

WIND TURBINE BOLTED WELD INSPECTION

Application Brief

Lifetime Extension Project - NDT Inspection Services

MISTRAS Group was successful in tendering for Nondestructive Testing (NDT) inspection services of the bolted connections and welds of two onshore wind farms located in the UK that are part of a Lifetime Extension project for a large owner operator.

Problem

With the client's windfarms approaching the end of their original design life, they now require an inspection program to assess tower welds, bolted connections, and blades to ensure that the structural integrity of the wind turbine has not deteriorated.

All inspections required are at-height and either coated steel or composite materials.

Process/Solution

MISTRAS reviewed the client's scope of work to determine the best inspection method(s) to assess the actual condition of the turbine elements requiring inspection / NDT. We offered the client various options and developed the necessary project specific

procedures, method statements, and risk assessments including:

- Manual Ultrasonic Testing (UT) of welds and bolted connections.
- Eddy Current (ET) of fillet welds and Magnetic Particle Inspection (MPI) back up.
- Phased Array Ultrasonic Testing (PAUT) of blade leading and trailing edges.

MISTRAS provided a 3 man multi-disciplined rope access team, PCN / IRATA / GWO compliant to deliver the scope of work.

The team delivered detailed inspections and reports.

These NDT inspections help assess the structural condition of wind turbines and the reports provide the client with the evidence to justify the continued, safe operation of the windfarm, or identify any significant defects that require repair and/or monitoring.



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More About MISTRAS Wind Energy Services

MISTRAS Wind Services offer a full and complete suite of inspection, repair, and monitoring services from structural monitoring of blades to condition monitoring of nacelle and monopile, to visual, photographic, and video inspection. Our experienced teams have worked alongside the world's largest energy providers on projects that include London Array, Gwynt y Mor, Walney, LINCS, West of Duddon Sands, Horns Rev, and Lillgrund.

MISTRAS is working in partnership with the best wind technicians in the industry to service blades, towers, and monopiles with solutions including:

- Internal, external and EOW inspection
- Ultrasonic rotor blade scanning
- Laminate and coating repair
- Construction assembly support
- Inspection and installation of LPS
- NDT
- Global Wind Training Center
- Structural Monitoring of piles, foundations and towers
- Condition monitoring of low-speed bearings
- Repair and installation of blade protection and aerodynamic systems

Products and Services Supplied

- Eddy Current Testing (ET) [Welds]
- Magnetic Particle Inspection (MPI)
- Ultrasonic Testing (UT) [Manual] Bolts and Studs
- Ultrasonic Testing (Manual) Welds
- Visual Testing (VT)

Customers Benefits

- To ensure the structural integrity has not substantially deteriorated over the wind turbine's current lifetime.
- The outcome of the inspection reports will determine the client's action plan for remedial works and strategy for determining the expected lifetime extension of the structure.

