination of online cleaning, daily with demineralised water and using detergent about every 100 hours and offline cleaning, about every 1000 hours.

In 2018 a comparison of the then cleaner (Cleaner A) and TURBOTECT 2020 was carried out. The two GTs used for the comparison had been cleaned on-line and off-line for 4 years with Cleaner A. From inspections carried out prior to the test the condition of the compressors and in particular the degree of fouling was judged to be very similar. One GT continued to be cleaned on-line and off-line with Cleaner A and the other GT was on-line cleaned with Cleaner A and off-line cleaned with TURBOTECT 2020, both for a further period of 9 months. At the time of a major overhaul of the two GTs the compressor vanes were inspected. Below are photographs of 4<sup>th</sup> stage vanes from both GTs



GT1, 4th stage vane, pressure side  
On- and off-line cleaned with Cleaner A



GT2, 4th stage vane, pressure side  
On-line cleaned with Cleaner A  
Off-line cleaned with TURBOTECT 2020

The vane surfaces of the pressure side of GT1 were found to be fully covered with hard hydrocarbon deposits of about 2mm thickness. In comparison, only patchy hydrocarbon deposits were observed on the vane surfaces of GT2.

Due to the findings of the inspection following the nine months comparison study, Turbotect 2020 is now used throughout the station for on-line and off-line cleaning.

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