

BREVET DE TECHNICIEN SUPERIEUR

MAINTENANCE ET EXPLOITATION DES MATERIELS

AERONAUTIQUES

EPREUVE U2 : ANGLAIS

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COMPOSITES SOFTEN IMPACT

Researchers find most efficient energy absorbers after study of simulated crashes

Foam sandwiched between skins of Kevlar and carbon-fibre can effectively absorb energy during a helicopter crash on water, a three-year European research project has concluded.

The €4.5 million (\$5.8 million) "crashworthiness of helicopter on water: design of structures using advanced simulation tools" (CAST) project examined different types of composite structures and standard computer simulation tools, which researchers knew needed improvement. The computer models were adapted to take account of the different materials in composites and their abilities to absorb energy.

"We have discovered that composites are far more efficient energy absorbers than metals and we established that existing [composite simulation] models were not accurate enough," says Rade Vignjevic, professor of applied mechanics and head of Cranfield University's

20 crashworthiness, impact and structural mechanics group.

In addition to the Kevlar/carbon-fibre/foam sandwich, the researchers found that composite cones that would line the fuselage of a helicopter were another effective energy absorption system.

25 The cones' size and shape would vary according to helicopter type and whether it is operated mainly over water or land. CAST researchers discovered that water impacts could be worse for airframes than land impacts.

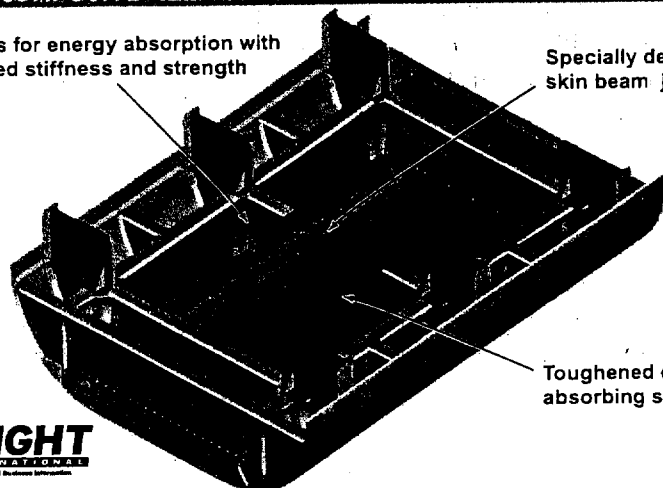
30 CAST, a Fifth Framework research project, involved 14 industrial, academic and government research agency partners including Agusta-Westland, Germany's DLR, Eurocopter Deutschland, Israel Aircraft Industries, and Polish research organisation Wytwornia Sprzetu Komunikacyjnego.

Source: FLIGHT INTERNATIONAL
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NEW COMPOSITE HELICOPTER SUB-FLOOR DESIGN

Cones for energy absorption with tailored stiffness and strength

Specially designed skin beam joints



Toughened energy-absorbing skin

FLIGHT
INTERNATIONAL

TRAVAIL À EFFECTUER

1 - Traduction en français 10 points

Traduire en français les passages grisés

- titre et sous-titre
- lignes 1 à 21 et 26 à 30.

2 - Essai en anglais 10 points

“Improvement”: a key word in aeronautics.

Illustrate and justify.

280 à 300 mots. Indiquer le nombre de mots utilisés à la fin du travail.

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