

**Proposed Equivalent Safety Finding on CS 25.979(b)(1) for “Pressure fuelling system shut-off operation check”**

**Applicable to Airbus A350-941**

**Issue 1**

**Introductory Note:**

The hereby presented Equivalent Safety Finding has been classified as an important Equivalent Safety Finding 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.) of 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:**

CS 25.979(b)(1) allows that the shut-off means of the automatic pressure fuelling system be checked before each fuelling of the tanks for proper shut-off operation.

**Airbus A350-941 – Equivalent Safety Finding to CS CS 25.979(b)(1)**

**– Pressure fuelling system shut-off operation check –**

**Design Proposal:**

On the Airbus A350, an automatic system controls the refuel of the aircraft. Upon selection of refuel and before fuel flows onto the aircraft all system sensors (probes, level sensors) associated with refuel are automatically checked to confirm there are no failures which would prevent shut off. During this check the tank inlet valves, which serve as the actual shut-off means, are, however, not mechanically cycled open/close/open.

**Justification:**

In addition to the normal shut-off means of the pressure fuelling system, the A350 will feature an additional automatic shut-off capability that uses independent sensors, located in the surge tank. In the event of them becoming wet, they will cause the refuel isolation valve, located within the refuel coupling, to close and stop fuel entering the aircraft. The control system and sensors associated with this system are implemented such that there is no damage to the fuel system equipment, no overpressure of the tanks or fuel spillage from the aircraft in the event of a failure of the normal refuel shut off system.

**Safety Equivalency Demonstration:**

The pressure fuelling system as defined for the A350 is considered to ensure an equivalent level of safety to a literal compliance to CS 25.979(b)(1) for the reasons detailed hereafter:

1. The shut-off means redundancy built in the A350 pressure fuelling system is considered to provide a compensating factor for the lack of complete operational check of the normal shut-off means.
2. Demonstration of the overall pressure fuelling system compliance will be documented in the Fuel System Safety Assessment, Fuel Quantity Management System Equipment Qualification, Fuel System Ground Testing and Fuel System Refuel Analysis.