element®

EMC & environmental testing of defence equipment

Your challenge

Element Materials Technology is a trusted advisor to the defence sector. We understand your commercial challenges to deliver qualified tri-service products ready for deployment into the harsh military environment as well as your exposure to civilian legislation.

The design challenges faced by the defence sector to gain qualification throughout a product's life-cycle, from initial introduction, product modification, re-introduction to core and product life extension, are considerable. Element is able to 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 on time.

Our solution

Our expertise in product qualification and validation helps the entire defence supply chain demonstrate the durability and effectiveness of its products in the challenging military environments in which they will be deployed. It also ensures that products qualify against defence test standards as well as other legal obligations, such as:

- DEF STAN 59-411
- DEF STAN 00-35
- MIL-STD 461
- MIL-STD 810
- CE Marking
  - EMC Testing
  - Explosive Atmosphere Testing
  - Safety Testing
- E Marking
  - Whole Vehicles EMC Testing
  - Automotive Sub-assemblies EMC Testing

EMC testing

Element has the biggest capacity of any test house in the UK for defence EMC testing. Across our sites we have military EMC chambers that range in size from traditional dimensions for smaller systems or programmes up to our enormous military vehicle EMC test chamber. This was originally built to test the Challenger main battle tank, and has recently been used for the new generation of British army vehicles including the Mastiff and Husky. Our experts design and deliver pre-compliance testing and formal defence EMC testing programmes for over 350 military products every year. These cover a wide range of immunity and emissions that your product will need to endure when placed into demanding military environments.

Our defence EMC testing and qualification services are designed to provide standard defence validation as well as help companies perform Urgent Operational Requirement (UOR) testing in a short time period, most commonly against the following standards:

- DEF STAN 59-411
- MIL-STD 461
- DEF STAN 61-5
- MIL-STD 1275

We also work with customers and the Ministry of Defence to develop testing packages that cover both defence and commercial requirements with a single test programme:

- CE Marking
- RADHAZ Testing
- EMC Interoperability Testing
- Immunity Integrity Testing
- E Marking
- Naval Acceptance Testing
- NATO AMSG

Environmental testing

Element has an unprecedented capacity for defence environmental testing in the UK, and we support defence manufacturers in validating their products for harsh environments.

Our environmental test centre of excellence at Warwick is supported with facilities, expertise and capacity from our global network of Element sites which allows our clients to test their products to the common defence standards:

- DEF STAN 00-35
- MIL-STD 810

To ensure your products can withstand and perform against the extreme environmental demands placed on modern military equipment, we also provide:

- Vibration and Shock Testing including at temperature
- Temperature, Altitude and Humidity Testing
- Sand and Dust Testing
- Salt Corrosion Testing
- Ingress Protection Testing
- Highly Accelerated Life Testing (HALT)
- Fluid Contamination Testing
- Solar Heating Testing

This, coupled with our expertise in Finite Element Analysis (FEA), makes Element the natural partner for defence contractors to complete their environmental qualification.

Explosive atmosphere

Element works with manufacturers to produce and design equipment that can operate in fuel-air explosive atmospheres commonly found with aircraft, vehicle and marine fuels. Most commonly, we apply MIL-STD 810F to demonstrate the ability of the equipment to operate in these environments without causing explosion or combustion.

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 can also advise on how to optimise its mechanical performance prior to testing and qualification.

CE Marking & E Marking

Military equipment may be required to meet either CE Marking (electrical equipment) or E Marking (whole vehicles and individual components) in addition to contracted defence standards. We are experts in helping defence companies recognise how and when this extra certification applies and we can help build it into your testing programme, whether your product is new or returning to core following deployment under an Urgent Operational Requirement (UOR).

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

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