

# NATEP

## Graphene Projects



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Project	Supply chain partnership	Contact
<b>CTES - Lower Cost, Higher Performance Composite Tooling</b>	<ul style="list-style-type: none"> <li>• Composite Tooling &amp; Engineering Solutions Ltd</li> <li>• SHD Composite Materials Ltd</li> <li>• Applied Graphene Materials Ltd</li> <li>• GKN Aerospace</li> </ul>	Liam Moloney Director  liam@ctesltd.co.uk
To develop a lower cost, higher performance, composite tooling solution suitable for use in the production of all types of composite aerospace structures. <b>NATEP Grant £147,225</b>		

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<b>Graphene Composites Evaluated in Lightning Strike (GraCELS)</b>	<ul style="list-style-type: none"> <li>• Haydale Composite Solutions Ltd</li> <li>• SHD Composites Ltd</li> <li>• Cobham Antenna Services</li> <li>• Airbus UK (customer)</li> <li>• BAE Systems plc (customer)</li> </ul>	Gerry Boyce – Managing Director gerry.boyce@haydalecs.com
The addition of functionalized graphene nanoparticles into the epoxy resin matrix of composite materials will greatly enhance the electrical conductivity thereby making them much more resistant to lightning-strike damage. <b>NATEP Grant £150,000</b>		

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<b>Inkjet Printed Graphene Composite Materials</b>	<ul style="list-style-type: none"> <li>• Applied Graphene Materials Limited</li> <li>• SHD Composite Materials Limited</li> <li>• The Boeing Company (customer)</li> </ul>	Dr Tim von Werne Technical Director Tim.vonwerne@appliedgraphenematerials.com
This project seeks to produce lighter and more damage tolerant composites by optimising the application of new graphene materials and processing techniques. Successful demonstration will enable composites to achieve a step further towards their full potential. In practical terms: tougher composites means lighter composites which leads to significantly lower operating costs for the aerospace industry. <b>NATEP Grant £150,000</b>		

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<b>Graphene-Enhanced adhesive Technology through Functionalisation</b>	<ul style="list-style-type: none"> <li>• Haydale Composite Solutions Ltd</li> <li>• SHD Composites Ltd</li> <li>• Element Materials Technology Hitchin Ltd</li> <li>• Airbus (customer)</li> <li>• GE Aviation Systems (customer)</li> </ul>	Dr Quentin Fontana Collaborative R&D Manager quentin.fontana@haydalecs.com
Addition of functionalised graphene to epoxy adhesives will allow them to act as electrical conductors rather than as insulators allowing for an electrically unified structure <b>NATEP Grant £150,000</b>		

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Graphene Enhanced Adhesive Technology through Functionalisation (GrEAT Fun-2)	<ul style="list-style-type: none"> <li>• Haydale Composite Solutions</li> <li>• Element Materials Technology</li> <li>• Airbus</li> <li>• GE Aviation Systems</li> </ul>	Peter Hansen Engineering Manager  peter.hansen@haydalecs.com
<p>Adhesive bonds using conventional adhesives are generally electrical insulators which can cause issues when the parts being joined are electrically conductive. This project aims to use graphene and other 2D nano platelets in order to improve the electrical conductivity of adhesive bonds as well as enhance the strength of the bonded layer and to build on the success of the GrEAT Fun project</p> <p><b>NATEP Grant £150,000</b></p>		

Project	Supply chain partnership	Contact
<b>Graphene Composites Evaluated in Lightning Strike (GraCELS-2)</b>	<ul style="list-style-type: none"> <li>• Haydale Composite Solutions</li> <li>• Cobham Technical Services</li> <li>• Airbus</li> <li>• BAE Systems</li> </ul>	Peter Hansen Engineering Manager  peter.hansen@haydalecs.com
<p>The project aims to deliver a generation of carbon fibre-reinforced composites with greatly improved performance in lightning-strike combined with improvements in mechanical properties by utilising the ability of functionalised graphene and other 2D Nano-fillers in the matrix of the composite material to significantly improve the electrical conductivity of the composite material</p> <p><b>NATEP Grant £150,000</b></p>		

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<b>Nano-Enhanced Aerospace Interiors (NEAT)</b>	<ul style="list-style-type: none"> <li>• Coventive Composites</li> <li>• Applied Graphene Materials Ltd</li> <li>• Composites Evolution Ltd</li> <li>• Rockwell Collins operating in the UK as B/E Aerospace (UK) Limited</li> </ul>	Elliot Fleet Project Manager  elliot.fleet@coventivecomposites.com
<p>The project will leverage graphene's unique properties in novel aerospace interior composites to give: Enhanced fire, smoke and toxicity performance; Increased mechanical performance allowing weight reduction and reduced fuel costs; Improved handling and surface finish; Reduced production costs.</p> <p><b>NATEP Grant £148,898</b></p>		

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<b>HP1 Impact Classification System (HP1ICS)</b>	<ul style="list-style-type: none"> <li>• HP1 Technologies Limited</li> <li>• University of Central Lancashire</li> <li>• Centre for Process Innovation (CPI)</li> <li>• BAE Systems</li> <li>• GKN Aerospace</li> </ul>	Andrew Howes – Director  Andrew@hp1t.com
<p>This project will develop a printable intelligent flexible, thin and durable sensor array that will collect and analyse data relating to impact events on aircraft.</p> <p><b>NATEP Grant £149,926</b></p>		