

FUTURE AIRCRAFT STRUCTURES: METALS OR COMPOSITES?

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Abstract

The last decades have been characterized by a gradual broadening of the polymer Composite Materials (CM) application in the long-range passenger carrier's structures. A special feature of the present stage of their introduction is their use in the critical large-size load-bearing structures of wing and fuselage, reaching 50% of weight in the novel structures with the corresponding drop in the metal materials portion. The questing is the efficiency of this process for the improvement of the overall flight - technical performance of the aircraft and whether it will go on further. What will future long-range passenger aircraft structure be made of - metal or composite?

To answer this question, the paper discusses the merits and demerits of CM while introducing them in Air-Vehicle (AV) structures. the entire spectrum of the problems of using CM in AV structures, right from properties of materials finishing with complete certification issues are addressed in TsAGI. these are discussed in detail with appropriate illustrations in this paper.