

## APPENDIX D

Impact Damage and Repair of Composite Structures

Given by

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**Progress Report AG28****IMPACT DAMAGE AND REPAIR OF  
COMPOSITE STRUCTURES**

- **Objectives:**
  - Predict and characterise **impact damage** of composites
  - Analyse panels with impact damage, designed for **postbuckling**
  - Durability of bonded **repair** subjected to low energy impact
  - Develop, improve and validate **fatigue** prediction codes

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**Progress Report AG28**

- **Course and Duration**
  - Kick-off: 16-17 September 2002, Imperial College London
  - 1<sup>st</sup> Progress Meeting: 24-25 March 2003, DLR Braunschweig
  - Work Elements are dealt with concurrently
  - Work Element reports ready by March 2006
  - Executive Summary and Final Report ready by September 2006

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GoR SM – Meeting at DSTL Farnborough, 24/25 April 2003

### Progress Report AG28

Partners \ Contribution	Impact Damage	Postbuckling	Repair	Fatigue
ONERA	-	X	X	X
DLR	X	-	-	X
NLR	-	X	X	-
CIRA	-	X	X	-
QinetiQ	X	X	X	X
INTA	X	X	-	-
Sheffield University	X	X	X	-
SICOMP AB	X	X	-	X
Imperial College	X	X	X	-
BAE Systems	-	-	X	-
Airbus Deutschland	-	X	X	-
EADS-M (?)	-	X	X	-
SAAB	X	-	X	-
EADS-CRC	X	X	-	-

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GoR SM – Meeting at DSTL Farnborough, 24/25 April 2003

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- **Change in Partnership and Chairmanship**
  - FOI had to leave, new leader for WE 1: QinetiQ
  - CIRA, EADS-CRC, EADS-M did not show up in Braunschweig
  - Univ. Delft and Fokker did not reply to invitation
  - New partner: University of Sheffield, Constantinos Soutis
  - AG vice chairman is now Brian Falzon, Imperial College
  - Interest of additional partner: Michel Lambert, ESA, High-velocity impact(?), invited to next progress meeting

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- **Development wrt. Subject of Research**
  - Sandwich included due to interest at Airbus and Saab
  - Availability of Dornier data on repair (EADS-M) not yet clear
  - Secondary buckling well captured by arc length method and modified explicit method (I.C.)
  - Compressive strength of non-criped fabric much lower than tensile strength,  
NCF under fatigue (R=0,1) slightly better than prepreg