

AN IMPOSSIBLE DREAM

About all composite civil aircraft

'As engineers at Airbus and Boeing now know, demonstrating that composites are lighter and stronger is not the same as demonstrating that lighter civil aircraft can be built with composites.'

DRAFT

Hans van der Zanden

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An impossible dream

About composite aircraft

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Dedicated to the crew of the Columbia

Rick D. Husband, Commander

William C. McCool, Pilot

Michael P. Anderson, Payload Commander

David M. Brown, Mission Specialist 1

Kalpana Chawla, Mission Specialist 2

Laurel Blair Salton Clark, Mission Specialist 4

Ilan Ramon, Payload Specialist 1

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What's in a word

With the introduction of advanced materials in aviation new words and expressions enter the vocabulary of engineers and others involved. To make the text assessable to the layman formulas and abbreviations have been avoided, technical jargon has been limited and the following expressions are used, may be not completely in line with practice in the fields concerned.

Aluminum aircraft

some 75% or more out of aluminium by weight;

All-composite aircraft

some 50% out of composites by weight or about 80% by volume, probably the maximum that can be attained;

Composed aircraft

roughly about one third out of composites, one third out of other advanced materials and one third out of traditional materials;

Plain composites

Plastics that contains fibres in a resin matrix

Aluminum reinforced composites

fibre metal laminates - FML - describing composites that are reinforced with thin layers of aluminium sandwiched between the layers of the composite, reinforcing the composite in a way essentially similar to reinforced concrete.