

EASA PAD No. 07-074
COMMENT RESPONSE DOCUMENT
[officially closed for comments on 18 May 2007]

PAD / DOC PARAGRAPH COMMENTED	COMMENT / PROPOSAL	AUTHOR OF THE COMMENT	DATE OF COMMENT	PCM RESPONSE
General	<p>[Following several teleconferences involving FAA, EASA, Diamond Aircraft Industries (DIA) and Thielert Aircraft Engines (TAE) concerning the subject Proposed AD, FAA submitted the following general comments and suggestions]</p> <p>The dual engine failure experienced by the DA42 [the first known failure of this type] was the result of an under-voltage transient of the aircraft electrical system, which supplies electrical energy to the Engine Electronic Control (EEC), of sufficient duration to exceed the EEC's tolerance for power interrupts, and resulted in a loss of throttle control (LOTC) event.</p> <p>The FAA has also certificated the installation of the same Thielert engine on the Cessna 172 and (Reims) F172 series via STC SA01303WI; and on the Piper PA-28-161 via STC SA03303AT.</p> <p>Based on the dual EEC failure and subsequent review of the Thielert TAE125-01 and TAE125-02 installations, including on the Diamond DA42, the FAA considers that the Thielert TAE125-01 and TAE125-02 installations are not in compliance with 14 CFR Part 23, §§ 33.28(b), 23.903(c), 23.1309 and 23.1351(b)(3).</p> <p>The proposed solution by Diamond [and EASA PAD 07-074] in which a 'buffer battery' is installed solely to dampen electrical transients is not compliant with the above cited rules, because it does not provide sufficient capacity as required by 14 CFR Part 23, § 23.1353(h) to serve as an isolated and independent power source. In addition, FAA</p>	John R. Colomy, Manager Standards Staff, FAA Small Airplane Directorate, Kansas City, Missouri, USA	13/06/2007	<p>It is expected that the STC-installations of TAE125 engines on single engine aircraft will be addressed by separate EASA AD action.</p> <p>The primary cause for the engine failure has been determined as a total loss of electrical power for a period of less than one second.</p>

	<p>guidance applicable to § 33.28(b) states that if a battery is certified with the engine as a source of electrical power for the EEC system, then the endurance of the battery should be consistent with the airworthiness standards applicable to the intended installation (AC 33.28-2, 3-3, b, (1), (g).</p> <p>Considering all the arguments, the FAA will require the TAE125-01 and TAE125-20 installation on the Diamond DA42 to have a separate source of back-up electrical power that is independent, separate and isolated from the primary source for each EEC installed on the aircraft.</p> <p>The proposed use of a battery as described in the Diamond [and PAD 07-074] solution will meet the above requirements, provided the battery has sufficient capacity for at least 30 minutes of normal engine and EEC operation at the highest EEC power demand.</p> <p>The FAA is considering mandatory corrective action (i.e. an Airworthiness Directive) requiring the installation of a separate source of back-up electrical power that is independent, separate and isolated from the primary source for each EEC installed in any aircraft with an installation of a Thielert TAE125-01 and TAE125-02 engine.</p>			<p>The buffer battery of MSB 42-042 is adequate to supply power to the <u>engine only</u> for a period of 0,52 Hrs at -15°C.</p> <p>In case of an dual Alternator failure the main storage battery is capable to supply the <u>airframe electrical system</u> for a period of 1,47 Hrs. In case of main storage battery failure the second Alternator is able to supply power for an unlimited period.</p> <p>This is supported by Diamond Compliance Report Doc. 7.07.10 O129/23.1351 and Analysis report 7.07.02 O129/23.1351.</p> <p>EASA does not consider a non compliance to 23.1353 with the proposed backup battery installed.</p> <p>To require an additional backup battery that is able to supply the airframe and the engine electrical system for a period of 30 minutes under all conditions has not been confirmed by EASA specialists as necessary for the showing of compliance with the appropriate requirements and guidance material. Consequently the AD for EU registered aircraft will not require 30 minutes backup power, but 10 minutes. It is accepted that the FAA's view is different and that the FAA will require 30 minutes.</p>
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