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MATERIALS ET STRUCTURE DIVISION

EVALUATION OF SEAT-FLOOR ATTACHMENT STRENGTH

Since the presentation of the program sponsored by the French Civil Aviation Administration (DGAC) during the second Triennial International Aircraft Fire and Cabin Safety Research Conference in 1998, CEAT and AIRBUS have been keeping on with their investigations on the subject and achieved the evaluation of seat attachment behaviour under dynamics loading.

To remind, sizing of cabin floors and both seat and restraint systems are made independently through the application of different chapters of the FAR / JAR regulation. Floors are sized considering static loading and both seats and restraint system considering dynamics loading. Nevertheless, the conclusion of a study sponsored by the CAA indicating that in some accidents, failures occurred on seat/floor attachment. So, the interest in analysing the behaviour of a complete seat / cabin floor configuration was pointed out in order to check if the FAR / JAR specifications could be applied taking into account the risks of cabin floor failures and the influence of the seat stiffness in relation with the cabin floor strength.

As a result, the scope of this program consisted of dynamic tests performance with a sufficient representative configuration to meet the FAA requirements on the subject. The performance of a final 16g dynamic test configuration with a cabin floor representing of a real structure and two seats with different stiffness aimed at determining both the precise behaviour of the cabin floor under dynamics solicitation due to seats warping and the influence of seat with different stiffness and anchoring.

Finally, the measurement of loads introduced to the cabin floor during tests aimed at validating the pre-test simulation modelling and a Finite Element analyse under process will determine the complete behaviour of cabin floor under dynamic solicitations and with different location of seats. The results of dynamic calculations will show the good or bad behaviour of the seat/floor attachment to meet the study purposes.