



QUALITY AIRCRAFT SINCE 1948

TECNAM

TECNAM

Le attività di progettazione e sviluppo dei prodotti aeronautici



**Polo Tecnico «Fermi-Gadda» - Aula Magna
07 Febbraio 2017**



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TECNAM Overview



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*Giovanni and Luigi Pascale
Brothers and Founders*

1948



P48B Astore

1952



P52-Tigrotto

1955



P55-Tornado

1957



P57 Fachiro

1959



P59 Jolly

1964



P64 Oscar

1966



P66 Oscar 100/150



P66 Charlie

1968



P68 Victor

1968



P68 R

1970



AP68 TP Viator

History

- **Founded in 1948 in the South of Italy – Naples, by Pascale Brothers.**
- **Became a leading producer of General Aviation at this time as Partenavia.**
- **Producer of parts for other important Manufacturers:**
 - Alenia (Horizontal tail for the ATR aircraft family)
 - Aer Macchi (Vertical tail of M346 Military Trainer)
 - Boeing (Fuselage panel for B717 Commercial Aircraft)
 - Augusta (Fuselage Structural Parts)



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What TECNAM Do Today

- One of the **most innovative company** in General Aviation in the last decade;
- In the last years TECNAM have delivered **more than 200 aircraft per year**, becoming one of the most important GA's OEM according to GAMA;
- TECNAM have **250 employees** and our production capability is to produce 1 ½ single engine two seater aircraft per day, 1 twin engine per week and 1 single engine four seater every two weeks.
- **More than 33's models** along AUL – LSA – CS/VLA – CS/23//FAR23's categories.





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TECNAM is spreads all over the world:



TECNAM Headquarter in Capua - Italy



Casoria Facility in Naples - Italy



Sebring Facility in Florida - US



Shenyang Facility in China by LUSY



STRONGER  TOGETHER

"MORE THAN 65 DEALERS & MORE THAN 125 SERVICE CENTER WORLDWIDE"



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TECNAM CAPABILITIES

Wide Selection of machines and special tools

- ***Precision structural fabrication***
- ***Metal sheet forming***
- ***Thermal treatment facilities for light alloys***
- ***Numerical control machining***
- ***Metal welding***
- ***Water cutting***
- ***ABS forming***



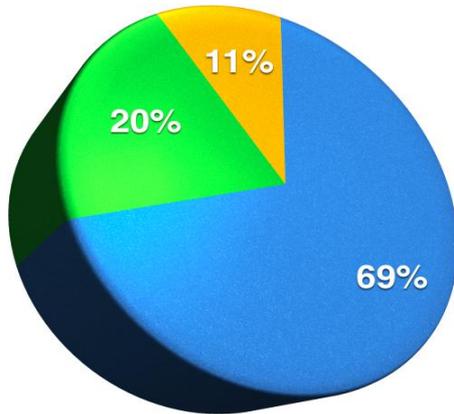


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TECNAM

TECNAM Airplanes:

- Recognized as the First Choice for many Flight Training Organizations (FTO);
- All family of aircraft have the widest range of choice for any Flight School, Private Owner, Surveillance and Regional Airlines.
- More than 33's models along AUL – LSA – CS/VLA – CS/23//FAR23's categories;
- All our fleet is capable of using Mogas (Automobile Fuel) and Avgas.
- TECNAM is the only company offering the most affordable fleet in terms of acquisition price and operational cost in the sector.



Market Share

- *Flight Training Organization*
- *Special Mission*
- *Private*



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TECNAM AIRCRAFTS

P92 JS
CS/VLA

P2002 JR
CS/VLA

P2002 JF
CS/VLA

P2008 JC
CS/VLA

P Twenty Ten
CS/23 - FAR 23

P2006T
CS/23 - FAR 23



AIRCRAFT

***TODAY TECNAM IS A
WORLD LEADER
IN LIGHT AIRCRAFT
MANUFACTURING***

P92 LIGTH

P92 CLASSIC

P92 EAGLET

P92 TAIL DRAGGER

P92 SEA SKY

P2008



P2002 SIERRA

ASTORE

SNAP





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TECNAM

CERTIFIED FAMILY OF AIRCRAFT



P92JS
CS-VLA
EASA.A.412



P2008JC
CS-VLA
EASA.A.583



P2002JF
CS-VLA
EASA.A.006



P2010
CS-23
EASA.A.476



P2006T
CS-23
EASA.A.185

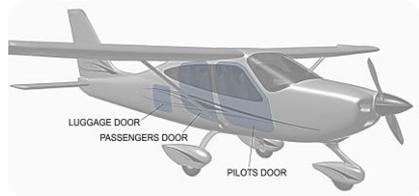
Competitive Advantages: The CERTIFIED family of aircraft have the widest range of choice for any Flight School, Private Owner and Regional Airlines. All this family is capable of using Mogas (Automobile Fuel) and Avgas.



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P2010 – Certification Programme – First Phase



Design Start - 2010

- Preliminary Design
- Resources Allocation



Application to EASA

- Requirement definitions
- First prototype building start (configuration enough mature)



First Flight SN 001

- Flight Conditions Achievement (reduced envelope)
- Permit to Fly Achievement



First TCB Meeting

18-20/07/2013

- TECNAM/EASA Team presentation
- First Prototype Exposition



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P2010 – Certification Programme – Second Phase



**First Flight SN 002
30/01/2014**

- FC extension to SN 002
- PtF achieved



Type Investigation

- Certification Programme agreed
- Flight Test Programme and mature CCL issued

**Type Certification Basis definition
24/03/2014**

- CS amdt
- All CRI and SC issued

Flight Condition Full Envelope (n=3.8, Night VFR, IFR) 14/07/2014

- Frozen Configuration
- Structure static tests passed
- Operation tests passed
- PWP tests passed
- EL/AV tests passed

**Completion of Compliance Demonstration
18/07/2014**

- Completion of all certification tests
- Completion of all MoC

TC Achievement

- TCB meeting held in Capua
- All actions closed
- Draft TCDS definition

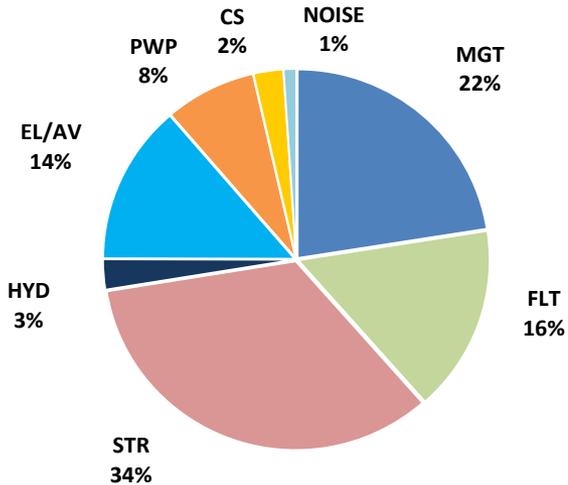


P2010 – Certification Programme - Panel Involvement Overview

Management

- EASA PCM: Maximillian Maas
- DPCM: Stefano Fico
- TECNAM PM: Michele Oliva

18 Meetings
120 Reports
EASA Lol percentage: **90%**



Flight	<ul style="list-style-type: none"> • EASA: Dominique Roland • TECNAM: Claudio Caruso
Structure	<ul style="list-style-type: none"> • EASA: Antonio Blanco • TECNAM: Vincenzo Capuano
Hydro/Mechanical Systems	<ul style="list-style-type: none"> • EASA: Wulf-Ingo Goesling • TECNAM: Giuseppe Paduano
Electro/Avionic Systems	<ul style="list-style-type: none"> • EASA: Jean-Christophe Lamy • TECNAM: Vincenzo Formato
Powerplant Systems	<ul style="list-style-type: none"> • EASA: Anne Guisen • TECNAM: Raimondo Insero
Cabin Safety	<ul style="list-style-type: none"> • EASA: Thomas Ohnimus • TECNAM: Giuseppe Paduano
Noise	<ul style="list-style-type: none"> • EASA: Jean-Michel Lejeune • TECNAM: Francesco Marulo



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TECNAM P92

- JAR-VLA certified
- Single engine
- High Wing
- Fixed Gear
- Analogue cockpit
- Fully Metal
- 17 Lt/Hr
- Automobile Fuel (Mogas) and AVGAS
- Superior performance and flight characteristics
- Low stall speed
- Stable and responsive
- Ideal for flight schools
- High level of comfort that makes it ideal for long routes
- Excellent visibility





QUALITY AIRCRAFT SINCE 1948

TECNAM

TECNAM P2002 JF/JR

- Single engine
- Low Wing
- Fixed Gear
- Fully Metal
- 17 Lt/Hr
- Analogue cockpit and Glass
- Automobile Fuel (Mogas) and AVGAS
- Superior performance and flight characteristics
- Low stall speed
- Stable and responsive
- High level of comfort that makes it ideal for long routes
- Excellent visibility
- Sliding canopy can be opened in flight
- Exciting, yet easy to fly
- EASA CS-VLA certified
- Ideal for flight schools





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aerobILITY

BRITISH FLYING CHARITY

TECNAM P2002 JF

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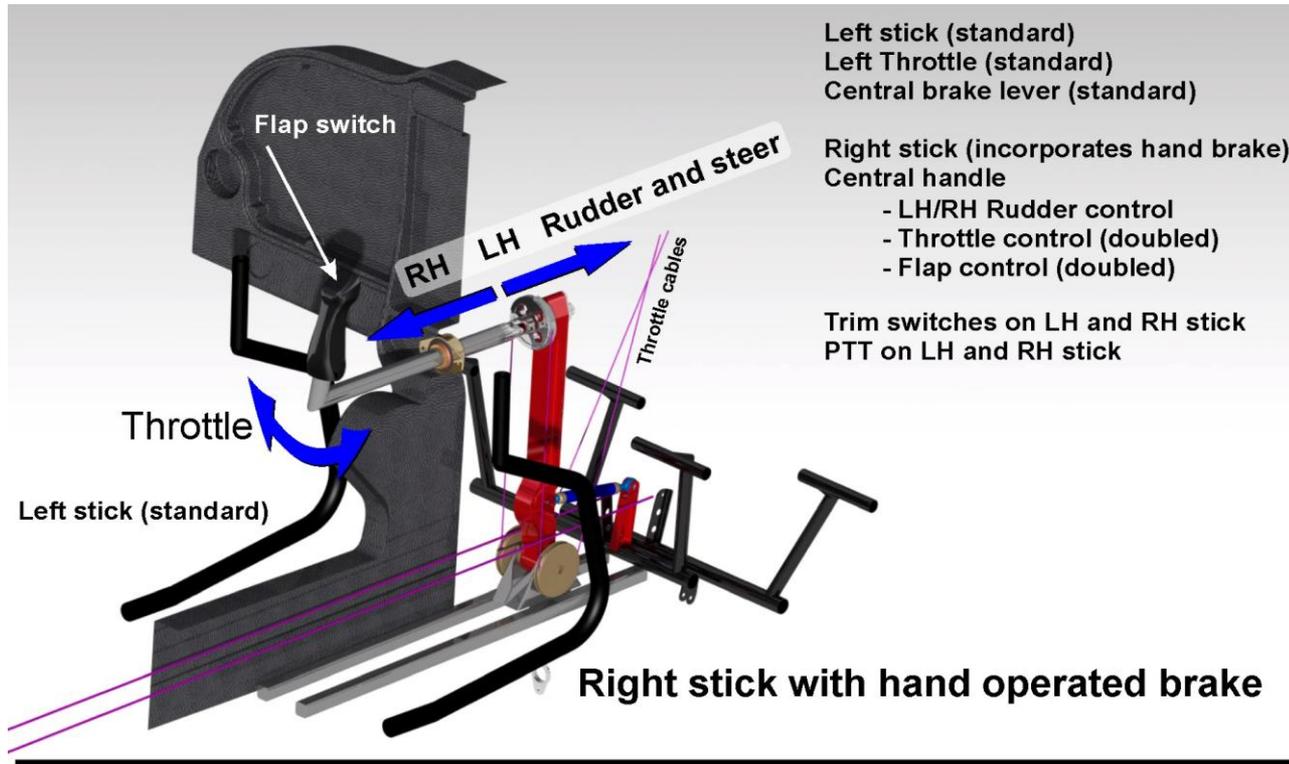


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TECNAM P2002 JF





QUALITY AIRCRAFT SINCE 1948

TECNAM

TECNAM P2008 JC

- CS-VLA certified
- Single engine
- High Wing
- Fix Gear
- A carbon fiber fuselage and vertical stabilizer
- Metal Wing and metal stabilator
- Analogue cockpit and Glass
- 17 Lt/Hr
- Automobile Fuel (Mogas) and AVGAS
- Superior performance and flight characteristics
- Stable and responsive
- High level of comfort that makes it ideal for long routes
- Increased cabin size
- Larger doors
- A semi-tapered metal wing
- As with all of the other Tecnam single engine aircraft, it has excellent visibility and an exceptionally quiet cabin.





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TECNAM P2010

- Single engine
- High Wing
- Fix Gear
- Four Seats
- Three Doors
- A carbon fiber fuselage and vertical stabilizer
- Metal Wing and metal stabilator
- Analog cockpit and Glass
- Automobile Fuel (Mogas) and AVGAS
- Superior performance and flight characteristics
- Stable and responsive
- High level of comfort that makes it ideal for long routes
- Increased cabin size
- Larger doors
- A semi-tapered metal wing
- As with all of the other Tecnam single engine aircraft, it has excellent visibility and an exceptionally quiet cabin.
- EASA CS-23 and FAA FAR-23





QUALITY AIRCRAFT SINCE 1948

TECNAM

TECNAM P2006T

- CS-23 certified
- Twin engine
- High Wing
- Retractable Gear
- Analog or Glass cockpit
- Fully Metal
- 17 Lt/Hr per engine
- Four seats
- Superior performance and flight characteristics
- Stable and responsive
- Great Visibility
- High level of comfort that makes it ideal for long routes
- Width cabin size
- The best choice for Flight School





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TECNAM P2006T - SMP



“Special Mission Platform”



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TECNAM P2006T – SPECIAL MISSION

TECNAM SMP

“OUR MMA AND MRI AIRCRAFTS OFFER KEY SOLUTIONS FOR SPECIFIC NEEDS”



- **Models:** TECNAM SMP
- **Competitive Advantages:** The TECNAM SMP provide solutions for governments, agencies and specialized organizations worldwide by modifying The P2006T aircraft to suit the needs of customers for different mission requirements including surveillance and monitoring and communication Platforms.
- Website: www.tecnam.com

TECNAM MRI



- **Models:** TECNAM MRI
- **Partner:** INDRA – Tecnam Aviation from Spain
- **Competitive Advantages:** The TECNAM MRI developed by INDRA, provide the best solution available on the market. The TECNAM MRI affords significant opportunities for clients seeking more efficient and effective maritime security and costal patrol missions.
- Website: www.tecnammri.com



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TECNAM Research & Development



NASA has selected the **Tecnam P2006T** twin as the airframe on which it will evaluate the potential of **LEAPtech** (Leading Edge Asynchronous Technology), with the aim of developing safer, more energy efficient, lower operating cost and greener general aviation aircraft.



TECNAM is the only company who has a complete aircraft certified by EASA. In order to allow disable pilots to get their license in GA. This certification was supported by a recognize entity from UK called **Aerobility**.



CIRA has selected the **Tecnam P92** to develop a **P92 UNMANNED**.



Tecnam is actively evaluating the potential of developing and producing a two-seater, single turboprop engine powered aircraft **TECNAM PJET Concept**.



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TECNAM Research & Development

State of the Art Software for Analysis and Design

Autocad®

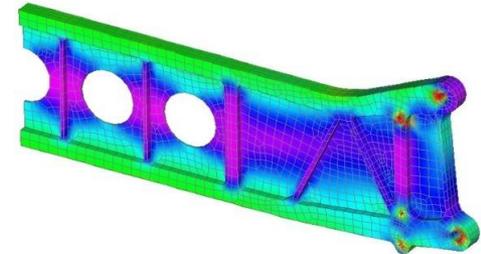
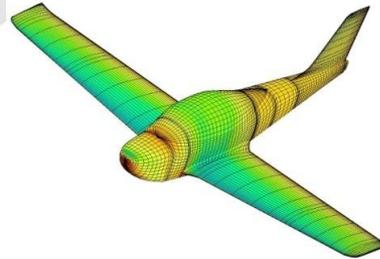
CATIA®

MSC/Patran®

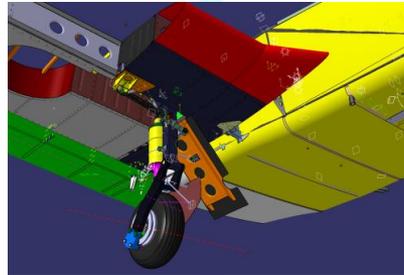
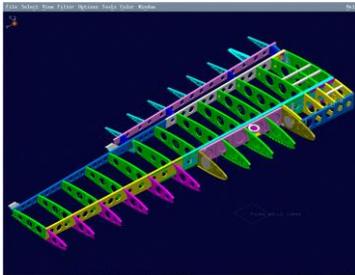
MSC/Nastran®

FLUENT®

In-house developed software for



Stress analysis, Flight Testing, Performance analysis, Ground Vibration Testing, Aeroelastic Analysis





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TECNAM P2012 TRAVELLER

CS-23/FAR- 23



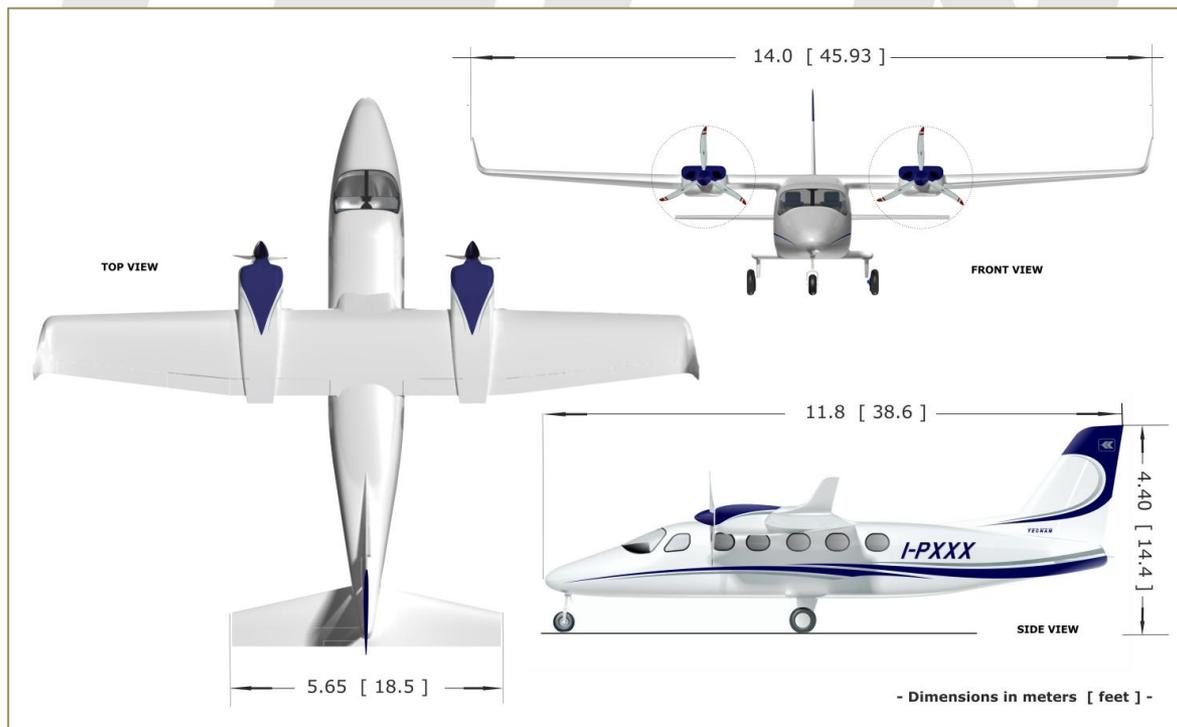
“INNOVATIVE, STYLISH, EFFICIENT & AFFORDABLE”



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TECNAM P2012 TRAVELLER



General Dimensions

Wing Span	14m
Wing Area	25,4m ²
Length	11,8m
Height	4,4m
Cabin max width	1,48m
Cabin max height	1,35m

Weights and Loading

MTOW	3600kg
CG travel	18-31%MAC
Wing Loading	136kg/m ²
Power Loading	4,9kg/hp

P2012 is an all-metal high wing, twin-engine, unpressurized aircraft with fixed tricycle landing gear. The aircraft can accommodate up to eleven persons including a minimum crew of one. Suitable allowance for luggage and optional equipment is also provided. Seats removal and the large rear door allow a quick and roomy cargo configuration. The P2012 Traveller will be certified to the requirements of EASA including day, night, VFR and IFR.



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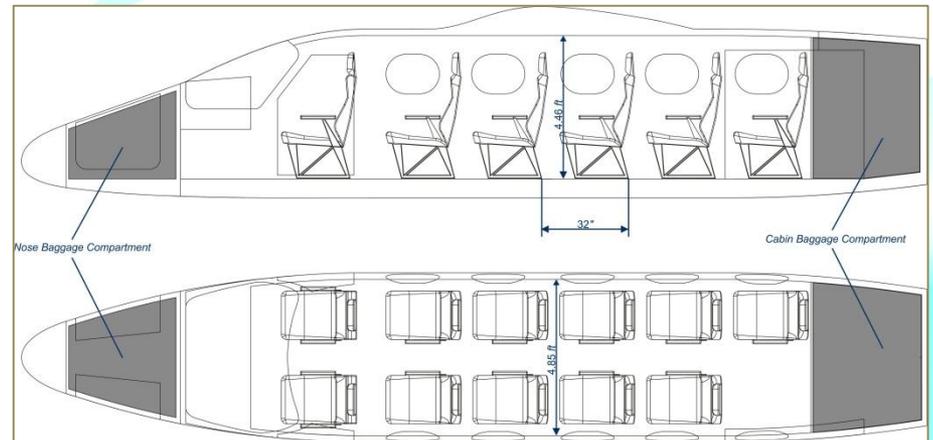
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TECNAM P2012 TRAVELLER



P2012 fuselage is composed by aluminium formed sheet metal frames, beams, stringers and panels coupled by solid rivets or, where necessary, by bolts. Some major items, as undercarriage beams, wing and tail surface attachments, are machined.

P2012 Cabin can accommodate up to eleven occupants including a minimum crew of one.
Suitable allowance for luggage and optional equipment is also provided.

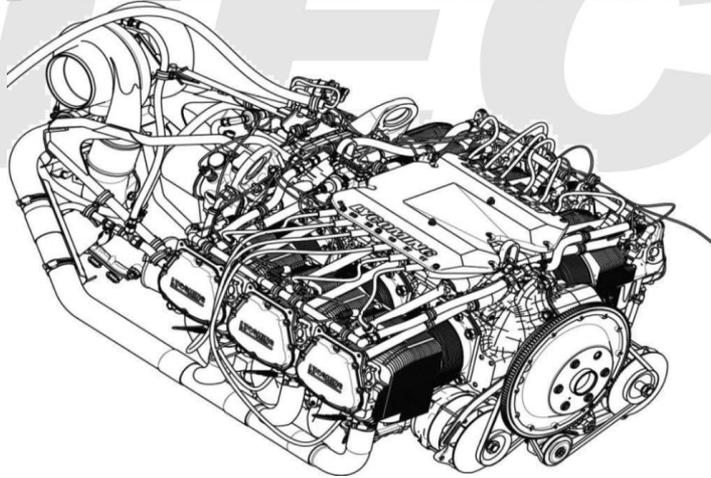




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TECNAM P2012 TRAVELLER



TEO-540-C1A engine is a direct-drive six-cylinder, horizontally opposed, turbocharged, air-cooled engine. It features electronic fuel injection, electronic ignition, down exhaust, and induction air coolers. As equipment, this engine has an automotive type starter, a 28V alternator (130A) and a propeller governor.

The engine is in process of certification under FAA, then it will be validated under EASA certification specifications.

Rated Max. Cont. HP/RPM	350/2500
Performance Cruise (75% Rated)	262/2400
Economy Cruise (65% rated)	210/2200
Fuel Consumption, Cruise (lb/hr)	125 (75% Rated Power)
	95 (65% Rated Power)
Propeller Drive Ratio	1:1
Propeller Shaft Rotation	Clockwise
Bore (in)	5.125
Stroke (in)	4.375
Displacement (in³)	541.5
Compression Ratio	7.3:1
Fuel, Aviation Grade, Minimum Octane	100 or 100LL
Fuel Injector, EEC	Electronic
Ignition	Electronic - Variable

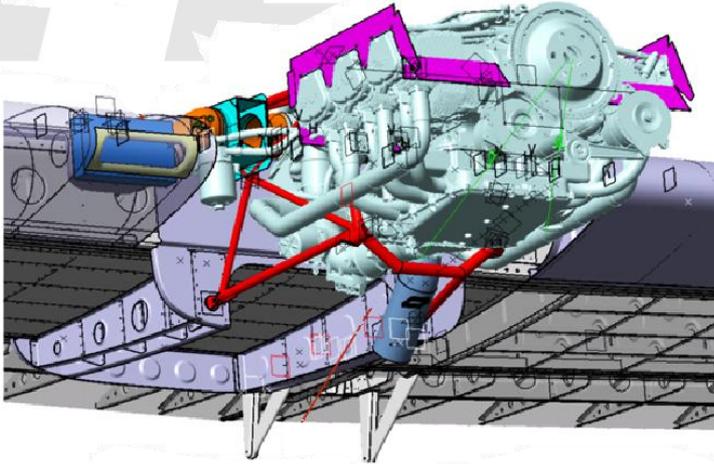


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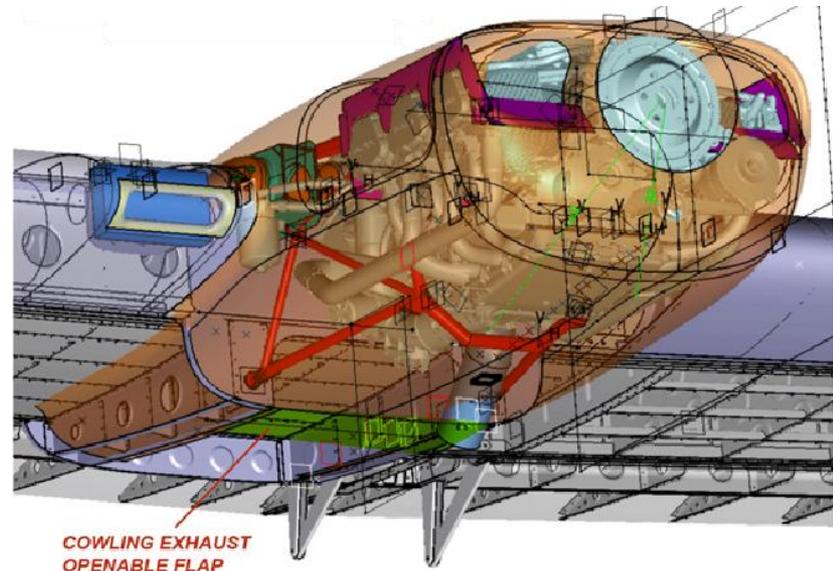
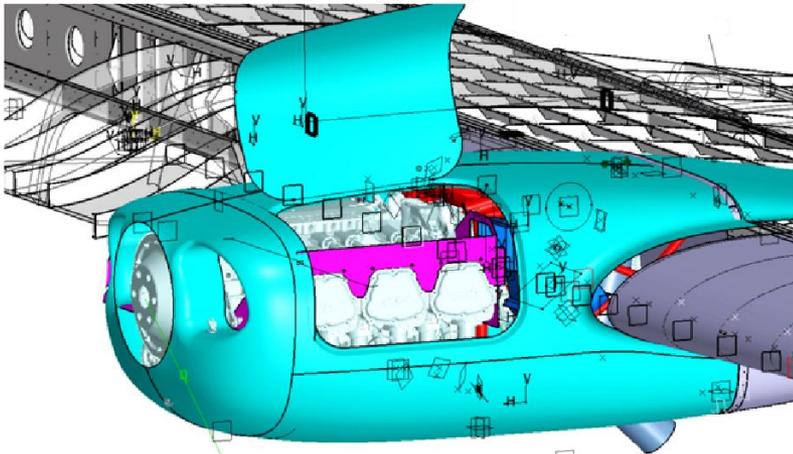
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TECNAM P2012 TRAVELLER

P2012 Overview – Engine Installation



Each engine is installed on its semi-wing by means of an engine mount and it is integrated to the wing structure by means of a fiberglass nacelle.





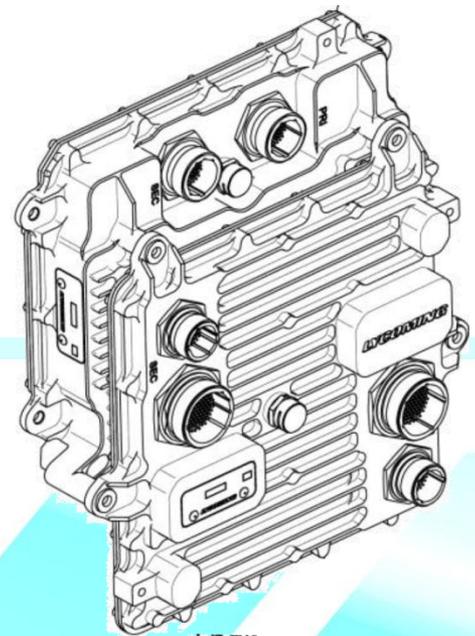
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TECNAM P2012 TRAVELLER

P2012 Overview – Electronic Engine Control System

The **EECS** (Electronic Engine Control System) is an electronic, microprocessor controlled system that continuously monitors and adjusts ignition timing, fuel injection timing, and fuel mixture based on operating conditions. The EECS eliminates the need for magnetos and manual fuel/air mixture. The EECS connects engine hardware with electronic controls to replace mechanical control systems and enables single lever engine control.

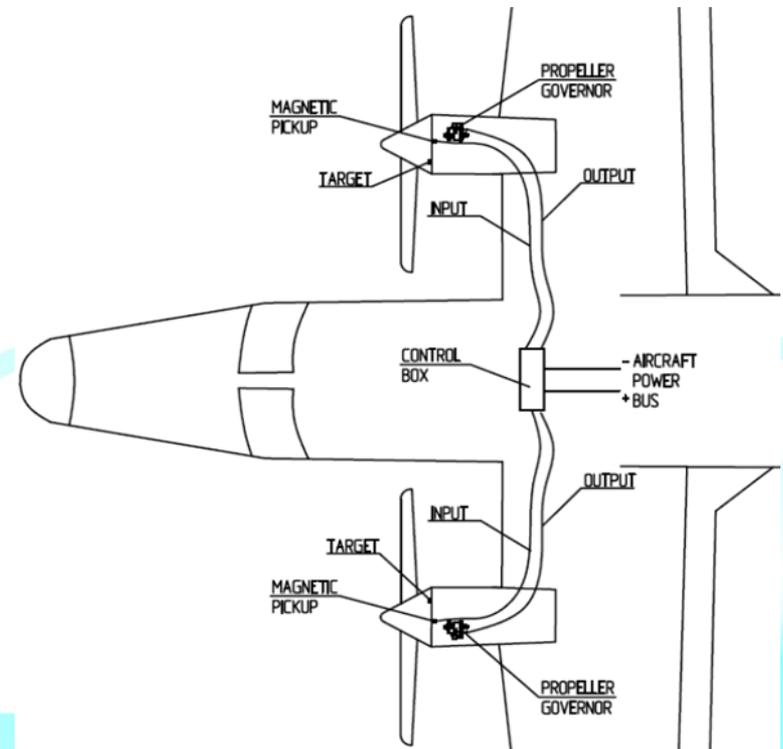




TECNAM P2012 TRAVELLER

P2012 Overview – Propellers

- MTV-9-B-C-F/CF210-58a
 - Three blades, variable pitch, constant speed
 - Laminated wood composite structure, epoxy-fiber glass cover, with leading edge and erosion protection
- MT-Propeller Synchrophaser System
 - Synchronizes the RPM of the left and right engine so to eliminate engine beats and minimize sound and vibration in the aircraft.





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TECNAM P2012 TRAVELLER-COCKPIT

The integrated avionics system incorporates three displays; the pilot's primary flight display (PFD), the multi-function display (MFD) and the co-pilot's PFD. The system includes a single audio system control panel and a separate autopilot controller. **Garmin G1000 NXi*** system provides the following communication/navigation/surveillance (CNS) functions: Dual VHF NAV/Glideslope/Localizer receivers, dual VHF com transceivers, dual WAAS GPS receivers and Mode S transponder.

*confidential data

nr	DESCRIPTION	nr	DESCRIPTION	nr	DESCRIPTION
1	A/P mode controller Garmin GMC 710	7	Anti-ice fluid Q.ty Indicator (TKS System)	14	LH ECU Switches
2	Garmin GDU 1050 PFD1 (10")	8	Annunciator Panel	15	Engine LH Starter
3	Mid Continent MD 302 back up EFIS	9	Digital Audio Panel Garmin GMA350c	16	Anti-Ice switches
4	Garmin GDU 1250 MFD (12")	10	(optional) GCU 477 FMS	17	External Lighting switches
5	Garmin GDU 1050 (10")	11	Trim position Indicators	18	Engine RH Starter
6	ELT remote switch			19	Internal Lighting switches
				20	RH ECU Switches
				21	Fuel Selectors
				22	Storage pockets



The KN-63 DME information is integrated within the display and offers Nav1/Nav2 switching. Crew alerts are displayed on the PFD. The automatic flight control system (AFCS) incorporates a GFC-700 three-axis autopilot with pitch trim.



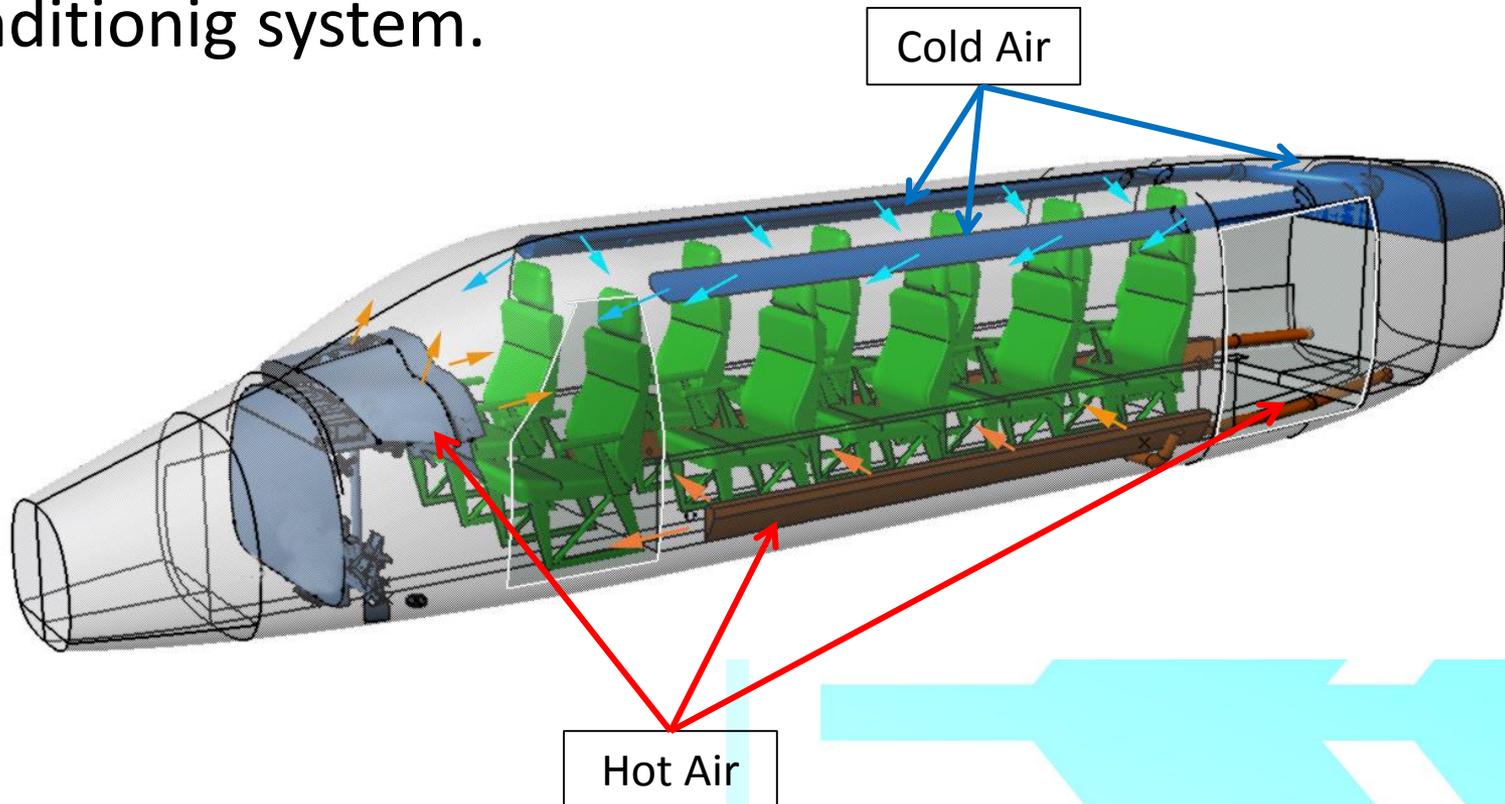
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TECNAM P2012 TRAVELLER

P2012 Overview – Air conditioning

P2012, as optional equipment, is provided with an air conditioning system.

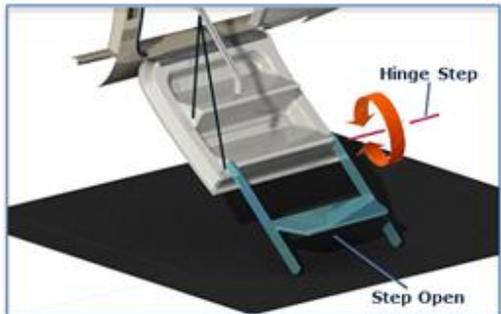
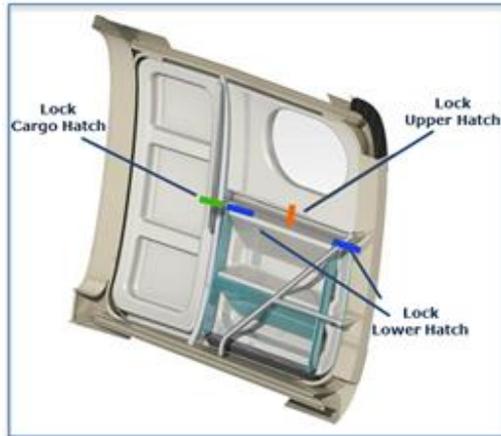
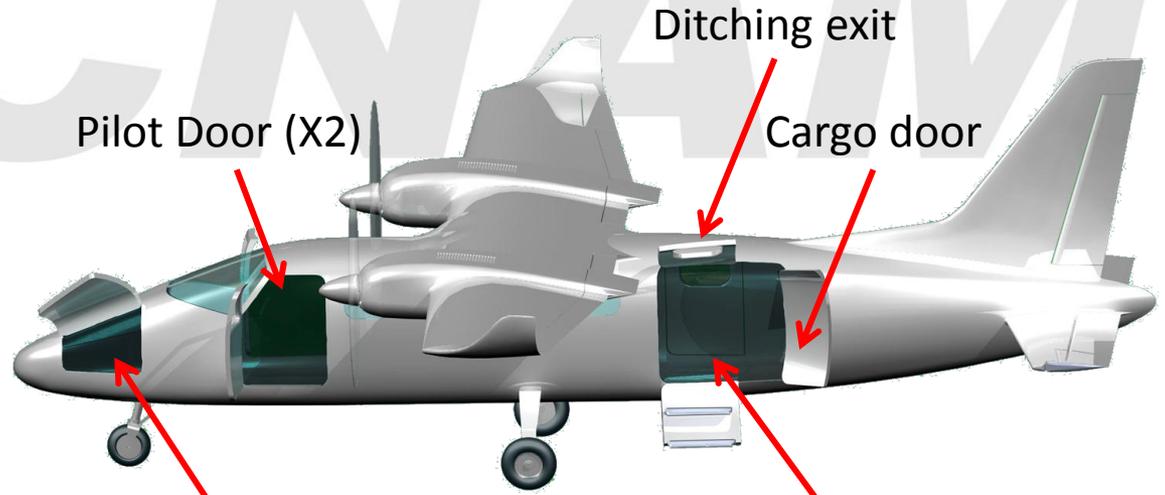




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TECNAM P2012 TRAVELLER-DOORS





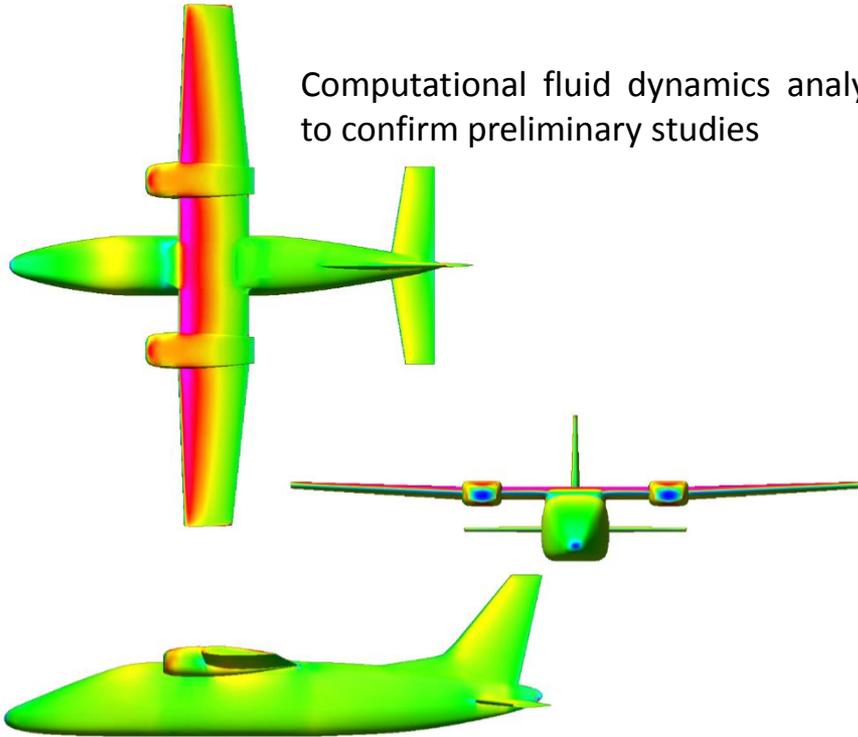
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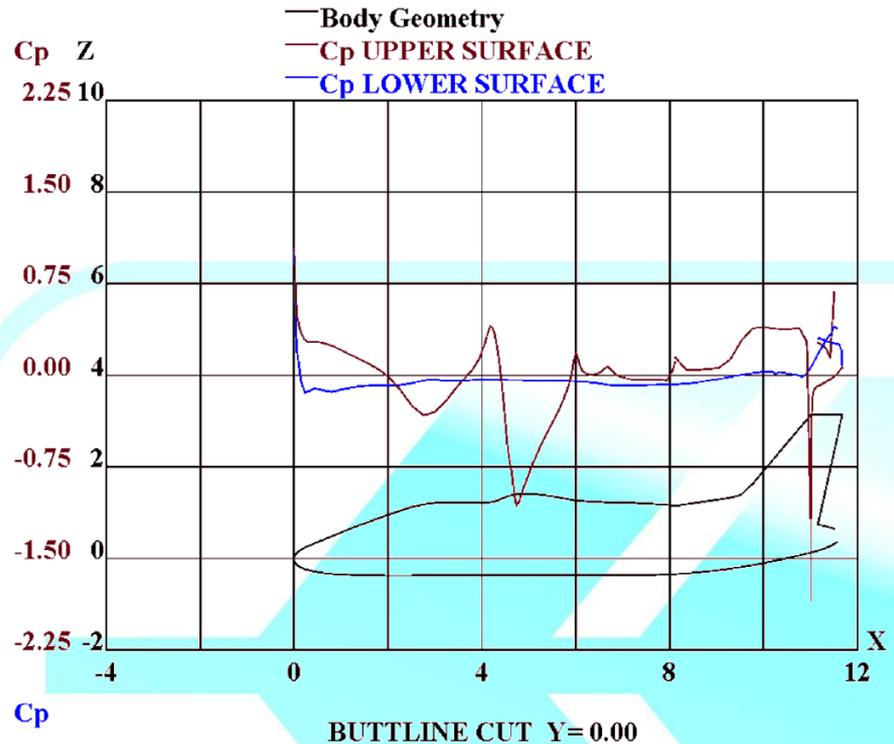
TECNAM P2012 TRAVELLER

R&D Aerodynamic Analysis

The Application was made only when the design of the aircraft has reached an high level of detail, being the development phase almost closed.



Computational fluid dynamics analysis to confirm preliminary studies



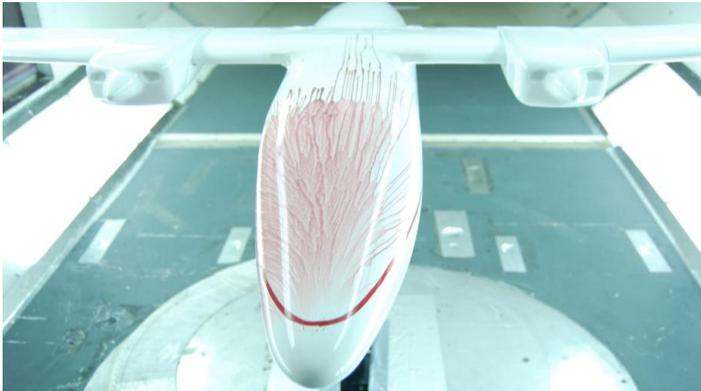
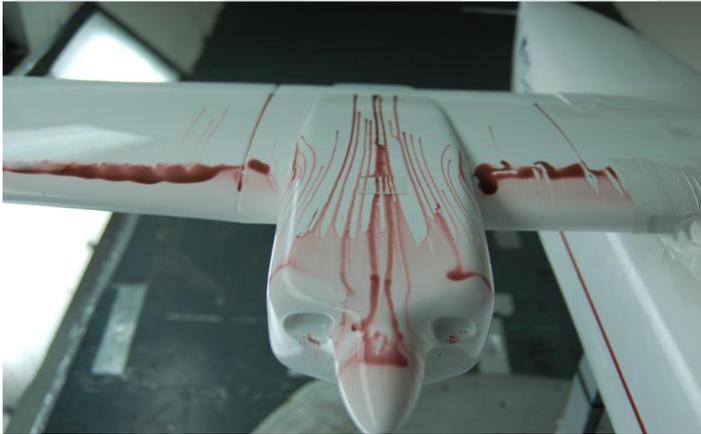


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TECNAM P2012 TRAVELLER

R&D Aerodynamic Analysis



Wind Tunnel Tests were performed on a scale model of the aircraft, which confirmed and validated the CFD and preliminary aerodynamic analysis.

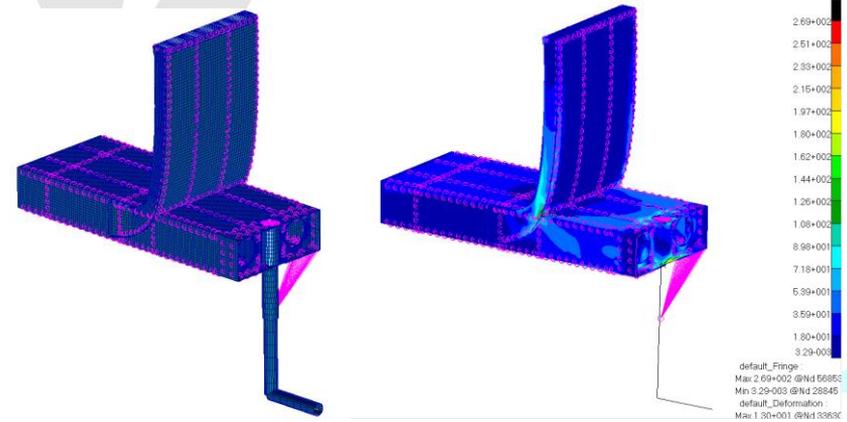


TECNAM P2012 TRAVELLER

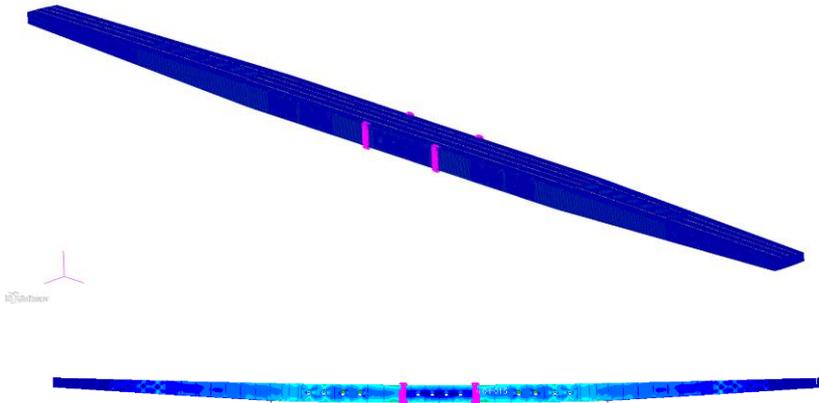
R&D F.E.M. Analysis

During the design phase, linear and non-linear F.E. analysis were performed on several structural parts of the aircraft, so to confirm and/or optimize the preliminary design.

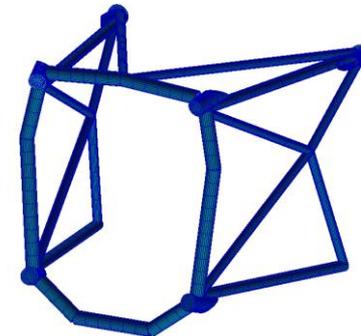
MLG box FE model



Metallic wing Box FE model



Engine Mount FE model



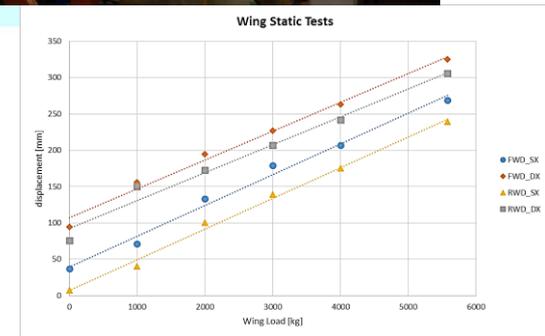
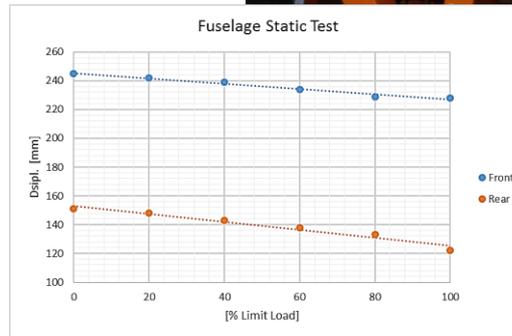


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TECNAM P2012 TRAVELLER

R&D Static Tests



During the Development Phase, on the fuselage and wing structure were performed several static tests up to the Limit and Ultimate Load, in accordance with the relative paragraphs of CS-23.



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THANKS FOR YOUR TIME!!!!