



Federal Aviation Administration

Memorandum

Date: September 21, 2007

From: Manager, Project Support Branch, ACE-112

To: Manager, Small Airplane Directorate, ACE-100

Prepared by: Greg Davison, Aerospace Engineer, ACE-112

Subject: Review and Concurrence, Equivalent Level of Safety (ELOS) to JAR 22.1093, Amendment 4, "Induction System Icing Protection" for the DG Flugzeugbau DG-808C Powered Glider, ELOS number ACE-07-05

This memorandum documents concurrence for the subject finding of an Equivalent Level of Safety (ELOS). We request your office to review and concur with the proposed ELOS finding to JAR 22.1093, Amendment 4, "Induction System Icing Protection." The proposed ELOS will allow for compliance to the regulation to be accomplished via standard convection heating.

Background:

The DG Flugzeugbau DG-808C is a self-launching, single-place motorglider with a retractable engine and fixed pitch propeller. It is equipped with a Solo model 2625 01 two-stroke engine, coupled with a two-blade propeller, and is available in two different versions (Classic and Competition) with two different wingspans (15m and 18m). Both versions are certificated by EASA to operate in the utility category. It has a throttle control and an automatic priming system for cold starts. A carburetor pre-heater is not installed; neither is the intake air continuously heated.

Applicable Regulation:

The applicable regulation is JAR 22.1093, Amendment 4, which states:

22.1093

- (a) Except as permitted by (b), each engine having a conventional venturi carburetor must be provided with a pre-heater capable, in air free of visible moisture at a temperature of 30.2°F (-1°C), of increasing the intake air temperature by 122°F (50°C) with the engine at 75% of maximum continuous power.

- (b) Where the intake air is continuously heated, and it is demonstrated that the temperature rise is adequate, a pre-heater need not be provided.

Basis for Equivalent Level of Safety:DG Flugzeugbau's Position as dated August 29, 2007:

DG Flugzeugbau concludes, through similar service history, that sufficient heat is generated by thermal radiation from the engine's hot cylinders. DG Flugzeugbau has gathered more than ten years service experience with this engine installation. No carburetor icing occurred during their test flights in temperatures down to 30.2°F (-1°C). In addition, no incidents/accidents of carburetor icing have been reported by DG-800B or DG-808C operators. The DG-800B, which utilizes the same engine, is type certificated under FAA TCDS No. G01CE.

In addition, compliance to JAR 22.1093 has been shown through compliance to JAR 22.901 (b)(1) which states: "The powerplant must be constructed, arranged, and installed to ensure safe operation". Flights have been executed under all environmental conditions such as cold winter days, hot summer, rain, etc; no incidences of carburetor icing has occurred.

DG Flugzeugbau has submitted to the German CAA, Luftfahrt-Bundesamt (LBA), a substantiation report which states their request and basis for an equivalent level of safety to JAR 22.1093, Amendment 4.

LBA Position as dated August 29, 2007:

The LBA concurs with the findings of DG Flugzeugbau for an equivalent level of safety to JAR 22.1093, Amendment 4.

FAA Position as dated August 29, 2007:

We concur with the findings of the LBA that DG Flugzeugbau has established an equivalent level of safety to JAR 22.1093, Amendment 4, for the DG-808C motorglider.

Concurred by:

William J. Timberlake
Manager, Project Support Branch, ACE-112

9/20/07 _____
Date

John Colomy
Manager, Standards Office, ACE-110

9/20/07 _____
Date

David R. Showers
Manager, Small Airplane Directorate, ACE-100

9/21/07 _____
Date