

Aircraft Systems Engineering



As a leading independent systems engineering consultancy, Sula brings the judgement, experience, intellect and innovation needed to help you deliver your complex aerospace and defence programmes on time and on budget.

Sula's capabilities extend to both the commercial and military aircraft industries, with particular expertise in the areas of Landing Gear, Fuel Systems, Helicopters and Unmanned Air Vehicles.

Capabilities

- **Performance Integrity**
 - Safety engineering
 - V&V management
 - Reliability engineering
 - Requirements engineering
- **Systems Integration**
 - Electromagnetic Hazards
- **Analysis, Modelling & Trade-off Studies**
- **Systems engineering process development**
- **Technology Management**
- **Programme Management**

- Management of the requirements in DOORS.
- Management of the Design and Product Verification.

Safety and Reliability Engineering

A350 Particular Risks Requirements

Sula conducted an analysis of the Airbus A380 and A400M Fuel Systems' Particular Risk Requirements to establish their applicability to the A350 Fuel System and compliance with the FAA and the EASA Certification requirements. Sula produced a revised set of requirements relating to Fuel Tank Explosion Risk to ensure that the inherent level of safety in the design meets the Certification requirements FAR/CS 25.981.

Fuel Tank Inerting

Sula are currently compiling the various safety documents required for the Airbus Single Aisle, Long Range & A350XWB programmes, including the Functional Hazard Assessment (FHA), Preliminary System Safety Assessment (PSSA), Common Mode Analysis (CMA) and Particular Risk Assessments (PRA).

Aircraft Fuel & Inerting Systems

Design Validation & Verification

Sula is working on several Fuel System programmes within Airbus including A350XWB, A380 & A400M. Sula has led the V&V activities for the Fuel (ATA 28), Inerting (ATA 47) and Air-to-Air Refuelling (ATA 48) systems as well as the Weight & Balance Computation (WBC) and Air-to-Air Refuelling (AAR) Functional Integration Teams (FITs) on the A400M programme. To all of them we have brought a consistent and coherent approach to managing requirements validation and verification so as to ensure that each programme meets the requirements of the European Aviation Safety Agency's (EASA's) Certification Review Item F-01 standard (JAR 25.1301 and 1309 Compliance – Design assurance and safety assessment processes).

Our responsibilities have included;

- Writing the V&V Plans
- Supporting the validation of the SRDs, SSRDs, SIDs & PTSs



Fuel Domain Strategy Support

Sula provided support to Airbus Fuel Systems' ongoing drive to improve their technical and project management process. As part of this work, Sula developed a Technical Development Capability Assessment method for use across the Airbus System and Equipment supply base.

- Developed integrated reporting mechanisms for technical project management, giving clarity and

focus in a structured manner that provides visibility and enables action.

Aircraft Landing Gear

Research & Technology Programme Management

Sula has successfully established a number of competitive research programmes for Airbus, involving landing gear suppliers. These have included the investigation of:

- New brake technologies / materials.
- Electrically Actuated Extension and Retracting Systems.

Unmanned Air Vehicles

Vulnerability Trials

Sula has undertaken a series of trials to assess the likely extent of fragment damage to typical UAV engines and fuel systems, and the resulting impact on survivability from offensive systems (warheads and guns).

The vulnerability of UAVs to fragments of different sizes and velocities was quantified and related to potential engagement geometries. We developed a number of rules and algorithms for inclusion in detailed vulnerability and Operational Analysis models.

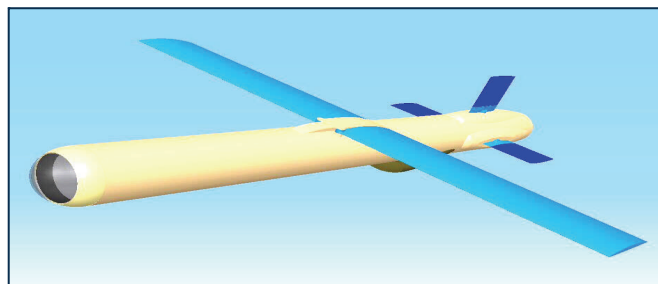


Concept Development of "Cougar"

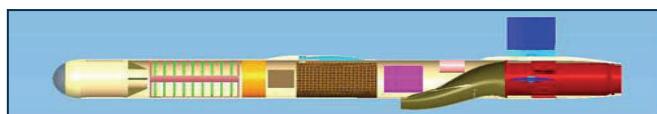
Sula developed a concept for a cost-effective counter to the increasing threat posed by prolific, low-cost UAVs. Our solution exploited threat characteristics and vulnerabilities to defeat the target well beyond the effective range of its sensors.

Novel guidance procedures were developed to attack the target from the rear; exploiting a weakness in the spatial awareness available to the ground based operators of UAVs. By colliding with the target UAV

from the rear, catastrophic damage is inflicted without the use of a warhead. The concept uses low cost components without compromising overall performance.



Cougar



Helicopters

DE&S Helicopter Strategy Team Future Medium Helicopter (FMH) Requirements Management

The UK MoD announced its intention to develop a replacement for the existing Puma and Sea King helicopter fleets during the period 2017 to 2022. Sula provided support to MoD's Helicopter Strategy Team to develop the Requirements Set, Acquisition and Through-Life Options, Performance-Time-Cost (PTC) constraints and Master Data Assumptions List (MDAL) for the Future Medium Helicopter (FMH) capability.



For more information about Sula and how we can help you, please contact us on 01453 844660 or email info@sula.co.uk

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