

21ST CENTURY AEROSPACE ENGINEERING

HCL ERS AEROSPACE AND DEFENSE ENGINEERING SERVICES

**21ST
CENTURY
TECHNOLOGIES**

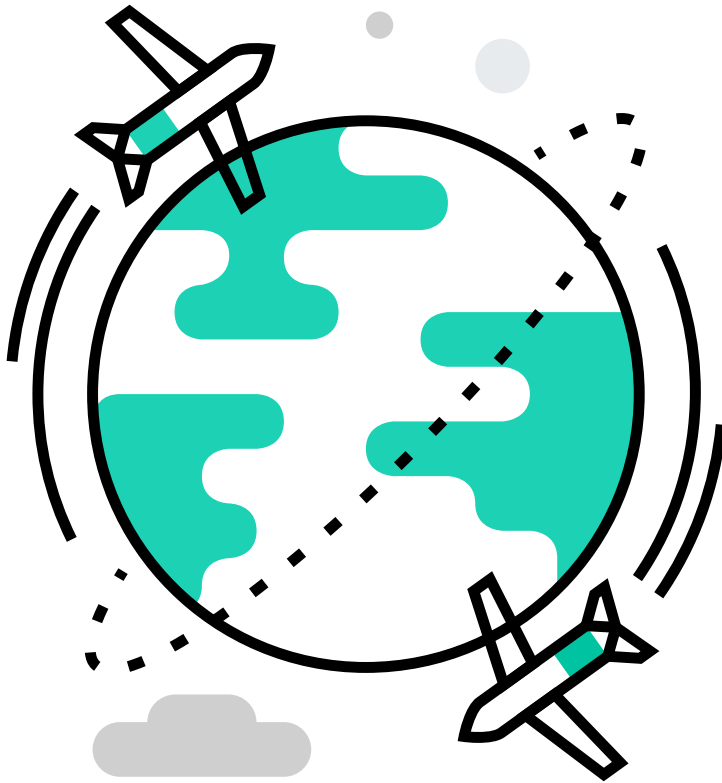


THE AERONAUTICAL INDUSTRY

TODAY

Despite an upsurge in demand for air travel, airlines are having trouble maintaining profitability. They must provide passengers with the right experience at the right price point while ensuring higher utilization of capital intensive equipment. Technology is playing an increasingly crucial role in addressing these objectives. Having pioneered offshore engineering services in this industry more than a decade ago, we have become the largest dedicated aerospace practice in India and the preferred engineering partner for new aircraft programs across the A&D ecosystem, offering application management services, infrastructure support, testing and new product development. In the past decade, we have successfully executed projects in various sub-domains and have partnered on all major commercial aerospace programs.

AEROSPACE EXPERTISE



Close to two decades of experience in Aerospace domain

Integrated solutions across the aircraft lifecycle - from design to aftermarket support

2500+ A&D projects across 25 Aircraft programs for leading OEMs and Tier 1s

Partnered to 8 of top 10 A&D companies

First Indian company to be AS9100 certified; and only Indian company to be DO-178B/C & DO 254 experience.



**EXTENSIVE SPREAD OF
SERVICES FOR THE
21ST CENTURY ENTERPRISE**

New Product Development

- Concept / Idea Generation & Industrial Design
- Detail Design, Development, Engineering Documentation
- V&V and Certification Support
- Low Volume Mfg.
- Materials and Structures Analysis
- Configuration Management

Sustenance Engineering

- Value Engineering
- Product Sustenance & Support - ECM
- Product Quality & Compliance
- Legacy Modernization
- Supplier Support

Manufacturing Engineering services

- Process Planning, Methods Engineering
- Tooling Design, CNC programming, Should Costing
- Additive Manufacturing, Supply Chain management
- Manufacturing Lean Services
- Integral part of customers' manufacturing operations
- Ability to support manufacturing process transfer across geographies

Aftermarket Services

- Technical & Field Services
- Supply chain and sourcing support
- MRO Support Services
- Retrofit & Integration Support
- Technical Documentation
- Wiring harness
- Logistics
- Training

Product Lifecycle management:

- 20+ years of unrivalled expertise with over two decades of PLM services experience
- Consulting,
- PLM Vision & Roadmap
- Data Migration Services
- Digital transformation experience of managing digital transformation initiatives of global corporations
- End-to-end capabilities across product realization
- Product Extensions and sustenance
- Best in class partnership ecosystem to support diverse requirements

Embedded SW Engineering:

- Complete life cycle software development for safety critical on-board software
- Experience working in many on-board sub-system (like FMS, FCS, Landing Gear etc)
- Expertise working in latest technologies which includes (MBD, OOAD) with tools like SCADE, MATLAB
- 25+ mil saving for top 4 clients in the last 2 years through development of productivity improvement tools
- Centre of Excellence with Produce Testing Service
- Extensive experience participating in SOI/DER audits and in certification support for customers
- Certified AS9100
- Active participation in the DO-178 C committee.
- In house embedded software quality framework to execute avionics software development meeting RTCA DO-178B & C and DO-254 standards
- Rich exposure ARINC and MIL standards,

Test Engineering and ATE solutions:

- Design and Development of Automated Test Equipments to test Level 'A' Safety Critical Avionics LRUs
- 25+ Complex ATE (Automated Test Engineering) Programs successfully completed, Partnered in major Aerospace Programs
- Largest aerospace verification & validation practice in India
- Process Framework specific to ATE projects, considering key Aerospace domain requirements
- Delivered 100+ ATEs designed for various major Tier-1 & OEM Aero customers
- Strong Supply Chain and Manufacturing teams on handling Aerospace specific ATE requirements

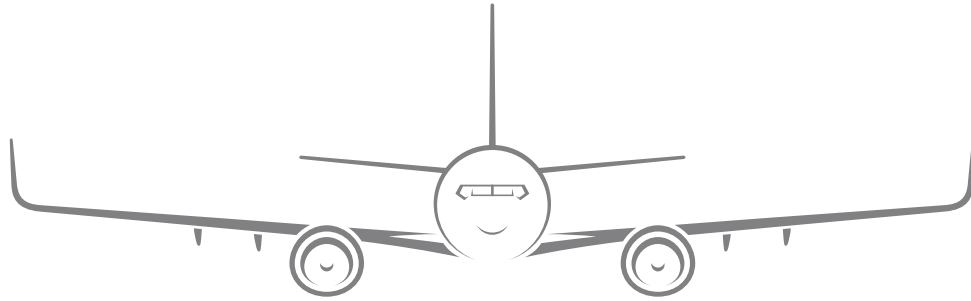
Mechanical Engineering services:

- About 7,000 engineers delivering to OEMs, Tier 1s & Tier 2s
- 100+ E2E product design / build / transfer programs
- Niche areas like Reliability engineering, DERs on staff, Design Automation, Industrial Design
- Certified Engineers: CREs, CVSs, PSE
- One of the largest CATIA houses in India with more than 250+ licenses with experience of working with all major Design and Analysis tools used in the industry

Electronics:

- ASIC/FPGA/SoC design, board design, verification and design analysis, obsolescence management (FPGA, PLAs, DSPs and DO 254 standards etc)
- Complex FPGA with 3 million gates, PCB designs upto 26 layers, 800 MHz Bus speeds
- Alliances with vendors for EDA, IP/DESIGN/FPGA/FOUNDARIES
- Environmental and EMI/EMC Pre qualifications tests complying DO 160G standards
- IS 17025 accredited Lab.





50 Billion

product revenue enabled

Industry leading

recognition by Gartner, Forrester, IDC,

Over last ten years

for our customers TBR and Frost & Sullivan

1250+ patents

filed, \$20M invested in own labs, 35+ customer labs

Work with

55 of the top 100

R&D spenders globally

#1 ESO provider

from India, fastest growing, 600+ basis point market share gain in 4 years

Relationship™

BEYOND THE CONTRACT

Gartner

Endo selected HCL as one of its partners not only for its technical depth and expertise, but more importantly because it was able to secure HCL's commitment to a long term R&D partnership



The HCL-Rockwell Collins relationship is a model case study in technology services outsourcing best practices



Meggitt sees HCL's role not only in executing to statements of work but also in contributing and adding value such as suggesting ideas for design improvements



FROST & SULLIVAN

We have used HCL all the way from testing, specification engineering, software engineering and areas in media as well



FROST & SULLIVAN

We have given HCL not only development responsibilities, but product management responsibilities and technical engineering responsibilities



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