

CASE STUDY

H125 / AS350 Maximum View Pilot Kit (MPVK)



Task Objectives

AFD Systems was engaged by GVH Aerospace to assist with the design, development, and certification of the Swiss Rotor Solutions Maximum Pilot View Kit (MPVK).

The kit provides enhanced pilot visibility for aerial lifting operations and reduces the pilot workload.

The kit comprises: replacement RHS composite door with integrated bubble window; modified floor structure; lower cowling with integrated window.

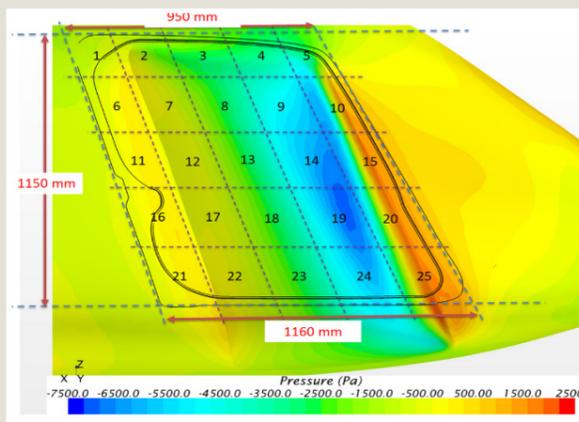
The objective was to certify a door designed with a Carbon Fibre surround to meet EASA CS-27 airworthiness regulations.

The design of the new door frame was carefully specified to ensure that the necessary strength and stiffness characteristics were achieved.

Particular attention was paid to the lay-up, stacking sequence, edge-band thickness, and Tg (glass transition temperature).

Loads Mapping

In order to define a static test for the door, it was necessary to map the aerodynamic suction over the surface and compartmentalise the loads for the static test.



Static Testing

Once the design was sufficiently mature, and the loads clearly understood, a prototype or first article door was manufactured and prepared for a static test.

A rig was also designed to support and load the door. The loading texture resembled a milk crate, permitting the placement of lead shot in discrete compartments to simulate the varying pressure distribution.

Testing was carried out in an approved test facility and inside an environmental chamber so that the test could be executed at an elevated temperature of 72°C.

Pass / Fail criteria were assessed during and after the test to ensure that the necessary compliance was achieved.



Static Strength Substantiation

The static strength of the entire door and interface with the helicopter was substantiated using the results from the static test.

The ULTIMATE test loads were increased to include knock-down factors to account for the absence of in-service moisture absorption and variability associated with composite materials and manufacturing processes.

“AFD were able to bring extensive experience in composite design and structural testing to this programme.

During the test campaign, the AFD CVE/Witness diligently carried out the duty of ensuring test article conformity and executing the test according to the Test Plan.

Post-test, AFD processed the results and delivered the required documents without delay, enabling GVH to issue the Supplemental Type Certificate in a timely manner”.

Jaco Loubser | GVH Project Manager

Contact the specialist team at AFD Systems to discuss your next complex engineering challenge
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