element®

Environmental testing and qualification

Your challenge

Element Materials Technology is a trusted advisor to the aerospace, oil & gas, transportation, defence and industrial sectors. We understand the complexity in delivering your products to meet either your contractual or regulatory environmental product qualification in a global marketplace.

Element is able to support your product qualification testing and compliance needs with a global platform of laboratories and over 60 years of experience. Our network of engaged experts, worldwide capacity and innovative services are designed to meet these challenges, increasing your market share by increasing speed to market, reducing the administrative burden and managing testing costs.

Our solution

We work with manufacturers from the very beginning to understand the challenges of environmental compliance. Through our Early Stage Qualification (ESQ®) and Finite Element Analysis (FEA) services at the design stage, we reduce the risk of product failure by applying our understanding of the environment in which you are looking to operate your product. Our pre-qualification testing services can help increase the likelihood that your product will pass the testing process on the first attempt and remove the potential for future redesign work and associated costs and delays.

We can provide the following test services to meet your requirements:

- Vibration and Shock
- Bespoke Testing
- Climatic Testing
- Highly Accelerated Life Testing (HALT)

Vibration and shock testing

Element has a range of vibration and shock testing equipment that can reproduce low and high frequency conditions that are representative of environments your products may be subjected to. We use a wide range of electrodynamic and hydraulic vibration testing systems, with standard test frames, to apply dynamic vibration test loads suited to any requirement you may need, including:

- Vibration and Shock
- Bench Handling Testing
- Bounce Testing
- Seismic Testing

The standards we commonly test to are:

- RTCA DO-160
- MIL-STD 810
- DEF STAN 00-35
- DEF STAN 08-123
- BS EN 60068
- ETSI EN 300

We have a global capacity of shakers including those that specialise in large and challenging tests and are ideally suited for the testing of products with a large footprint, for example, aircraft actuation systems, mobile power generation systems, aircraft landing gear, in-flight refuelling equipment, aircraft motor drive systems, satellite sub-systems and motorway signage.

Bespoke testing

Element's environmental testing can simulate a wide variety of environmental conditions to help determine a product's reliability. Our bespoke testing covers many diverse aspects, from aircraft ditching and survivability tests, through to jet engine blade fatigue testing and more simple manifold pressure testing. We have a comprehensive range of environmental testing facilities, and combined with our engaged experts and sophisticated testing techniques, this gives us the flexibility to provide bespoke environmental testing solutions that meet your specific requirements, including:

- High Cycle Fatigue (HCF) Testing
- Vibration Testing at temperature
- Fatigue Testing in climatic extremes
- Hydrodynamic Ditching and Flotation Testing

Climatic testing

Element's climatic testing helps to ensure your product will survive in its required transportational, storage and operational environment. Our testing includes environments that simulate hot, cold or humid conditions as well as corrosive atmospheres. We can also simulate the effects of pressure and / or altitude, as well as test ingress protection against sand, dust or water. We can help you by providing the following climatic tests:

- Ingress Protection (IP) Testing of solid particles or liquids
- Temperature and Humidity Testing
- Sand and Dust Testing
- Altitude Testing
- Solar Heating Testing

Climatic tests are performed to either accepted national and international standards or to customer or industry-specific requirements. The standards we commonly test to:

- IEC & BS EN 60068 series
- MIL-STD 810
- DEF STAN 08-123
- RTCA DO-160
- DEF STAN 00-35
- ASTM

Highly Accelerated Life Testing (HALT)

Element's HALT is used to find weaknesses and product stress limits through the techniques of thermal cycling and random vibration step stress. We commonly perform HALT for manufacturers of:

- Electronic products
- Automotive components
- Aerospace sub-assemblies

Electronic products are particularly suited to evaluation by HALT by accelerating time to identify latent defects and inducing failures which could occur in service.

During HALT, your products must be stimulated and monitored to determine when failures occur. Defective units can be repaired and strengthened and then returned for further applications of progressively higher stress levels. By performing HALT we can help you to improve the quality and survivability of your product.

Seismic testing

Element has the industry-leading capacity to meet seismic testing and qualification. We provide validation and consultancy on seismic and earthquake testing, to assist manufacturers with the design, development and qualification of their product destined for seismically active countries and nuclear applications.

We can partner with companies, from the initial stage of a project, providing technical and commercial advice and can assist you with the following tests:

- Single Axis Testing
- Biaxial Testing
- Triaxial Earthquake Testing

These tests are carried out in accordance with national and international standards. The typical seismic test standards we see are:

- ANSI/IEEE 344
- ASCE 7-10/AC 156
- IBC and CBC
- ETSI EN 300 019-2-3
- BS EN 60068-3-3
- ANSI/IEEE 693
- BNFL ET 372
- Telcordia GR-63-Core
- ESTI EN 300 019-2-4
- ANSI/IEEE 323

Why Element?

Element Materials Technology is UKAS accredited to BS EN ISO/IEC 17025:2005, an SC21 signatory company and has a global capacity for environmental testing.

We provide a comprehensive range of aerospace, defence and commercial product qualification testing services for manufacturers to evaluate and qualify the behaviour and performance of their products.

element®

www.element.com