SERVICE OFFERING

Rolls-Royce

Inspection and Non-Destructive Examination Services

COMMISSIONING AND IN-SERVICE SUPPORT

Rolls-Royce provides a comprehensive range of manually operated to fully automated inspection and non-destructive examination services for all phases of a nuclear reactor lifecycle.

With over 40 years of experience supporting the UK Royal Navy nuclear Submarine fleet and worldwide in-service support to civil nuclear plant, Rolls-Royce offers a comprehensive range of integrated surface inspection, non-destructive examination (NDE) and condition monitoring services.

Rolls-Royce provides; technique development, inspection manipulator design and development, safety justifications, the production of inspection procedures, on-site implementation and comprehensive analyses of results. Whether it's the remote manipulation of a replicating end-effector or a surface inspection using a dye penetrant, Rolls-Royce offers a holistic service from initial planning through to in-depth analysis of findings and solution development.

Our inspection and NDE services can be implemented manually, remotely operated or fully automated and all solutions are tailored to meet specific customer requirements.

Rolls-Royce is a world leader in the development of innovative NDE and inspection techniques, and always strives to continuously develop both our manufacturing and in-service inspection techniques. We remain at the forefront of this discipline by collaborating and investing with a number of industrial and academic partners:

- Rolls-Royce is a long serving member and active participant in the steering group for the European Network for Inspection Qualification (ENIQ).
- We are a full industrial member of the UK Research Centre in Non-Destructive Evaluation (RCNDE), an EPSRC sponsored collaboration between industry and academia to coordinate research into NDE technologies.
- Rolls-Royce is also working with Imperial College, the University of Strathclyde and the University of Bristol on the NDE aspects of the Nuclear Propulsion Critical Technologies (NPCT) project, to support next generation ultrasonic inspections.

Rolls-Royce not only has the capability to inspect and test components and systems but also the expertise to assess quality systems and procedures. Our extensive experience in inspection development and application, and inspection qualification of equipment, personnel and procedures has contributed to the development of our own inspection qualification body, in accordance with the ENIQ Recommended Practice 7.

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Supporting capabilities

To maintain world-class capability Rolls-Royce acquires and develops innovative technologies for use in the manufacture and in-service inspection of components and systems.

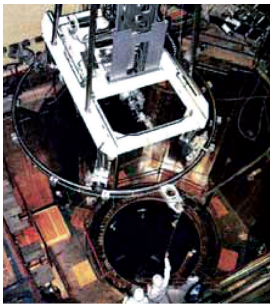
The team has specific expertise in:

- Visual inspection (incl. metallurgical methods)
- Magnetic particle testing
- Dye penetrant inspection
- Phased array ultrasonic inspection
- Ultrasonic inspection
- Eddy current inspection
- Digital radiography inspection
- Surface defect inspection and metallurgical replication
- Underwater replication
- Electromagnetic interference monitoring
- Irradiation damage analysis (3D atom probe)
- Noise and vibration examination (incl. acoustic emission and resonance testing)
- Alternating current field measurement
- Alternating current potential drop
- Composite inspection

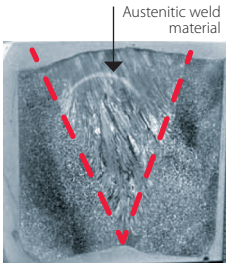
All of our NDT Inspection staff are suitably qualified to PCN standards or above.

Examples/applications

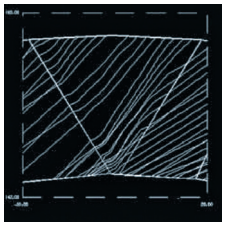
Ultrasonic inspection



Fitting of the manipulator for the ultrasonic 'fingerprint inspection' of Sizewell 'B' Reactor pressure vessel

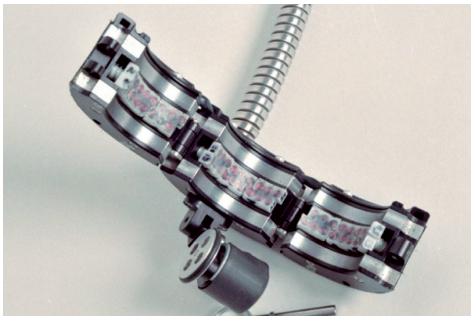


Macrograph of a typical austenitic weld

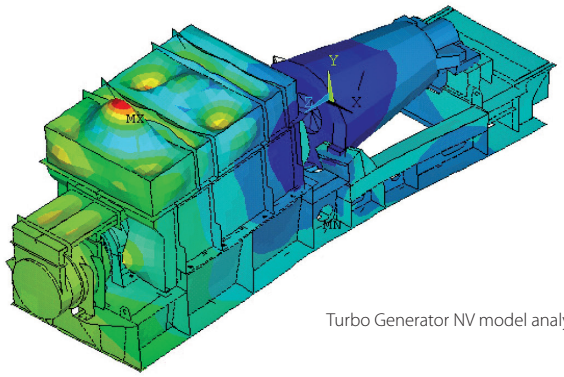


Ultrasonic ray tracing through the weld (opposite)

Noise , vibration and conditioning monitoring



Eddy current examination



Turbo Generator NV model analysis

7406/SO.18/Sep10

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