

# EMC & environmental testing of aerospace sub-systems





## Your challenge

**Element Materials Technology is a trusted advisor to the aerospace sector. We understand your evolving technical, operational and commercial challenges and work with you to meet them.**

Aerospace primes and their global supply chain face many hurdles on the road to qualification, not least the use of new materials and increased pressure to save weight. So we support your testing and qualification 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 the challenges of delivering qualification in time for safety of flight deadlines.

## Our solution

We deliver a unique range of wider product qualification testing and validation often required by aerospace manufacturers during qualification, such as:

- Indirect Lightning Testing
- High Intensity Radiated Field (HIRF) Testing
- Altitude Testing
- Engineering Simulation & Finite Element Analysis
- Explosive Atmosphere

This makes Element the natural choice of product qualification testing partner for aerospace companies when they are looking to develop and take their products to market. Our expertise in testing and validation helps the entire supply chain demonstrate the durability and effectiveness of its products in the challenging aerospace environment in which they will be asked to operate, and ensures that products qualify against aerospace test standards, such as:

### Civil aerospace

- RTCA DO-160

### Defence aerospace

- DEF STAN 59-411
- DEF STAN 00-35
- MIL-STD 704
- DEF STAN 59-41
- MIL-STD 461
- MIL-STD 810

### EMC testing

With our EMC and reverberation chambers, Element can provide unrivalled capacity to accommodate the demands of any aerospace qualification programme.

Our engaged experts design and deliver both pre-compliance testing, as well as formal aerospace EMC testing programmes. These cover a wide range of susceptibility and emissions that your products will endure when placed into harsh electromagnetic environments.

Our aerospace EMC testing and qualification services are designed to provide aerospace validation, most commonly against the following standards:

### Civil aerospace

- RTCA DO-160 – up to and including revision G

### Defence aerospace

- DEF STAN 59-411
- DEF STAN 59-41
- MIL-STD 461
- MIL-STD 704

Additionally, we work with airframers' specific qualification requirements which many manufacturers demand:

- SPE-J-1000 (Euro fighter)
- ABD 0100 (Airbus)
- D6-16050 (Boeing)

## Environmental testing

Element supports the aerospace industry in validating products for the harsh environments they will face during flight. Across our sites we have an unprecedented capacity for vibration and shock testing within our environmental test centres as well as providing High Cycle Fatigue (HCF) testing of jet engine blades and vanes, supported by Scanning Laser Doppler Vibrometer (SLDV) technology. We also provide a complete suite of testing facilities to support all aircraft manufacturers' testing needs, including:

- Vibration and Shock Testing inc. at temperature
- High Cycle Fatigue Testing
- Temperature, Altitude and Humidity Testing
- Aircraft Ditch Testing
- Sand and Dust Testing
- Salt Corrosion Testing
- Ingress Protection Testing
- Highly Accelerated Life Testing (HALT)
- Fluid Contamination Testing
- Solar Heating Testing

Our aerospace environmental testing and qualification services are most commonly used against the following standards:

### Civil aerospace

- RTCA DO-160

### Defence aerospace

- DEF STAN 00-35
- MIL-STD 810

This coupled with our expertise in Engineering Simulation makes Element the natural partner for aerospace contractors to complete their environmental qualification.

## Indirect lightning strike testing

We help aerospace companies understand how equipment may be affected by a lightning strike while in service. We are able to provide:

- Single Stroke Lightning Testing
- Multiple Stroke Lightning Testing
- Multiple Burst Lightning Testing

We work to the following standards:

- RTCA DO-160 – up to and including revision G
- EUROCAE ED-14 – category D to F
- ABD0100.1.2 (Airbus)
- D6-16050 - 4 & 5 (Boeing)

## High Intensity Radiated Field (HIRF) testing

With aircraft design evolving, sub-assemblies are becoming exposed to unprecedented levels of RF energy. Element can offer several testing options to ensure aerospace equipment will survive these massive field strengths by replicating the environment created by a high power RADAR up to 16,000V/m. Element is the only testing company in the UK which can both exceed RTCA DO-160 category L using our reverberation chambers and achieve up to category G using the direct illumination method, accommodating the preferred testing methodology required by your customer.

## Engineering simulation

We provide advanced Finite Element Analysis to complement your product's design and development in the early stages, or where it is not possible to physically test a product due to cost or size. Our highly skilled engineers are not only able to predict how the physical environment or event is likely to affect a product, but also advise on how to optimise its mechanical performance prior to testing and qualification.

## Explosive atmosphere

Element works with manufacturers to produce and design equipment that can operate in fuel-air explosive atmospheres commonly found with aircraft fuels at ground level. Most commonly, we apply RTCA DO-160 Section 9 Explosive Atmospheres to demonstrate the ability of the equipment to operate in these environments without causing explosion or combustion.

## CE Marking

Military aircraft sub-systems will require CE Marking in addition to contracted military standards. We are experts in helping defence companies recognise how and when this extra certification applies and we can help build this into your testing programme.

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## 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 EMC and 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.



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