

## **Equivalent Level of Safety ELOS-VLA.0991-01, Fuel Pumps**

(is.2: number of the ELOS corrected to ELOS-VLA.0991-01)

### **Introductory Note:**

The hereby presented Equivalent Level of Safety has been classified as an important Equivalent Level of Safety and as such shall be subject to public consultation, in accordance with EASA Management Board Decision 12/2007 dated 11 September 2007, Article 3 (2.), which states:

*"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."*

### **Statement of Issue**

For engine installations using fuel pumps to supply fuel to the engine, CS-VLA 991 (a) requires the main fuel pump(s) directly driven by the engine. In previous time with the older technology, this requirement was complied with, by using at least one fuel pump mechanically directly driven by the engine, which was then considered as main fuel pump. It has to be noted that one of the intent of requiring that the main fuel pump is "directly driven" is that in this way, the pump cannot be actively switched off permanently by the pilot and by that runs all the time, except for the checking function of the fuel pump.

Furthermore, CS-VLA 991 (b) requires in addition to the main fuel pump, an emergency fuel pump with a power supply other than the main pump. This was traditionally complied with by means of an electric fuel pump.

For new engines with more modern design and fuel systems, it is becoming more frequent that no mechanical driven fuel pump is available anymore as main pump. Nowadays the fuel supply happens for example also all electric.

### **Justification:**

The intent of those requirements mentioned above is:

- There is a main pump always supplying enough fuel to the engine, independent of any action of / control by the pilot. Deactivation of the main fuel pump by the pilot by means of switches or equivalent must not be possible in flight.
- For the case of failure of the main pump, there is a backup fuel pump system with a separate, independent or sufficiently redundant and segregated power supply, controlled by the pilot in case of need, and capable to provide enough fuel to the engine.

### **Safety Equivalency Demonstration:**

It is acceptable to have no directly driven main fuel pump, if it can be demonstrated that the intent of CS-VLA 991 and the independence or redundancy and segregation as listed above is still met with the different design.