

# QinetiQ Corrosion Testing Facilities

The QinetiQ Corrosion Control Group offers a range of services to government and industry ranging from long term research to short term consultancy and testing.

## Marine testing site: Portland Harbour, Dorset.

- Atmospheric exposure racks for long term testing of coatings and materials (c. 5m<sup>2</sup> capacity). Varying levels of corrosion severity at different locations on secure site.
- Pontoon raft in tidal harbour for fouling trials and immersion testing of large items. Full strength clean seawater of 34.5‰ salinity.
- Land based covered trough (c. 6m length, 0.3m depth, 0.4m width) supplied with natural seawater from Portland Harbour. Permits in-situ sample monitoring and electrochemical testing.
- High velocity seawater test cell (12.7mm diameter jet operating at up to 30m/s) equipped for electrochemical measurements / impingement erosion studies.
- Pumps available for 50-100mm diameter seawater pipe loops. Circulated and once-through seawater at up to 5m/s can be utilised for equipment testing and chemical treatment studies.



*Marine atmospheric exposure.*



*Pontoon raft in Portland Harbour.*



*Seawater trough outlet.*

# Data sheet

## Farnborough laboratory facilities

- Accelerated corrosion testing for coatings and materials:
  - Continuous or computer controlled cyclic salt fog routines, including ASTM G85 acidified cyclic salt fog test for exfoliation corrosion.
  - UV exposure, controlled humidity and temperature environmental cabinets (up to 1m<sup>3</sup> volume).
  - Kesternich (SO<sub>2</sub>) testing.
- Stress corrosion cracking (SCC) testing using constant strain methods: C-ring, bending or tensile test pieces. Constant load tensile testing rigs.
- Alternate immersion/emersion test rigs (to ASTM G44) located in environmentally controlled room for SCC testing of aluminium alloys to ASTM G47.
- Alternate immersion/emersion testing of paints in buffered sodium chloride solutions to BS EN ISO 15710.
- Coating cathodic disbondment testing to various standards.
- Chemistry laboratory supports accelerated test methods such as:
  - EXCO exfoliation testing of aluminium alloys (ASTM G34).
  - Chloride stress corrosion testing of stainless steels (ASTM G36 boiling magnesium chloride etc).
  - Ferric chloride pitting and crevice corrosion tests (ASTM G48).
  - Copper release rate measurements from antifouling coatings (BS EN ISO 15181).
- Corrosion and chemical testing to Defence Standard 00-35 Part 3- Environmental Tests.
- Vibratory cavitation erosion testing equipment (ASTM G32).
- Abrasion testing of coatings; non-slip deck paint evaluation.
- Comprehensive range of electrochemical techniques allowing polarisation sweeps, galvanic corrosion measurements, and AC impedance studies to be undertaken including the imaging scanning reference electrode technique (SRET).
- Facilities for the development of electroplating, anodising and passivation techniques.
- Computer modelling capability for cathodic protection systems and galvanic corrosion studies.
- Failure investigations using optical and scanning electron microscopy, with X-ray analysis and surface chemical characterisation tools. Supported by a range of non-destructive examination and mechanical properties test equipment for metallic and non-metallic materials.

### Contact:

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