

**Consulting, Engineering & Managed Service Provider**



A Joint Venture Company

**Together Making a difference**

# Introduction



## ■ Genesis of AeroEuro:

- A Joint Venture between Punj Lloyd Group, India and GECI, France
  - Punj Lloyd ,India -
    - \$ 2 Billion well diversified in Energy, Infrastructure, Defense and Aviation Sector
    - presence over 30 countries
    - more than 30,000 employees across the global
  - GECI, France
    - Presence over last 30 years in Aerospace, specialized in Aero structures
    - E2S Supplier to Airbus, and suppliers to almost all NATO Countries
    - More than 1000 Engineers deployed all across the world
- Offshore development center in Whitefield, Bangalore and Gurgaon.
- Total 175k hours of Engineering experience.

## ■ Business Focus:

- Provide Engineering Services to Aerospace, Defence, Transport, Energy, IT & Telecom and General Engineering customers
- End to End product development Services

## ■ Quality & Infrastructure:

- ISO 9001:2000 & AS 9100 Certified

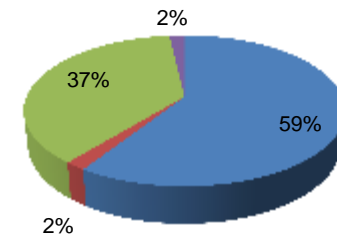
## ■ Global Footprint :

- Head quartered in Bangalore with foot print across Europe & Asia

### Resource Matrix

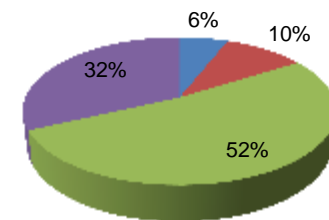
#### Education

■ Bachelors ■ Phd ■ Masters ■ Diploma



#### Experience

■ (1-3 Yrs) ■ (3-5 Yrs) ■ (5-10 Yrs) ■ (>10 Yrs)



# End to End Product Engineering Solutions



**Industry Focus**



Aerospace



Defence



Transport



Energy



IT & Telecom



General Engineering

**AeroEuro Engineering Service Scope**

Engineering Design & Analysis

Manufacturing Engineering (Jigs and tool design)

Embedded Electronics System

Electrical Systems, Cable Harness

Technical Publication

Managed Services

**Functional Capabilities**

Technology Control Plan

IT Management

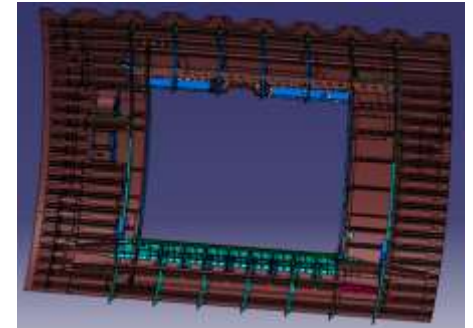
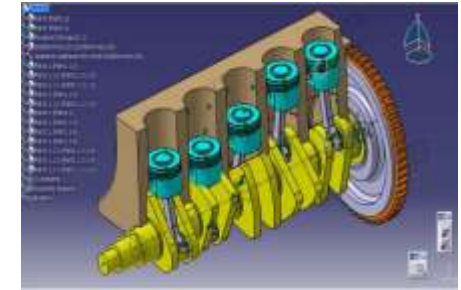
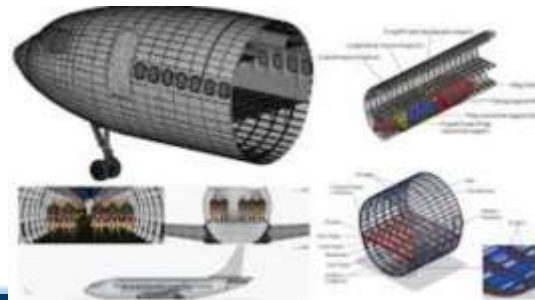
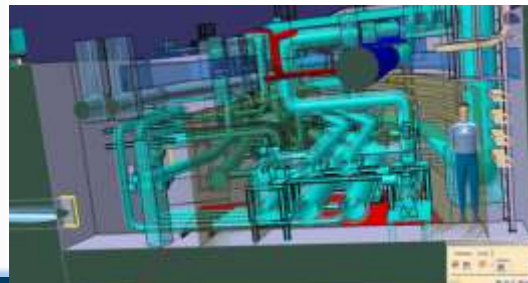
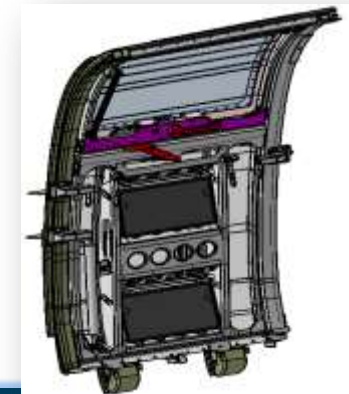
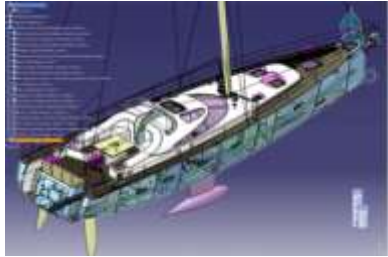
Quality Management

HR

**Key Enablers**

# Our Service offerings

# Mechanical Design Capabilities



## Product Design & 3D Modeling

- ✓ Design of components made of sheet metal, machined parts, composite materials, plastic parts, cast parts etc.
- ✓ Tooling Design and Assembly
- ✓ Die & Mould Design
- ✓ Detailing and Drafting
- ✓ Geometric Dimensioning and Tolerancing

## Assembly & Simulation

- ✓ Digital Mock Up
- ✓ Advance Assembly Modeling
- ✓ Kinematic Simulation.
- ✓ Interference and Space Analysis

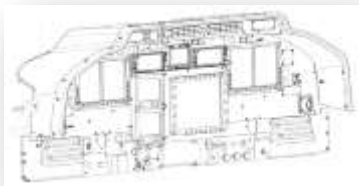
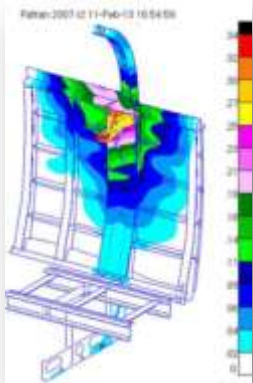
## Product Catalogue

- ✓ Generation of Family Tables driven models and assemblies
- ✓ Catalogue Generation
- ✓ Creation of Libraries

## Tools Expertise

- Solid works
- Pro/E
- CATIA V4 & V5
- Unigraphics
- AutoCAD
- SolidEdge

# Engineering Analysis (CAE) Capabilities



## Structural Analysis

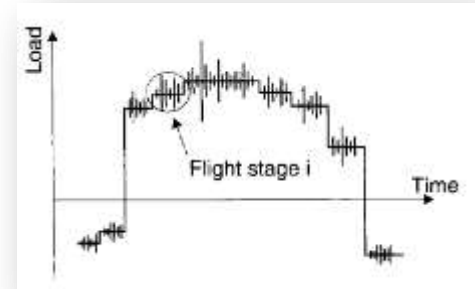
- ✓ Mesh generation
- ✓ Static linear / Non-linear
- ✓ Buckling
- ✓ Fatigue and Damage Tolerance Analysis
- ✓ Repair and Modification Substantiation
- ✓ Process Change and Re-Industrialization
- ✓ Certification Documentation
- ✓ Fatigue Failure Analysis
- ✓ Design optimization
- ✓ Dynamic Shock & Vibration
- ✓ Shape, Size & mass optimization
- ✓ Contact Analysis
- ✓ Drop / Impact Simulation
- ✓ Metal & Composite Structures

## Fluid Dynamics

- ✓ Flow analysis
- ✓ Mold-Flow Analysis
- ✓ HVAC Duct Design

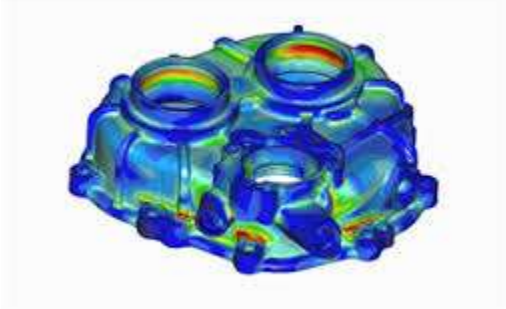
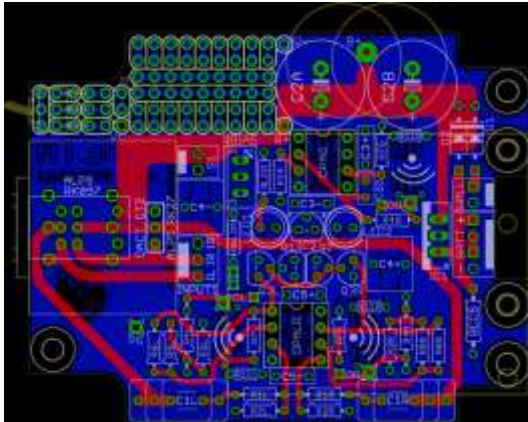
## Thermal Analysis

- ✓ Heat Transfer Analysis
- ✓ Thermal transient
- ✓ Combined Structural & Thermal stress



## Tools Expertise

- Nastran
- Patran
- Ansys
- Hypermesh
- Femap
- Fluent
- Icepak
- Flotherm
- Moldflow
- Ls Dyna
- Abaqus
- Star CD



- Product Development – Specification to Prototype.
- Product Engineering and optimization.
- Firmware and software solutions.
- Product testing and certifications.
- Automated testing system development
- Virtual prototyping and simulation
- Product Life Cycle Support



# Embedded System Capabilities

## HARDWARE

- Analog & Digital electronics
- Power electronics
- RF systems
- Microcontroller board designs
- PCB design
- Design for manufacturing and testing
- Design for EMI/EMC



## FIRMWARE

- Embedded C
- Real time programming
- Protocols & interfaces: MODBUS, PROFIBUS, LIN, SMBUS, RS232/485, SPI, I2C, CAN, ZigBee, Z-wave and other proprietary protocols
- Device drivers
- Application development for LabView.



## TOOLS

- Matlab / Simulink
- LT Spice
- NI LabView
- Code Composer Studio
- Atmel AVR Studio
- MPLAB-IDE
- Keil
- IAR Embedded workbench
- Proteus
- Solid Works
- Codesys
- PADs
- Cadstar
- ICT-Checksum





# Embedded System Capability Matrix (contd.)



<b>CONCEPT</b>	<b>SYSTEM ARCHITECTURE</b>	<b>SOFTWARE</b>	<b>SERVICES</b>	<b>Device Drivers</b>	<b>OS porting</b>	<b>Board Support Packages</b>	<b>Encryption App.</b>	<b>Networking routing protocols</b>	<b>Hardware Design</b>
			Comm. Protocols	Mln + Gate FPGA design	Video/Audio Compression	Object Vision	Multimedia Protocol	Object Detection & Recognition	
			<b>LANGUAGE</b>	C	C++	Java	Assembly		
		<b>FIRM WARE</b>	<b>OPERATING SYTEM</b>	Boot Loader	Windows	RT OS	OS Security	Linux	Unix & eCOS
		<b>CPU</b>	ARM	Power PC	X86	ColdFire	Zilog	Leon	
		<b>BUS</b>	CAN			PCMIA			
		<b>STDS</b>	<b>PERIPHERAL INTERFACE</b>	RS 232	RS 422	CAN	Ethernet		TCP/IP
		<b>HARD WARE</b>	<b>FPGA/CPLD</b>	Xilinx		Lattice Semicon.	Altera		Actel
		<b>TOOLS</b>	<b>TOOLS</b>	ORCAD	PSPICE	MATLAB	Verilog	Mentor	Visual & MS Project

# Embedded System Domain Expertise



- Industrial Design Division
  - Power Electronics
  - Selection, testing and integration of Sensors
  - Automated test equipment
  - Industrial and Automotive products
  - Motor Control Design
  - Automated testing system development
- IT & Telecom Division
  - Hardware and embedded Software level
  - Product development expertise in L2/L3 Switching, Multi service gateways (Ethernet, POTS, GPON, XDSL & others)
  - Good NPs, FPGA Level expertise for developing customised products in quick time.
  - Skills for Optical, Copper and Radio technologies
  - Encryption System ( Red/Black separation)
  - Network Management System
  - Computer vision and image processing

- Design and development of custom power supply for various applications.
- AC-DC Switched mode power supply.
- DC-DC Switched mode power supply.
- Inverters, UPS for rugged operation.
- Design of custom battery packs for smart application
- Development of intelligent charger

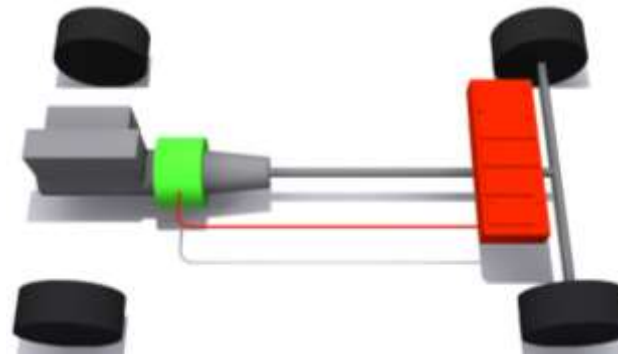
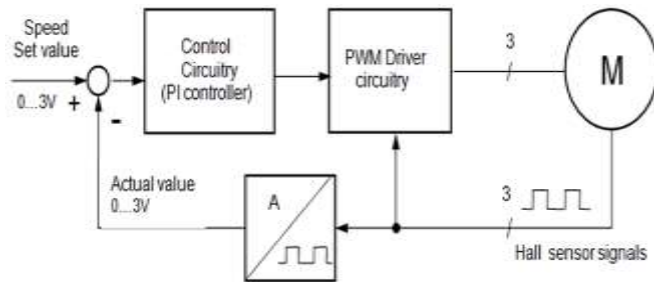
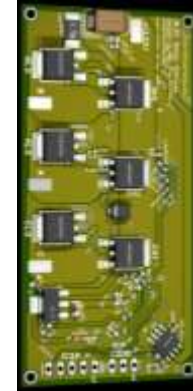


- Electronics and electromechanical products.
- End to end solution from concept to production.
- Experience in Semi active suspension , Power steering, HLL, engine actuators etc.
- Experience in Dairy automation products.
- Controllers for EV and HEV.
- RFID based solutions



# Motor Control Design

- Design and development of AC and DC motor controllers.
- Sensor less BLDC motor controllers.
- Motor controller & Drive Train solutions for Electric Vehicles and Hybrid Vehicles.
- Motor Control Algorithms and control system development.



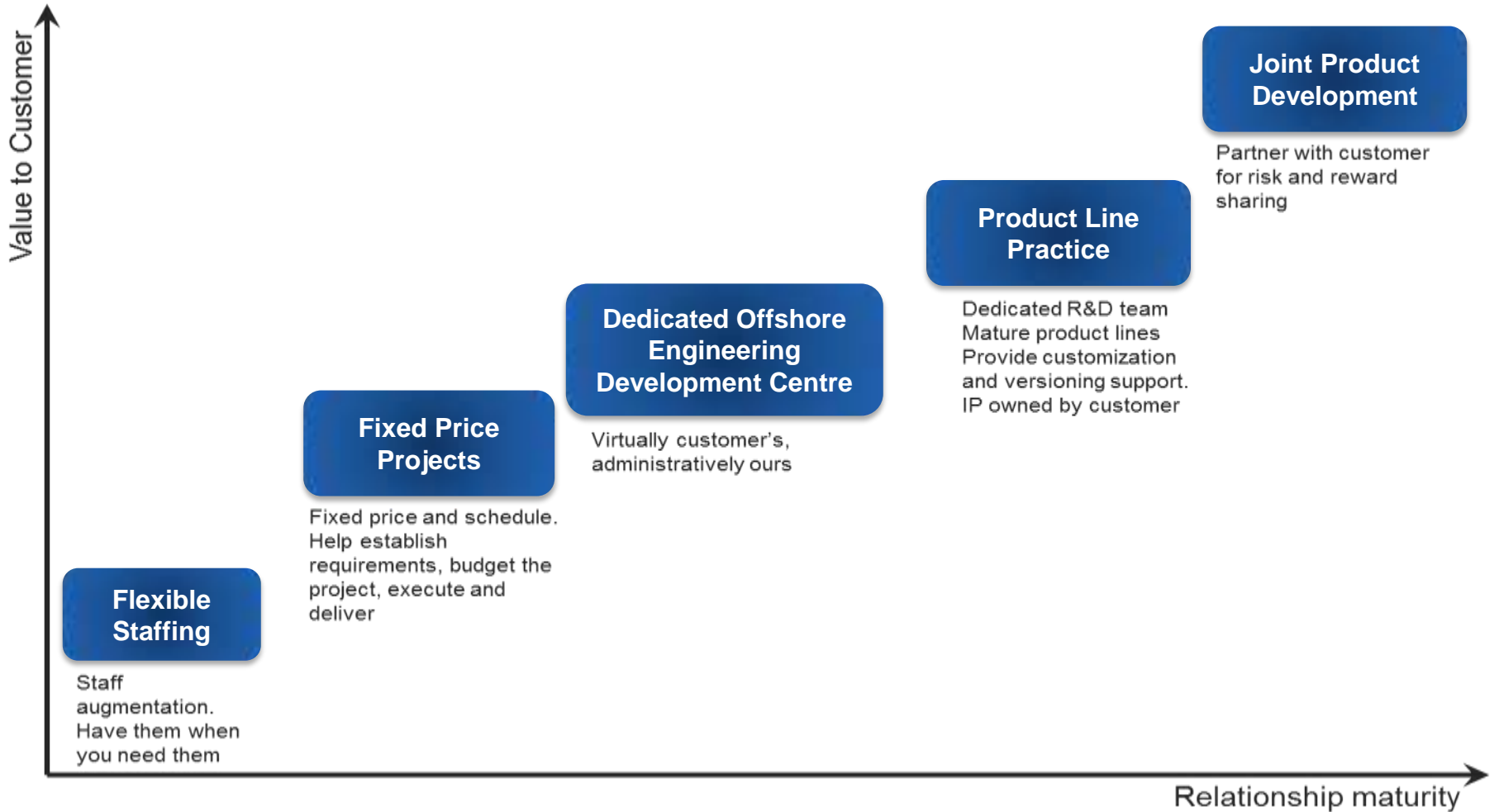
## Automated Test Equipment's

- Design ,development of automated test equipment for electronics as well as electromechanical parts.
- Complete automated systems for testing and report generation.
- End of line testing setup for low skilled operators.
- Expertise in MDA, ICT and functional testers for electronics production.
- Advanced test equipment for motors.



# Our Business Model

# Modes of Engagement: Staff Augmentation to Joint Product Development Experience





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