

SAFETY AND ENGINEERING ASSURANCE OF MILITARY CAPABILITY



Making tomorrow safer than today

ASSURANCE OF MILITARY CAPABILITY

Element is a trusted global engineering and safety assurance company, with over 60 years' experience. We offer military end-users, defence OEMs and their supply chain verification and validation of equipment, ensuring it is fit for purpose and safe to operate in the harshest environments. This is achieved through physical testing, inspection and certification, complemented by digital engineering and engineering advisory services.

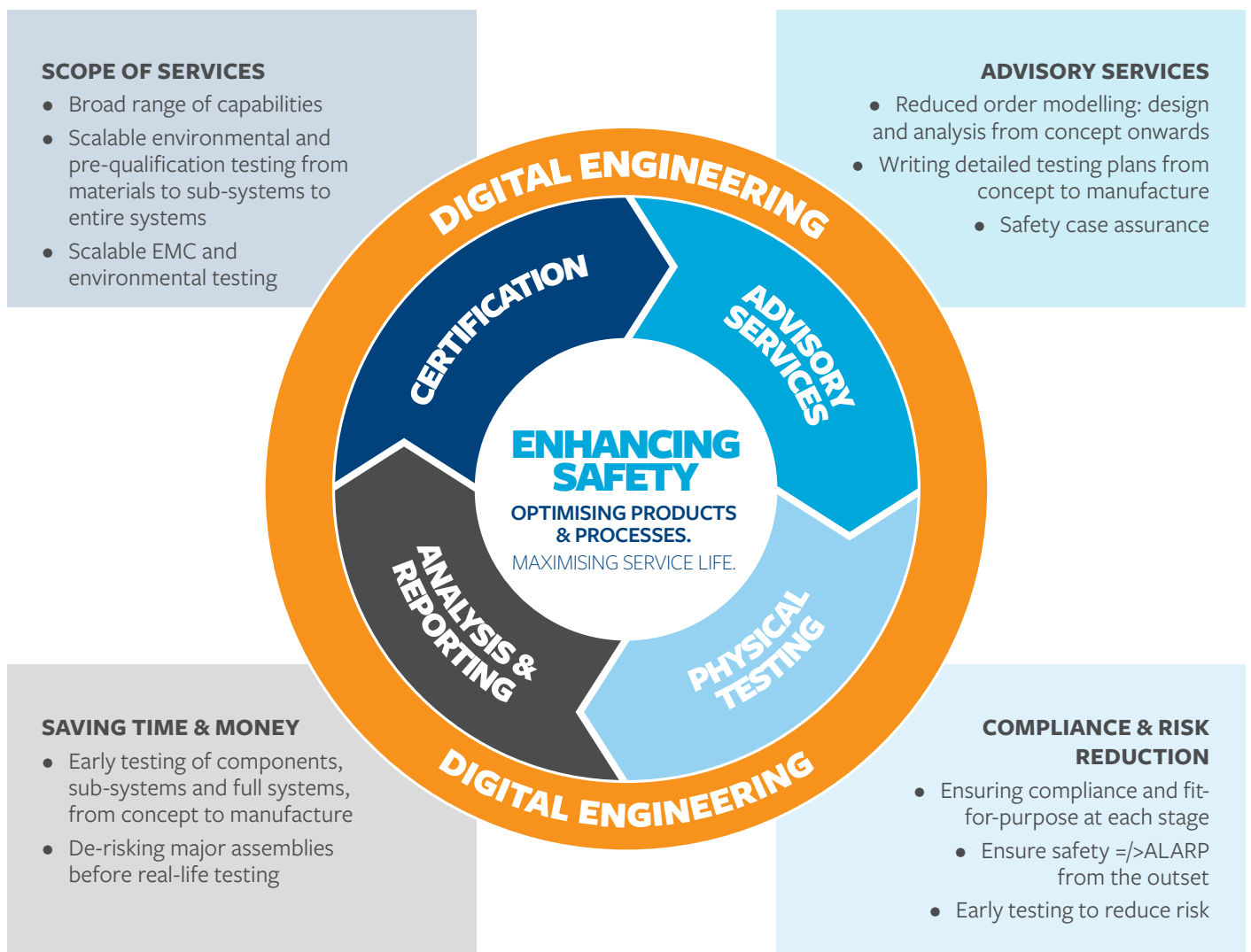
Element is UKAS accredited and holds a wide range of international military and civil certifications. The primary sectors where we operate are Defence, Nuclear Industry, Built Environment, Aerospace, Connected Technologies, Life Sciences, Hydrogen, Automotive, and Renewable Energy. With over 25 laboratories in the UK and 275 worldwide, we have a broad range of specialisations.

DELIVERING SAFETY

Element's 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 61-5
- MIL-STD 1275
- 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
- AECTP-500

ELEMENT'S CYCLE OF SERVICES



DEFENCE EMC & ENVIRONMENTAL TESTING

COMPLEMENTED BY DIGITAL ENGINEERING AND SAFETY ADVISORY SERVICES

EMC TESTING

Element has the UK's largest capacity for defence EMC testing. Our Wimborne and Malvern sites are EMC testing centres of excellence, UKAS accredited to ISO 17025. We have military EMC chambers ranging in size from traditional dimensions for smaller systems up to our fully anechoic large military vehicle EMC test chamber designed for a main battle tank.

Our experts design and deliver pre-compliance testing and formal defence EMC testing programs for over 350 military products every year, covering a wide range of immunity and emissions that your capability will need to endure in demanding military environments.

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

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

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

- UKCA CE Marking
- E Marking
- RADHAZ Testing
- Naval Acceptance Testing
- EMC Interoperability testing

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 by facilities, including a Scanning Laser Doppler Vibrometer (SLDV) expertise and capacity, from our global network of sites, allowing our clients to test their products to the common defence standards:

- DEF STAN 00-35
- MIL-STD 810

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

- Vibration and Shock Testing including at temperature
- Largest Commercial Temperature Testing
- Altitude Testing
- Humidity Testing
- Sand and Dust Testing
- Salt Corrosion Testing
- Ingress Protection Testing
- Highly Accelerated Life Testing (HALT)
- Fluid Contamination Testing
- Solar Heating Testing
- Centrifuge Testing
- Spin Testing
- LCF Low Cycle Fatigue



© www.defenceimagery.mod.uk



© www.defenceimagery.mod.uk

ENGINEERING BASED MODELLING & SIMULATION

Element's Digital Engineering team specialises in engineering simulation services, including advanced mathematical modelling, data science, and artificial intelligence to solve complex challenges in a wide variety of industry sectors.

Our simulation tools, data analytics, and modelling capabilities accelerate your research and development initiatives. This allows you to optimise the design process to give you the best possible products, realise processing and manufacturing efficiencies, and enhance your industrial and commercial competitiveness.

Our Digital Engineering services include advanced finite element analysis, computational fluid dynamics, discrete element modelling, and data science, augmented with additional high-performance computing, scientific programming, and software development capabilities. Element has expertise in structural mechanics, fluid mechanics, heat and mass transport, materials science, mechanical engineering, machine learning, and experiment design.

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.

LIGHTNING TESTING

Element's technical areas of expertise include;

- Lightning testing (High Current, High Voltage, Full Vehicle Tests/Aircraft Level, Equipment Tests)
- Lightning technical advisory services (Test/Certification Plan and Lightning Protection), and lightning protection training courses

Our UK lightning simulation laboratory is accredited DO-160 S22 and S23, ED-105, and specialises in testing for indirect effects on electrical equipment and systems, and high voltage testing of antennas and windscreens of up to 500kV. The team of highly specialised experts provides consultancy on all stages of aircraft lightning protection design and certification, through review, testing, and analysis.

UKCA CE MARKING & E MARKING

Military equipment may be required to meet either UKCA CE Marking (electrical equipment) or E Marking (whole vehicles and individual components) in addition to contracted defence standards. Element's experts help defence companies recognise how and when this extra certification applies and we can help build it into your testing program, whether your product is new, undergoing mid-life upgrades or spiral development, or returning to core following deployment under an Urgent Operational Requirement (UOR).

ENGINEERING & SAFETY ADVISORY SERVICES

Our experts offer a range of advisory services designed to guide you through the testing, inspection, certification, and regulatory compliance landscape as materials and products are developed. We help to ensure products are compliant, safe and ultimately fit for purpose.

From initial concept through the whole development cycle, our advisory services provide expert support based on proven methodologies. This helps you make critical decisions to achieve first-time success when your materials or product development activities reach the testing, approvals and certification phase. Coupled with our expertise in Engineering Simulation, this makes Element the natural partner for defence contractors to complete their environmental qualification.



GLOBAL LEADERS IN TESTING, INSPECTION & CERTIFICATION

Element Materials Technology is UKAS accredited to ISO 17025, a CyberEssentials company with key units JOSCAR accredited. We have a global capacity for EMC, environmental, and material testing.

Our London-based global group is a leading provider for a diverse range of materials, products and technologies in advanced supply chains where failure is not an option. 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. Element is accredited to provide assurance to both the military end-user and the manufacturer that capabilities are safe, compliant with global and national military and civil legislation, and, above all, fit-for role in the most demanding of environments.

That is how we will **make tomorrow safer than today.**