

Final ESF on Fire Protection – Engine attachment points

Applicable to Piston Engines

Final ESF

EASA published (until 12 September 2008) an ESF proposal for the engine mounts and engine attachment points which are not fireproof. Several comments have been received, evaluated and published in a Comment Response Document. Based on this public consultation the following ESF has been accepted:

In the case that an applicant can not demonstrate fireproofness of the engine mounting structure and its associated attachment points following conditions have to be fulfilled:

(1) The engine mounting structure must be designed fail safe so that in the case of a failure of one load path the remaining mounting structure is able to support the engine under the loads and thermal conditions as specified under (2) and (3).

(2) Those features of the engine which form part of the mounting structure or engine attachment points shall at least meet the fire-resistant criteria.

(a) The mounting structure and engine attachment points have to be able to sustain the limit flight loads which are appropriate for a typical aircraft installation for which the engine is intended, including engine thrust and torque for maximum continuous power, without failure for 5 minutes under the fire test conditions of AMC E 130 (4).

This ability has to be demonstrated by analysis or by tests for all mounting structures and attachment points.

For the most critical mounting feature of the engine tests under the loads specified above and in accordance with the fire test conditions of AMC E 130 (4) have to be performed.

(b) At the end of the 5 min period it is assumed that the engine will be shut down. Shutdown loads have to be evaluated.

Under the fire conditions as specified in (2)(a) the mounting structure and the engine attachment point shall be able to sustain flight loads of 0,5g/1,5 g superimposed with the evaluated shutdown loads without failure. This has to be demonstrated by analysis or test.

(3) After 5 minutes of fire application according to (2) and until the end of 15 minutes the engine is assumed to be shutdown. Under the fire conditions of (2)(a) above, the remaining other features of the engine mounting structure must have sufficient static strength to withstand the maximum loads expected during the completion of the flight.

In the absence of a more rationale analysis a load factor of 70 percent of manoeuvre loads and (separately) 40 percent of gust loads may be applied.

All loads referenced in (2) and (3) shall be considered as ultimate loads.