OPTIONAL SERVICE BULLETIN

NO. OSB-42-050

I TECHNICAL DETAILS

I.1 Category

Optional

I.2 Airplanes Affected

Type: DA 42

Serial Numbers: all

I.3 Time of Compliance

At owners discretion.

I.4 Subject

Installation of additional ECU Backup Batteries to supply electric power solely to the ECU in the course of high transient causing a short term voltage drop in case of insufficient main battery power. The ECU Backup Battery capacity is sufficient for at least 30 minutes engine operation.

ATA-Code: 72

I.5 Reason

On one occasion after starting the engines using ground power due to fully depleted main battery without following the procedures published in the AFM the airplane experienced a dual engine failure and total loss of electrical power.
In the course of the investigation ground tests on production aircraft in a similar scenario were carried out without showing the same results. Testing done by the engine manufacturer and subsequent further analysis revealed a potential for experiencing the above mentioned failures under the circumstances of failed or fully depleted main battery and non adherence to the published AFM procedures.
According to the Thielert Aircraft Engines Installation Instructions, the alternator of the engine is viewed as the engine's own electrical power source. The battery is the source of electric power in the electrical system of the aircraft. The alternator is certified as part of the engine. The FADEC, alternator and battery are wired in such a way that the FADEC electrical power supply is provided by the alternator in the event of a failure of the battery as required by the Thielert Aircraft Engines Installation Instructions. It has been observed, that the alternator is not able to provide adequate electric power under

such circumstances. Inrush currents of electric consumers may cause short term voltage drops (3 to 5 ms) which trigger a FADEC reset. During such a reset which lasts about 1.28 seconds the FADEC gives no commands to the fuel injectors or the propeller control system. This leads to a sudden engine RPM drop due to no combustion and a propeller auto feather command with subsequent insufficient electrical power generation if the engine RPM are below a certain limit. This results in a total loss of engine thrust and electric power.

I.6 Concurrent Documents

none

I.7 Approval

The technical information or instructions contained in this document relate to the Design Change Advisory No. OÄM 42-129, which has been approved under the authority of EASA Design Organization Approval No. EASA.21J.052.

The technical content of this document has been approved und the authority of DOA No. EASA.21J.052.

I.8 Accomplishment/Instructions

Comply with WI-OSB-42-050, latest effective issue.
Incorporate TR-OÄM-42-129
Incorporate AMM-TR-OÄM 42-129

I.9 Mass (Weight) and CG

Update the Weight and Balance report of the aircraft in accordance with AMM Airplane Maintenance Manual, Doc. No. 7.02.01, latest effective issue.

II PLANNING INFORMATION

II.1 Material & Availability

See WI-OSB-42-050, latest effective issue.

II.2 Special Tools

See WI-OSB-42-050, latest effective issue.

II.3 Labor Effort

Approx. 10 to 13 hours, depending on airplane configuration

II.4 Credit

For credit contact Diamond Aircraft.

II.5 Reference Documents

Diamond Aircraft DA 42 Airplane Maintenance Manual, Doc. No. 7.02.01, latest effective issue.
WI-OSB-42-050, latest effective issue.
AMM-TR-OÄM 42-129
TR-OÄM-42-129

III REMARKS

1. Due to the complexity of the installation all measures may only be carried out by certified Diamond Aircraft Service Centers.

2. Accomplishment of the measures must be confirmed in the log book.

3. In case of any doubt, contact Diamond Aircraft Industries.

EXECUTION REPORT

for OSB 42-050

AIRPLANE DATA

Airplane Serial Number: _____

Airplane Registration: _____

Airplane Operator: _____

Hours of operation of airplane: _____

No. of landings: _____

Hours of operation-engine LH: _____

RH: _____

Typical operation of airplane: private, club, training, other _____

_____

Date, Name, Sign

Please fax the completed form to Fax No. **43-2622-26700-369 or e-mail to airworthiness@diamond-air.at