

Aero Structures

Conceptualize, Digitize, Manufacture Engineering and Industrial Services

The dedicated CoE for Aero Structures under leadership of industry experts offers to Aircraft Manufactures, OEMs and Prime suppliers concept to component solutions in areas like Fuselage, Wing, Empennage, Vertical Tail Plane and Stabilizers, Secondary Structures (Door, Hatches etc). It undertakes conceptual, preliminary and detailed design projects for primary and secondary airframe structures with metal and advanced composites. Our Design and Analysis group has consultants with rich industry experience of design, development and aircraft upgrade programs. It has the expertise in the area of certification for conforming to the International Standards. Our Structural design group has been accredited with certification from Indian Airworthiness Authorities (CEMILAC). It follows a time-tested design and review process to offer quality design solutions to its customers.

Work Areas

- Fuselage
- Wings and Empennage
- Pylons
- Tail Cone
- Aerodynamic Studies
- Cabin Interiors
- Galleys
- Nacelle
- Digital Mock Up
- Manufacturing Support

Offerings

Concept/Preliminary Design

- Numerical Master Geometry
- Wind Tunnel Models
- Aerodynamic Studies - CFD
- Preliminary Design Layouts
- Preliminary Structural Analysis
- Digital Mockups

Detail Design & Modelling

- Finite Element Analysis
 - Static - Stress - Dynamic - Fatigue
 - Kinematics - Thermal
- CFD
- Piping and Routing layouts
- Harness Design
- Digital mock ups
- Interiors
 - Galley - Seating
- Design Optimization

After Market Support

- Requisition Engineering
- Technical publications
- CIR manuals
- Helpdesks
- EPO & Technical Support Services

Engineering IT Support

- CAD/CAM/CAE application
- Customization
- PDM/PLM implementation
- GIS
- Engineering Automation
- Engineering Portals
- CAD Translation
- IT System Integration
- Knowledge Based Engineering

Testing & Validation

- Design of test rigs
- Facilitate testing (through Alliance)
- Material data characterization

Manufacturing Support

- Tooling for
 - Assembly Jigs and Fixtures
 - ICY Tooling - Inspection gauges
 - Wire Harness tools - Sheet metal tools
- Process planning
- CAM/NC Support
- Composites & Tooling
- Sourcing Support

Technology Skills

CAE

- NASTRAN
- ANSYS
- MOLDFLOW
- PATRAN
- P3 THERMAL
- MATLAB
- HYPERMESH
- LS DYNA
- Pro/Mechanica
- Flotran
- I-DEAS
- ABAQUS
- Fluent
- CFX-TASCflow

CAD

- CATIA
- UNIGRAPHICS
- CADDSS
- Pro/E
- IDEAS
- MICRO CADAM
- AutoCAD 2000
- SolidWorks
- SolidEdge
- HELIX
- Euclid

CAM

- CATIA
- UG
- Pro/E
- EUCLID
- VERICUT
- Valisys
- emPower
- Delmia
- Tebis

MPM

- TeamCenter Manufacturing

KBE

- UG/Knowledge Fusion
- CATIA/CAA

PLM / PDM

- TeamCenter Engineering
- TeamCenter Enterprise
- WINDCHILL
- E MATRIX
- ENOVIA
- mySAP PLM

People

Dedicated Aero Structures groups providing solutions for

- Fuselage
- Wing
- Empennage
- Vertical Tail Plane and Stabilizers
- Secondary Structures (Door, Hatches etc)

Experts drawn from Aerospace Industries

- Aircraft
- Rotary Wing
- Aero Engines
- Space Vehicles
- Unmanned Aerial Vehicles

Case study

Design of front fuselage bay for UAV

Scope of work

- Design of payload bay and equipment bay and supply manufacturing drawings
- Static, dynamic and vibration analysis

Design challenges

- Equipment bay cover shall be removable to have access for mounting the equipments.
- Design to consider 6g normal in carriage and 3g in flight (As per MIL-STD-8591)
- Payload bay and Equipment bay shall be modular

Clients

Goodrich	EADS	Stork
Airbus	JAMCO	Safran (Labinal)
B/E Aerospace	Eclipse	DARE (DRDO)
HAL	Aviation	ADE (DRDO)
MartinBaker		

Contact us at corporate.engineering@tcs.com to know how we can help you achieve this.

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