

16th October 2009 – Statement relating to Temporary Suspension of the QR5 fleet

Quiet Revolution's ability to monitor and control its entire fleet proved its worth in recently managing a controlled shutdown of a faulty turbine. The unique system enabled to the company to quickly and safely, temporarily suspend operation of the fleet whilst it investigated the cause, which was quickly identified as a potential serial defect to a seal in a mechanical fitting.

The following note describes in more detail the nature of the fault and the actions we are taking to put the full fleet back into operation.

Mechanical fault detected:

On Friday 28th August a qr5 turbine installed on an extreme coastal site developed a mechanical fault in winds that had been continually over 14m/s for over 16 hours, with gusts up to 24m/s. The qr5 safety system detected the fault at 16:09:05 and immediately shut down the turbine and disabled it from further operation. The safety system operated as designed to bring the rotor from its maximum speed of 260 RPM to stationary in under 5 seconds.

The turbine control system informed our operations team immediately regarding the turbine shut down. The type of fault detected requires a visual inspection of the rotor prior to restarting the turbine and restarting accidentally is not possible.

Details of the fault:

The mechanical fault allowed one of the turbine blades to start to separate from the central spoke. The effect of this slippage meant that the spinning rotor became out of balance and this was detected by the accelerometers, which signaled to the turbine control system to apply the emergency brake thus shutting down the turbine.

The blade was prevented from becoming detached, despite the storm winds, as the qr5 turbine is fitted with further safety features, including a cable that restrains the blade in any unforeseen event. The primary reason for incorporating the safety cable is to prevent the possibility of dropping blade parts in the event of a major impact on the rotor.

The blade slippage was caused by a corroded pin. However the root cause, as is often the case, was not the point of slippage. The corrosion was caused by a poorly fitted seal that allowed salt-water ingress.

Quietrevolution response to the fault:

The faulty part and blade were removed from the rotor on Saturday 29th August and detailed inspections were undertaken on Monday 31st August.

quietrevolution has the ability to stop and start the entire fleet of rotors remotely, following any fault detection. As a responsible company we acted prudently to disable the entire fleet whilst investigations were undertaken.

Since the event quietrevolution has sent three updates on the incident and progress towards identifying the fault and implementing a solution to all our existing customers.

quietrevolution is implementing the fix on all rotors across the fleet whether they are showing signs of the fault or not. This includes all rotors, whether they are in or out of Warranty.

Details of the engineering design change:

- We have redesigned the part that corroded and all turbines will be retrofitted with a non-corrosive replacement part
- This replacement part has already been refitted to our captive turbines
- We are undertaking accelerated testing on the replacement part
- We have altered the seal design that lead to the corrosion
- We have amended our factory process to put additional quality control measures and checks in place