

Structural engineering

Full service capability in the field of structural design and integration, stress analysis, structural integrity investigation, and structural testing within an EASA-approved design organisation.



**Together
ahead. RUAG**

Supported by efficient, customer-oriented management, your specific requirements are fulfilled by RUAG Aviation's highly experienced specialists using state-of-the-art software engineering tools.



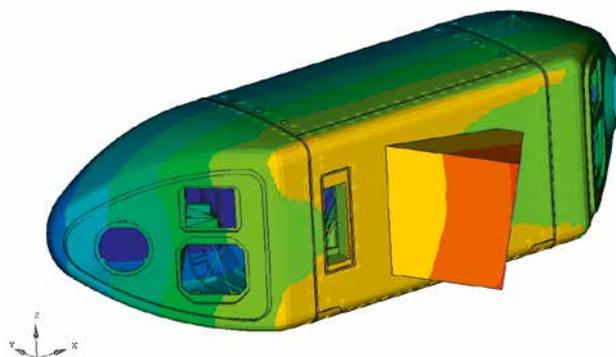
Our experts are well versed in the use of most major commercial design and FEM (finite element method) tools. In addition to our standard engineering tool, Catia V5, we also implement the Composite Product Design module (CPD), which allows reliable and efficient design processes of composite structures. Altair Hyper-works and MSC Patran/Nastran are our tools of choice for structural analysis tasks.

Our development process is lean and comprehensive, as our design solutions are based on in-house design principles. Thanks to our vast experience with major OEM programmes, we are fully capable of working with platform specific software and we are committed to working according to customers' design principles and methods.

Stress analysis

We provide design solutions for both new and existing aircraft structures. Our expertise encompasses a broad range of applications:

- Analysis of primary and secondary lightweight structures: metallic, composite or hybrid
- Static load analyses
- Fatigue analysis
- Investigations of fluid-structure interactions



FEM Analysis for a pod integrated self-protection system

Structural design

Our team consists of specialists in complete project management, advancing a design from customer specifications through to full project maturity. Focusing on functionality and efficient manufacturing, we are committed to traceability and configuration management.

- Establishing design solutions meeting all customer requirements
- Designing lightweight structures in conventional and composite technology
- Compiling and defining engineering solutions for in-service repairs and production non-conformances



Close collaboration with the workshop leading to efficient design solutions.

Structural integration

Collaborating with our avionics teams, we master the inherent intricacies of structural integration and the requisite modifications of your aircraft. Our expert support includes:

- Cabin refurbishment, avionic upgrades, new in-flight entertainment systems, etc.
- Structural upgrades
- Other adjustments and modifications
- Supplemental Type Certificates (STC)
- First-time-right solutions
- Detailed technical documentation
- Shortest possible downtime



Super Puma avionics upgrade

Testing

The development and modification of aircraft, as well as their utilisation and continued airworthiness, necessitate extensive aircraft testing and analysis. Structural, functional, operational and performance investigations anchor RUAG Aviation's comprehensive portfolio of capabilities:

- Test design
- Test article preparation
- Testing of medium to large components
- Coupon and small component testing
- Fully actuated, multi-cylinder certification test
- Data analysis, assessment and reporting



F/A-18 full-scale fatigue test

Structural integrity

As a long-standing, reliable partner of the Swiss Air Force, we are responsible for maintaining the structural integrity of all platforms in their fleet. Our capabilities include:

- Flight data monitoring
- Development of load spectra for fatigue calculations
- Creation of life cycle assessments
- Definition of inspection locations and intervals
- Compilation of recommendations for optimum fleet usage

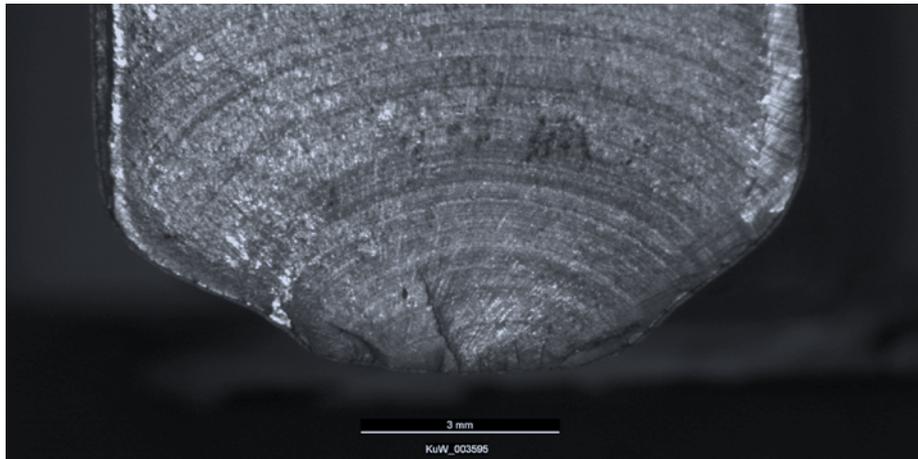


Non-destructive inspection (NDI) of a test article

Damage investigations

Finding the cause of in-service damage on airborne equipment, aircraft structure and ground-based vehicles can be a challenging task. We have extensive experience in:

- Assessing structural damages
- Evaluating root causes
- Composing damage analysis reports
- Developing complete repair or design change solutions
- Quantitative fractography



Quantitative fractography analysis: typical fatigue crack

Advantages

At RUAG Aviation we consider our customers as our partners. Partnering and active involvement in a variety of projects are our cornerstones. We collaborate with our partners to innovate improved solutions to a host of challenges faced by the industry. Our collaboration is comprehensive and at the highest level of quality:

- Engineering solutions for a broad range of civil and military aviation applications
- Close customer involvement in the decision-making and development processes
- Tailormade on-time solutions
- Superb manufacturing, assembly and maintenance capabilities
- Cutting-edge technology developments with our extensive network and in collaboration with renowned universities

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