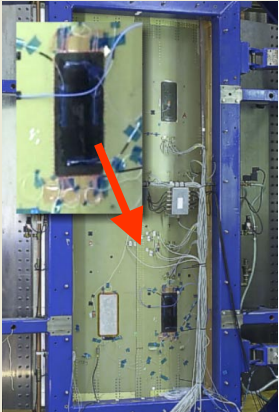
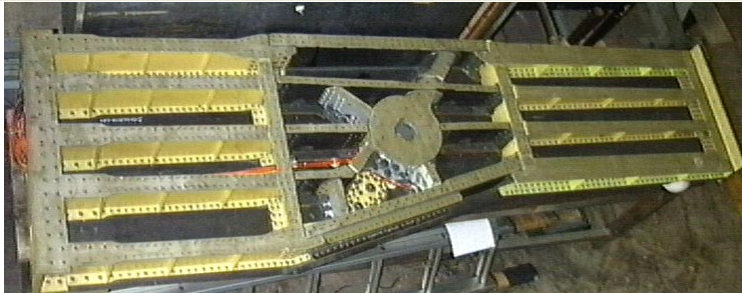


Aircraft Health and Usage Monitoring

Project	<p>8-Nation collaborative project AHMOS (Active Health Monitoring of Structures)</p> <p>To define, develop and demonstrate practical Structural Health Monitoring systems able to reduce the cost of ownership of military aircraft or other military platforms by reducing inspection and maintenance costs</p>
Partners	<p>BAE Systems / QinetiQ / Smart Fibres (UK); EADS-DASA (Germany); Patria Finavitec Oy / VTT Manufacturing Technology (Finland); Stork Fokker Services / National Aerospace Laboratory (Netherlands); Alenia Aerospazio / Centro Italiano Ricerche Aerospaziali (Italy); EADS-CASA / Instituto Nacional de Técnica Aeroespacial / UPM (Spain); DEMEX Consulting Engineers AS / Risø National Laboratory (Denmark); Centre Spatial de Liège (Belgium)</p>
Date	2000-2003
Location	EU
Sensors	Bare FBG sensors
Attachment	Composite embedded
Interrogator	OFSSSI
Images	<div style="display: flex; justify-content: space-around;">   </div> <p>Two instrumented test structures Left: Fokker 100 fuselage panel Right: Eurofighter pylon housing box</p>
Results	<p>The AHMOS project set out to integrate numerous candidate sensor technologies (acoustic emission, FBG, strain gauge, lamb wave, modal analysis, wide-area imaging) into an integrated health monitoring system. Each sensor sub-system communicated structural integrity and damage detection information over a CANbus network to a central processing unit which managed the information for presentation to maintenance crew. During the project, the technology readiness level (TRL) of each candidate sensor technology was increased via trials carried out on ground based test structures.</p> <p>In Smart Fibres' system, FBG were evaluated on two structures; a Eurofighter pylon housing box and a Fokker 100 fuselage panel composite repair patch. On both test benches, damage was induced and the FBG data were interpreted as indicators of damage. As damage occurred in the vicinity of the Smart Fibres system, it was identified accordingly.</p> <p>In a parallel development, Smart Fibres' OFSSSI instrumentation was miniaturised and ruggedised as a step towards a flightworthy interrogation system.</p> <p>As a result of this work, Smart Fibres' technology was given a TRL rating that permitted its downselection to a follow on project AHMOS II (2004-2007), in which developments towards flying test bed evaluation of the downselected technologies is underway.</p>
Further information	Detailed results are consortium confidential and so withheld.