Naples 25/05/2011

RESEARCH AND TECHNOLOGY IN AIRCRAFT DESIGN
THE ROLE OF ITALIAN INDUSTRY

COSTRUZIONI AERONAUTICHE TECNAM

www.tecnam.com

More than 60 years in aviation

1948

P48B Astore

1952

P52-Tigrotto

1955

P55-Tornado

1957

P57 Fachiro

1959

P59 Jolly

1964

P64 Oscar

1966

P66 Oscar 100/150

1966

P66 Charlie

1968

P68 Victor

1968

P68 R

1970

AP68 TP Viator

Tecnam History

COSTRUZIONI AERONAUTICHE TECNAM

FACILITIES

1986 Tecnam has been found

Capua Plant (11200 m² 121000 ft²)

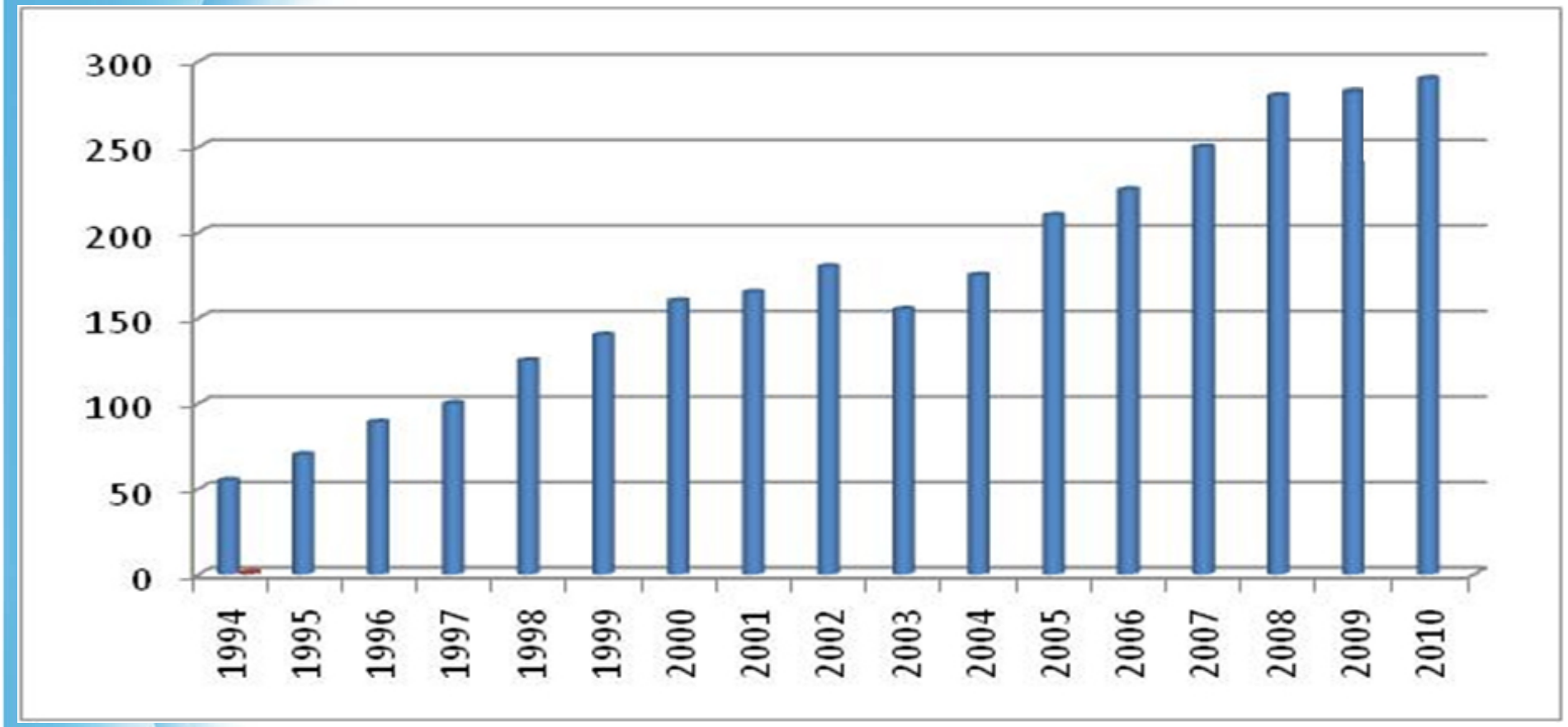
Close to Capua General Aviation Airport

Casoria Plant (6000 m² 65000 ft²)

Close to Napoli International Airport

COSTRUZIONI AERONAUTICHE TECNAM

Aircraft Deliveries



About Tecnam

- ***TECNAM is a major player in General Aviation.***

- ***15 different models of aircraft in different category.***

- ***Export to 50 countries***

- ***5 months of back log***

- ***Tecnam deliveres a single engine aircraft per day and a twin engine each five days.***

- ***More than 3000 aircraft delivered***

Main Market

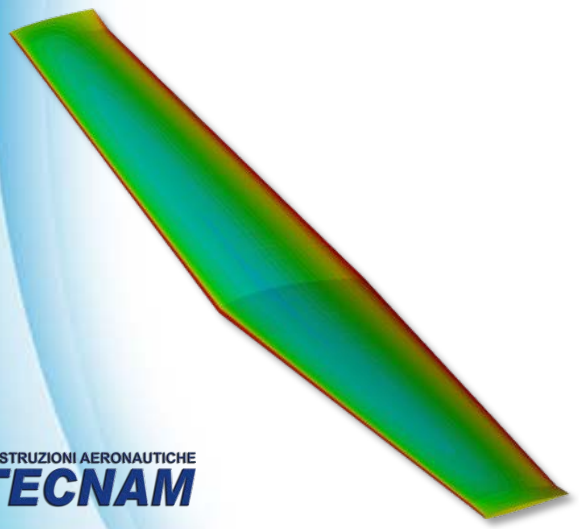
Australia, New Zealand & Pacific
Austrian
Benelux
Brazil
Bulgaria
Canada
Colombia
Czech Republic
Dominican Republic
France
Germany
Indonesia/Malaysia
Iran
Israel
Italy
Lithuania, Estonia, Latvia
Malta
Mexico
Namibia
U.S.A.
Pakistan
Portugal
Republic of Ireland
Russia
Slovenia/Croatia
South Africa
Spain
Sweden
United Kingdom
Switzerland

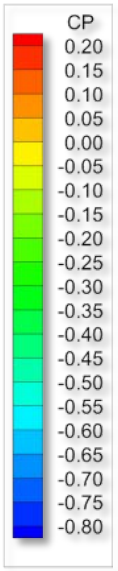
Tecnam Technical Departement

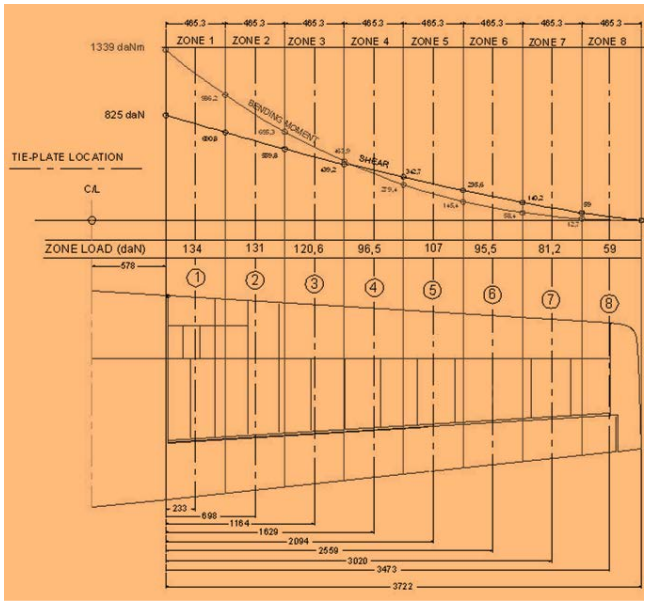
DOA Certification n° EASA.21J.335
All tests are made in house
Cooperation with University of Naples

Three Type Certificate according to CS.VLA
One Type Certificate according to CS.23
Two Certifications in process according to CS.23 (P2010 and P2012)
Two Certifications in process according to CS.VLA

Ten Major Changes in course of approval (for P2006T and P2002)

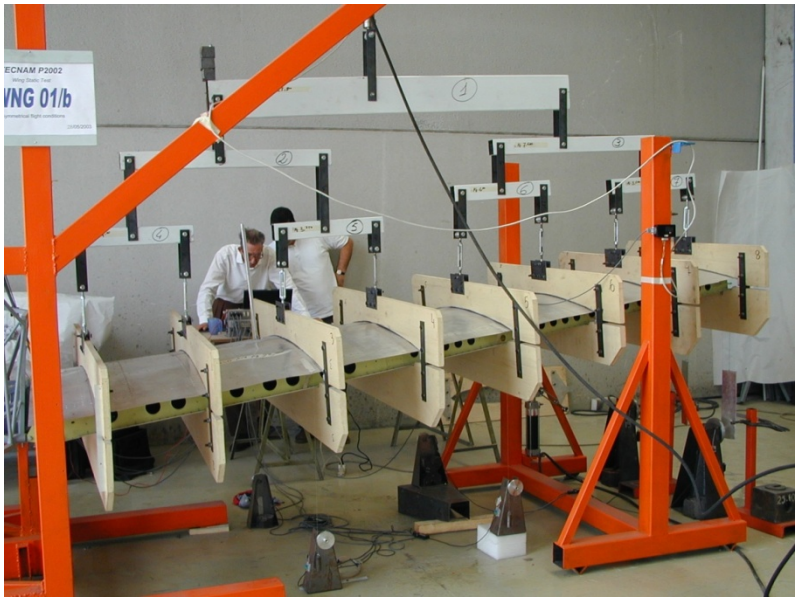


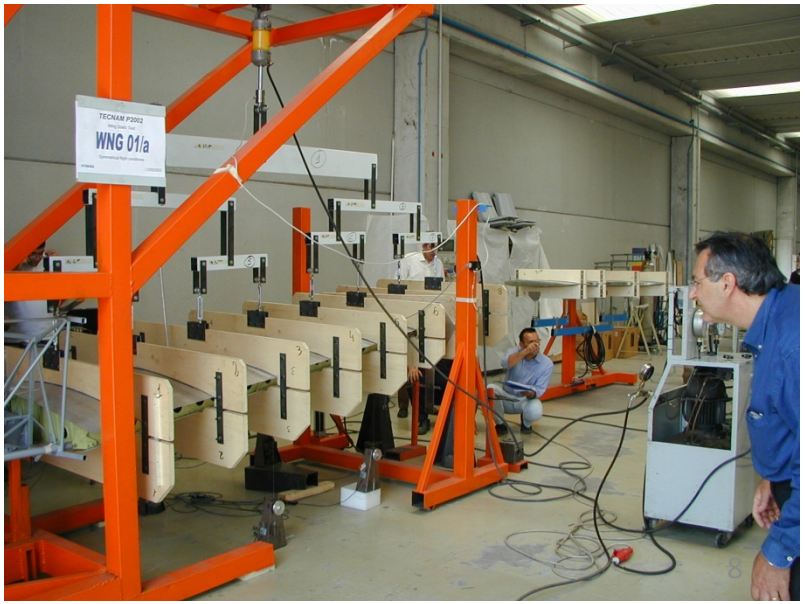




COSTRUZIONI AERONAUTICHE TECNAM

Tests development





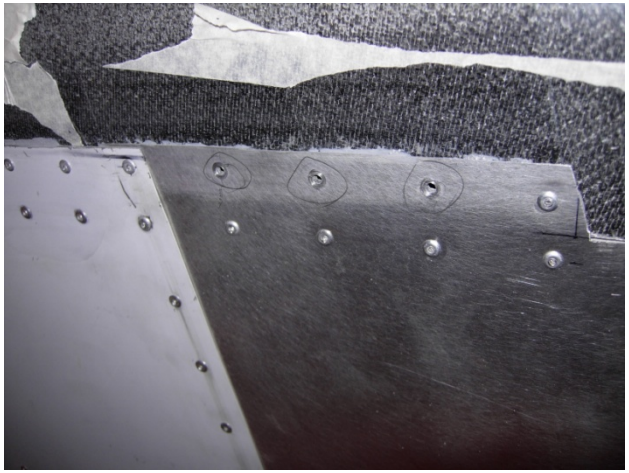
P2002JF Wing - Test Rig

Tests development

P2006T Wing Static Test
- EASA CS 23 -

Tests development

P2006T Composite Winglet Static Test
- EASA CS 23 -



Damaging before testing

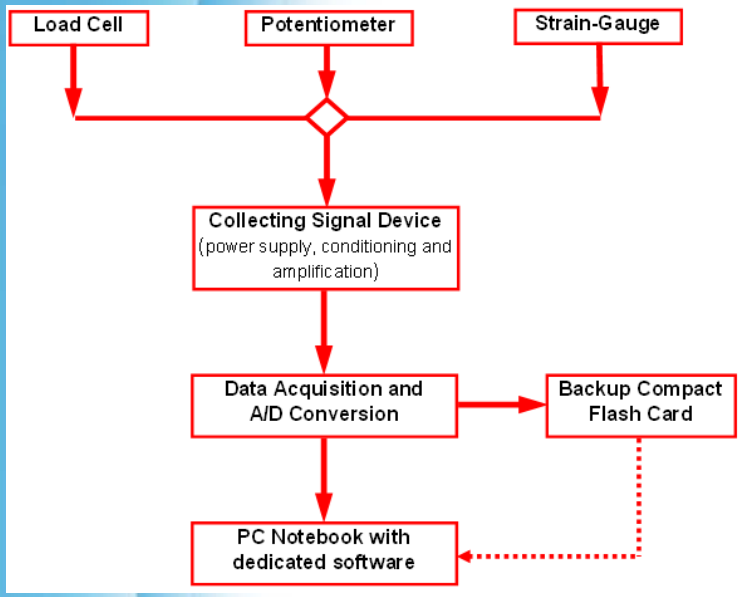
Tests development

P2008 Composite Fuselage Static Test

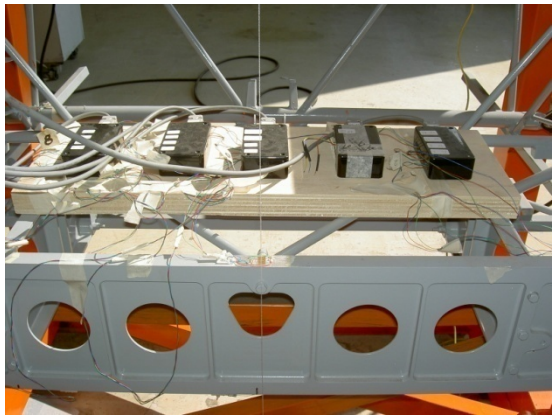
Loads computed according to LSA standards

Tests development

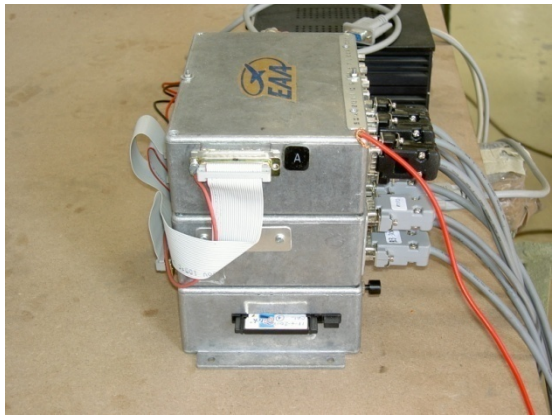
Data recording



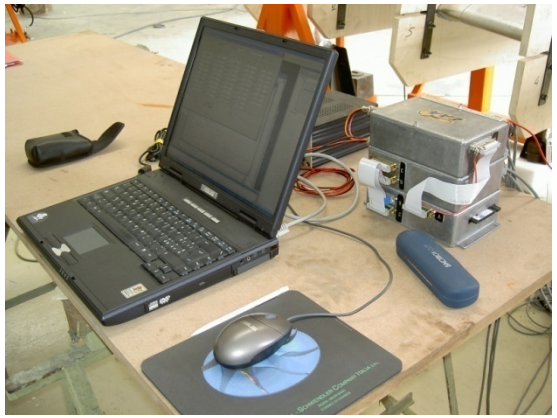
Block diagram of the data acquisition system



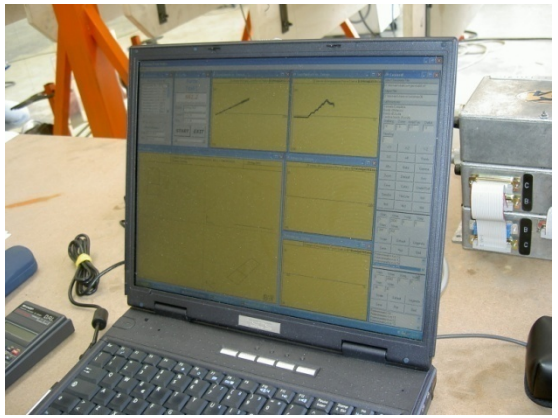
strain-gauge amplifiers



data acquisition system



complete system with the computer link



collecting the test data real-time

Tests development

Dynamic test

P2002 JF - Turnover test

Few instants before the impact

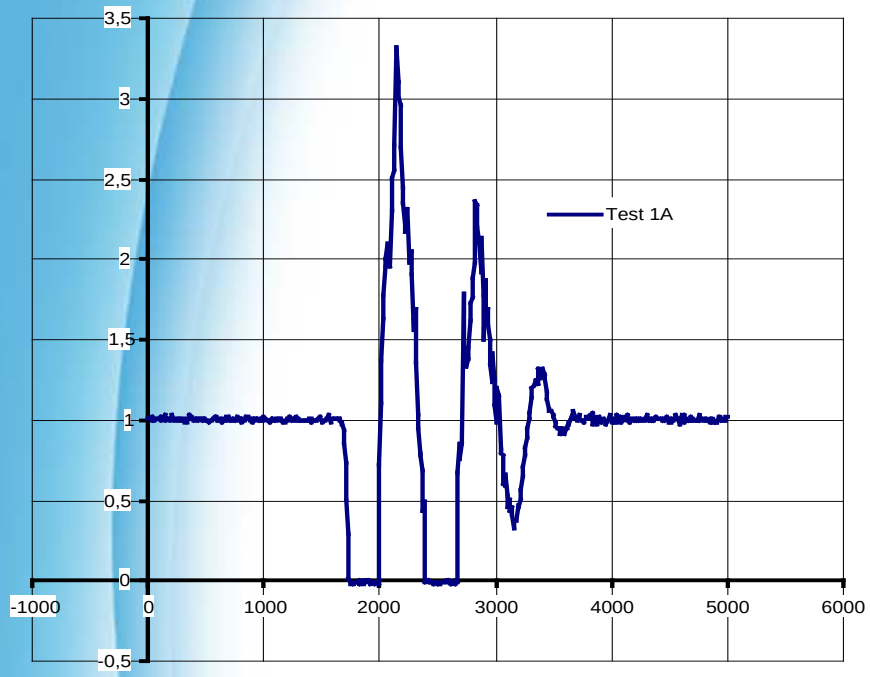
Maximum deflection

Clearance after impact

COSTRUZIONI AERONAUTICHE TECNAM

Tests development

Dynamic test



nj *vs.* time

P2002 JF MLG Drop test

Tests development

Dynamic test

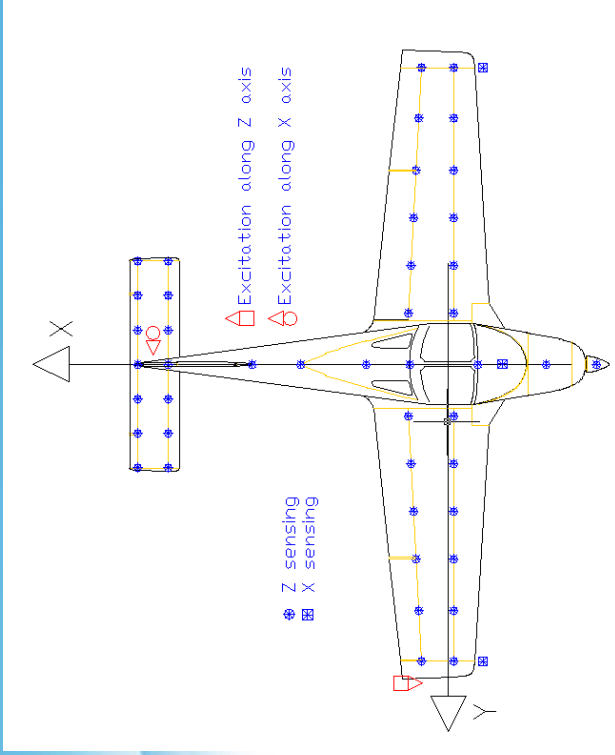
P2006T MLG Dynamic test:

Whole fuselage dropped simulating real landing conditions

Impact

Airframe Structure Testing

Ground Vibration test



Example of location of the measurement points

Wing excitation

Fuselage excitation

Fin excitation

Data recording

COSTRUZIONI AERONAUTICHE TECNAM

Flight Test

- Aircraft Performance
- Measurement
- Experimental Flight Tests
- Flight Path Reconstruction
- Handling Qualities
- Noise Test
- Crosswind Test
- Spinning

Experimental Flight Tests

Stall test with sawtooth on P2002 wing

Experimental Flight Tests

P2002 JF Program MTOW Increase

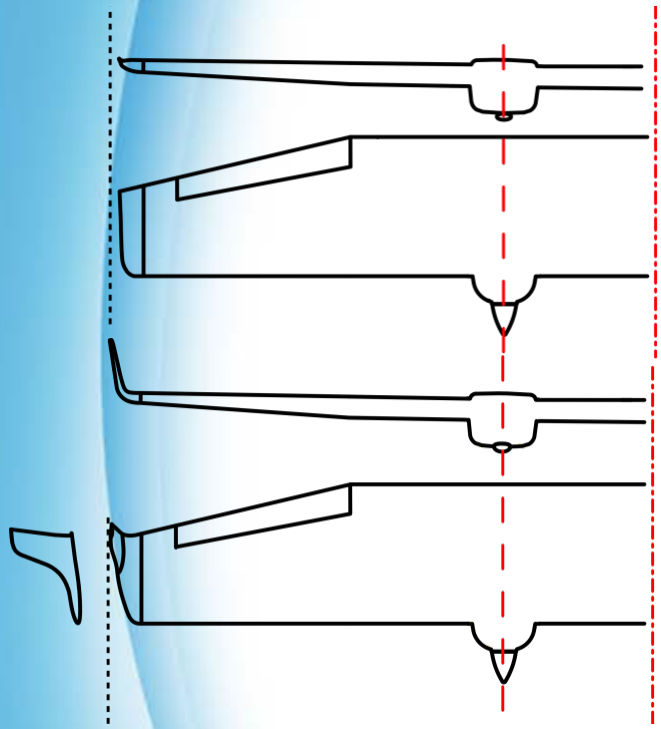
Flight measurement of wings displacement and stress level

P2006T Flight Performances and certification

CLIMB

Aircraft during pre-certification tests

b = 11.2 m S =14.7 m²



b = 11.4 m S =14.8 m²

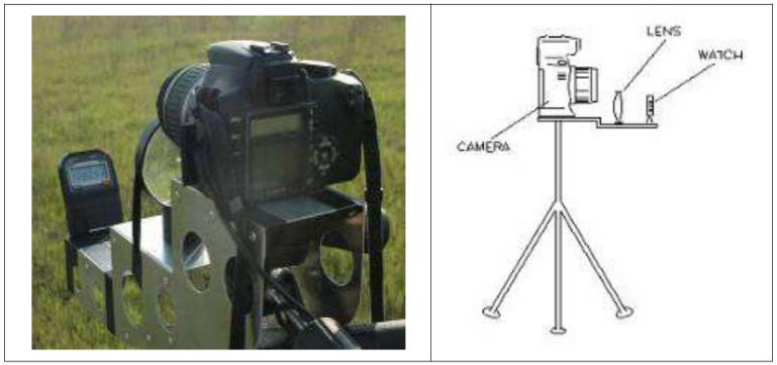
WINGLETS not installed

WINGLETS installed

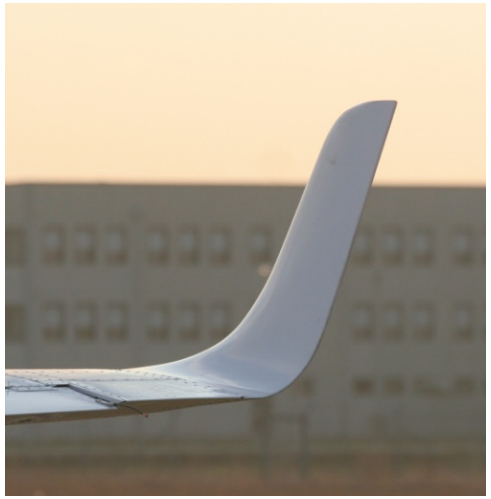
COSTRUZIONI AERONAUTICHE TECNAM

Flight Path Reconstruction

P2006T – Take Off Distance Test



P2006T - Landing Distance Test



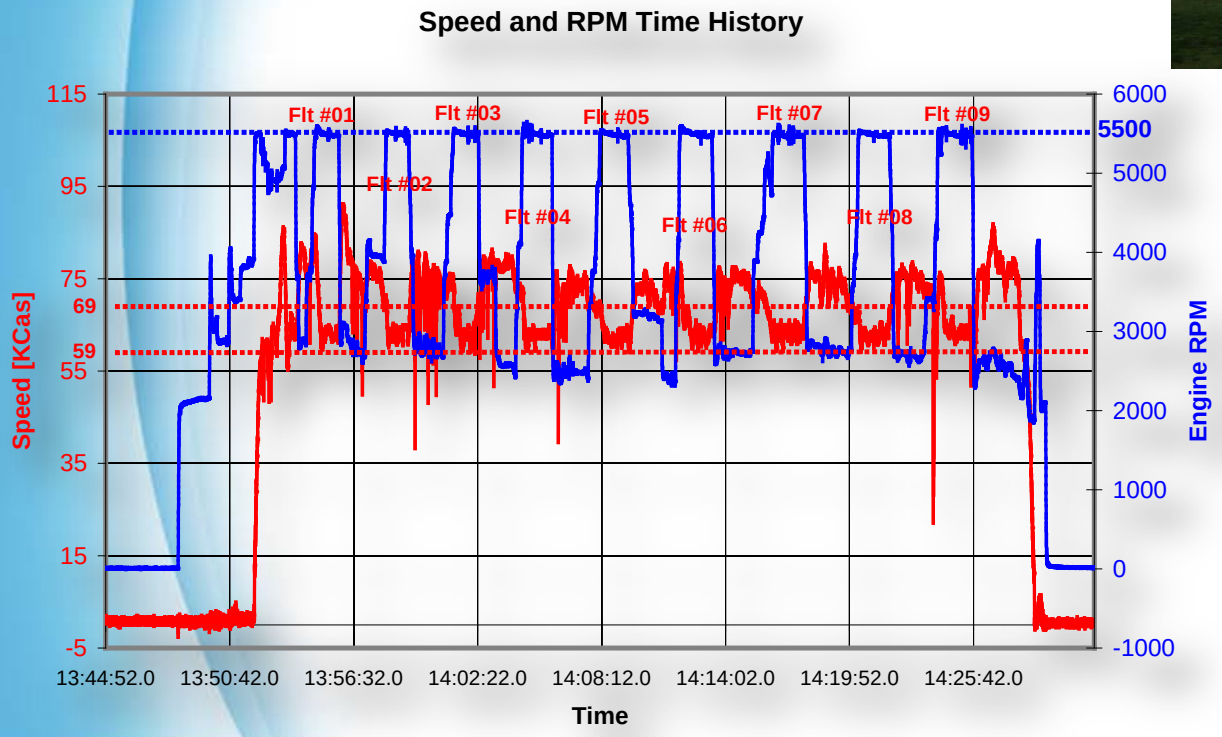
Handling qualities

Flight measurements of stick and control wheel forces

P2002 JF

P2006T

Noise testing



Crosswind & Spinning testing

Start

1 sec.

2 sec.

3 sec.

Airplane Family

P2002 Jr

P2006 T

P92 Js

P2002 Jf

P2008

COSTRUZIONI AERONAUTICHE TECNAM

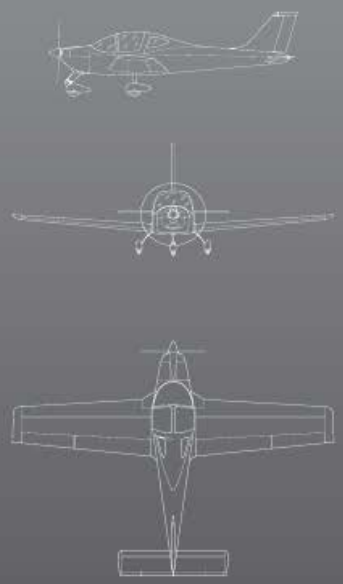
P92 JS

ADVANTAGES

- Superior performance and flight characteristics
- Low stall speed
- 194 km/h (105 kts) cruise
- Stable and responsive
- Ideal for flight schools
- High level of comfort that makes it ideal for long routes
- Excellent visibility
- Comfortable 45 in/114 cm wide cabin
- JAR-VLA certified

SPECIFICATIONS	
DESIGN WEIGHT & LOADING	**KG LB**
Maximum Take-off Weight MTOW	600 1320
Standard Equipped Weight	355 783
Standard Useful Load	245 540
Ultimate Loads	+5.7 / -2.9 G
Baggage Allowance	20 44
DIMENSION	
WING	
Wing Span	8,7 M 28,5 FT
Wing Area	12 M² 129 SQFT
FUSELAGE	**M FT**
Length	6,4 21
Height	2,5 8,2
ENGINE	
Manufacturer	ROTAX
Model	912 S2
Power	100 HP
Number of Cylinders	4
PROPELLER	
Manufacturer	HOFFMANN
Model	H017GHM
Number of Blades	2
Type	FIX
PERFORMANCE MTOW 450KG/990 LB	
SPEED	**KM/H KTS**
Maximum at Sea Level, Gross Weight	204 110
Cruise, 75% power	194 105
Vne	261 141
STALL SPEED	
Flaps up, power off	81 44
Flaps Down, power off	70 38
Service Ceiling	4500 M 14,800 FT
Rate of Climb at Sea level	1100 FT/M
TAKEOFF PERFORMANCE	**M FT**
Ground roll	120 394
Total over 50 fr obstacle	250 820
LANDING PERFORMANCE	
Ground roll	110 361
Tot. over 50 fr obstacle	260 853
FUEL	
Fuel Tank Capacity	45 X2 LT 11,2 X2 GAL

P2002 JF

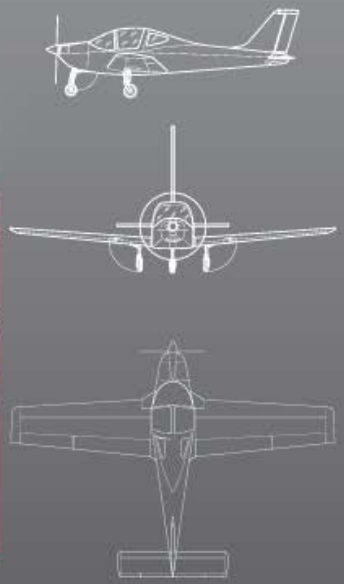


ADVANTAGES

- Superior performance and flight characteristics
- Low stall speed
- 210 km/h (113 kts) cruise
- 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

SPECIFICATIONS		
DESIGN WEIGHT & LOADING	**KG**	**LB**
Maximum Take-off Weight MTOW	600	1320
Standard Equipped Weight	360	790
Standard Useful Load	240	530
Ultimate Loads	+5.7 / -2.9 G	
Baggage Allowance	20	44
DIMENSION		
WING		
Wing Span	8,6 M	28,2 FT
Wing Area	11,5 M²	124 SQFT
FUSELAGE	**M**	**FT**
Length	6,63	21,7
Height	2,4	7,9
ENGINE		
Manufacturer	ROTAX	
Model	912 S2	
Power	100 HP	
Number of Cylinders	4	
PROPELLER		
Manufacturer	HOFFMANN	
Model	H017GHM	
Number of Blades	2	
Type	FIX	
PERFORMANCE MTOW 450KG/990 LB		
SPEED	**KM/H**	**KTS**
Maximum at Sea Level, Gross Weight	222	120
Cruise, 75% power	210	113
Vne	256	138
STALL SPEED		
Flaps up, power off	83	45
Flaps Down, power off	72	39
Service Ceiling	4500 M	14,800 FT
Rate of Climb at Sea level	1100 FT/M	
TAKEOFF PERFORMANCE	**M**	**FT**
Ground roll	140	460
Total over 50 fr obstacle	310	1017
LANDING PERFORMANCE		
Ground roll	140	460
Total over 50 fr obstacle	326	1070
FUEL		
Fuel Tank Capacity	50X2 LT	13,2 X2 GAL

P2002 JR



ADVANTAGES

- Superior performance and flight characteristics
- Low stall speed
- 226 KM/H (122 KTS) cruise
- 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

SPECIFICATIONS		
DESIGN WEIGHT & LOADING	**KG**	**LB**
Maximum Take-off Weight MTOW	62	1370
Standard Equipped Weight	390	860
Standard Useful Load	230	510
Ultimate Loads	+5.7 / -2.9 G	
Baggage Allowance	20	44
DIMENSION		
WING		
Wing Span	8,6 M	28,2 FT
Wing Area	11,5 M²	124 SQFT
FUSELAGE	**M**	**FT**
Length	6,63	21,7
Height	2,4	7,9
ENGINE		
Manufacturer	ROTAX	
Model	912 S3	
Power	100 HP	
Number of Cylinders	4	
PROPELLER		
Manufacturer	HOFFMANN	
Model	HOV352	
Number of Blades	2	
Type	V.P.	
PERFORMANCE MTOW 450KG/990 LB		
SPEED	**KM/H**	**KTS**
Maximum at Sea Level, Gross Weight	250	135
Cruise, 75% power	226	122
Vne	267	144
STALL SPEED		
Flaps up, power off	83	45
Flaps Down, power off	72	39
Service Ceiling	4500 M	14,800 FT
Rate of Climb at Sea level	1200 FT/M	
TAKEOFF PERFORMANCE	**M**	**FT**
Ground roll	150	792
ToT. over 50 fr obstacle	350	1150
LANDING PERFORMANCE		
Ground roll	142	466
Tot. over 50 fr obstacle	326	1070
FUEL		
Fuel Tank Capacity	50 X2 LT	13,2 X2 GAL

SPECIFICATIONS

DESIGN WEIGHT & LOADING

Maximum Take-Off Weight	1180 KG 2599 LB
Maximum Ramp Weight	1180 KG 2599 LB
Standard Equipped Weight	780 KG 1723 LB
Standard Useful Load	400 KG 880 LB
Limit Load Factors	+3,8G / -1,78 G
Ultimate Load Factor	+5,7G / -2,9G
Baggage Allowance	80 KG 176 LB

ENGINES

Manufacturer	ROTAX
Model	912 S3
Number Of Cylinder	4
Take Off Performance	98 HP 73,5 KW
Maximum Continuous Performance	92 HP 69 KW
Gearbox Reduction Ratio	2,43:1

PROPELLER

Manufacturer	MT PROPELLER
Model	MTV-21-A-C-F/CF178-05
Numeber Of Blades	2
Type	CONSTANT SPEED - FULL FEATHERING

PERFORMANCE

Max. Speed Sea Level (IAS - 0 FT)	148 KTS
Cruise Speed (75% 7000 FT)	140 KTS
Cruise Speed (65% 9000FT)	135 KTS
Stalling Speed Flap Down	47 KTS
Vlo (Landing Gear Extension)	91 KTS
Va (Manouvring Speed)	116 KTS
Vne (Never Exceed Speed)	168 KTS
Rate Of Climb	1140 FT/MIN
Rate Of Climb - Single Engine	230 FT/MIN
Range To 65%, 30' Reserve	620 N.M.
Service Ceiling (Twin Engine)	15000 FT
Single-Engine Ceiling	7500 FT
Take Off Distance	370 M 1213 FT
Take Off Run	274 M 898 FT
Landing Distance	390 M 1279 FT
Landing Run	200 M 656 FT

WING		
SPAN	11,4 M	37,4 FT
AREA	14,8 M²	159,1 SQFT

FUSELAGE		
LENGHT	8,7 M	28,5 FT
HEIGHT	2,85 M	9,35 FT

CABIN		
WIDTH	1,25 M	49,2 IN
LENGHT (WITH BAGG.)	3,35 M	11 FT

P2006T


QUALITY AIRCRAFT SINCE 1948
TECNAM
P2008
P2008 JC
CS VLA

P2008 New generation aircraft with composite fuselage

Carbon fiber meets metal with innovation, style, and advanced tecnology to create a new aircraft line by Tecnam.
The latest addition to the Tecnam line is the P2008.
The Tecnam lineage is apparent the P2008 which includes several exciting additions:

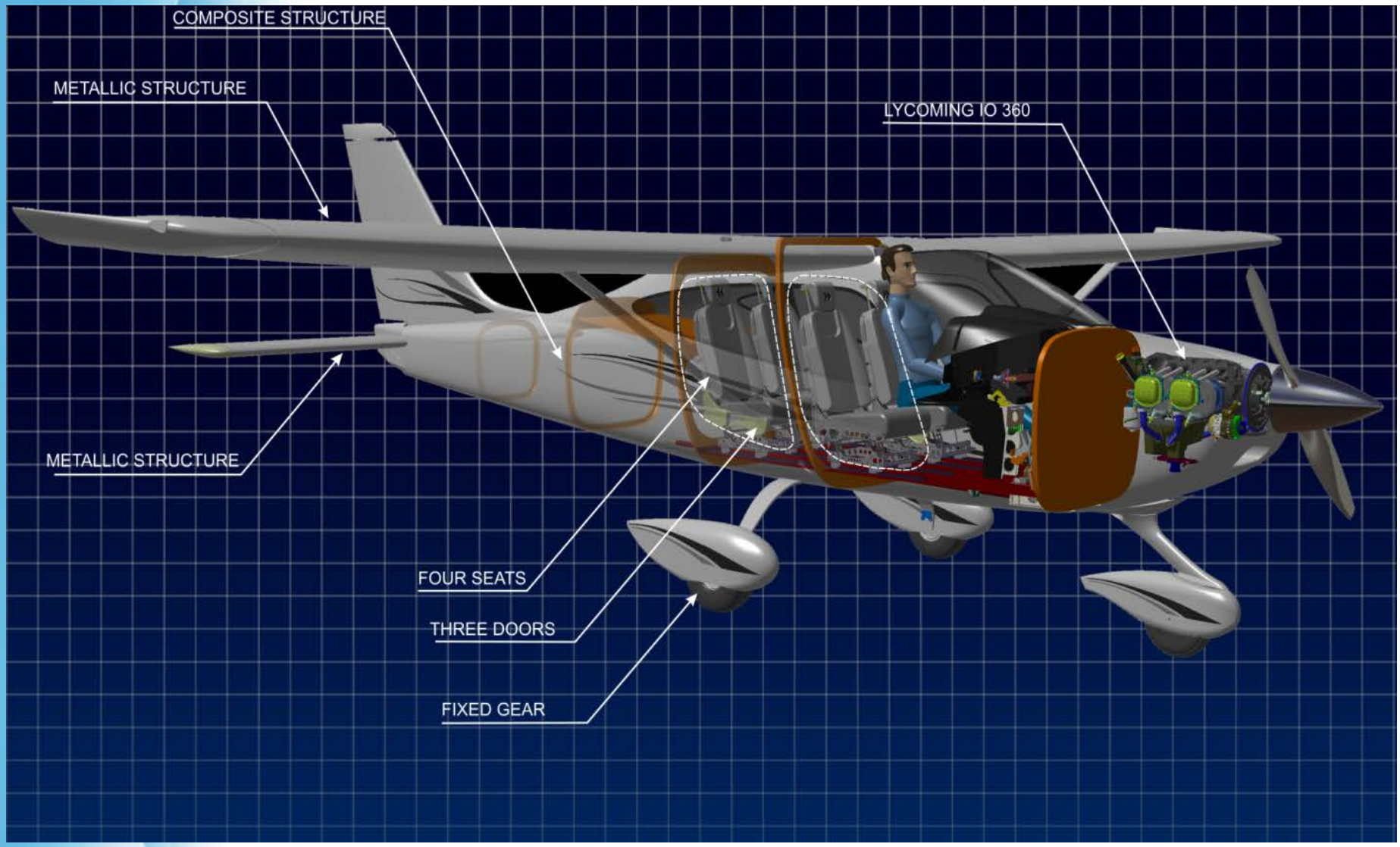
- A carbon fiber fuselage and vertical stabilizer
- Increased cabin size
- Larger doors
- A semi-tapered metal wing

As with all of the other Tecnam single engine aircraft, it has excellent visibility and an exceptionally quiet cabin.

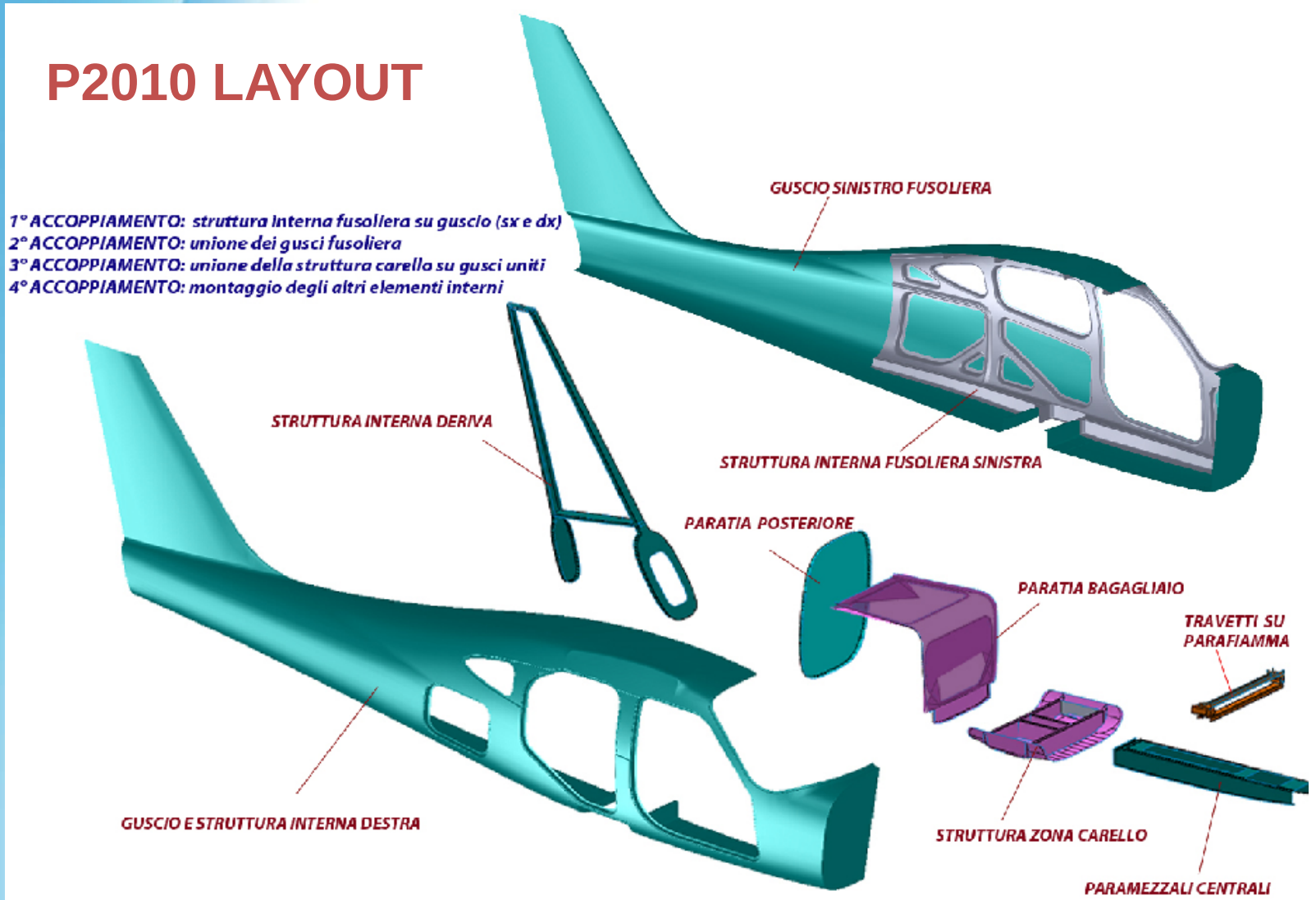
SPECIFICATIONS		
ENGINE		
Manufacturer	ROTAX	
Model	912 ULS	
Power	98 hp	
Number of Cylinders	4	
PROPELLER		
Manufacturer	GT PROPELLER	
Model	GT-2/173/VRR-SRTC FW101	
Number of Blades	2	
Type	FIX PITCH - WOOD	
DESIGN WEIGHT & LOADING		
MTOW	600 kg	1320 lb
Baggage Allowance	20 kg	44 lb
Limit Loads	+4 / -2 G	
Ultimate Loads	+6 / -3 G	
DIMENSION		
Fuselage Height	2,46 m	8,1 ft
Fuselage Length	6,93 m	22,7 ft
Wing Span	9 m	29,5 ft
Cabin Width	1,2 m	3,9 ft
Cabin Height SEAT TO COVER	0,91 m	3 ft
Fuel Tank Capacity	55 X2 lt	14,5 X2 GAL
PERFORMANCE	15°C SEA LEVEL 450 KG / 990 LB	
VMAX	235 km/h	127 KTS
Cruise Speed 75%	219 km/h	118 KTS
VNE	260 km/h	141 KTS
Stall Speed FLAPS DOWN POWER OFF	65 km/h	35 KTS
Pratical Ceiling	4572 m	15000 ft
Takeoff Run	105 m	344 ft
Takeoff Distance	200 m	656 ft
Landing Run	90 m	295 ft
Landing Distance	200 m	656 ft
Rate of Climb	5,6 m/sec	1100 ft/min
Range	633 N.M.	
MAIN FEATURES		
Fuselage	COMPOSITE	
High Wing	METALLIC	
Gear	FIXED WITH FREE CASTERING OR STEERABLE NOSE WHEEL	

TECNAM P2010

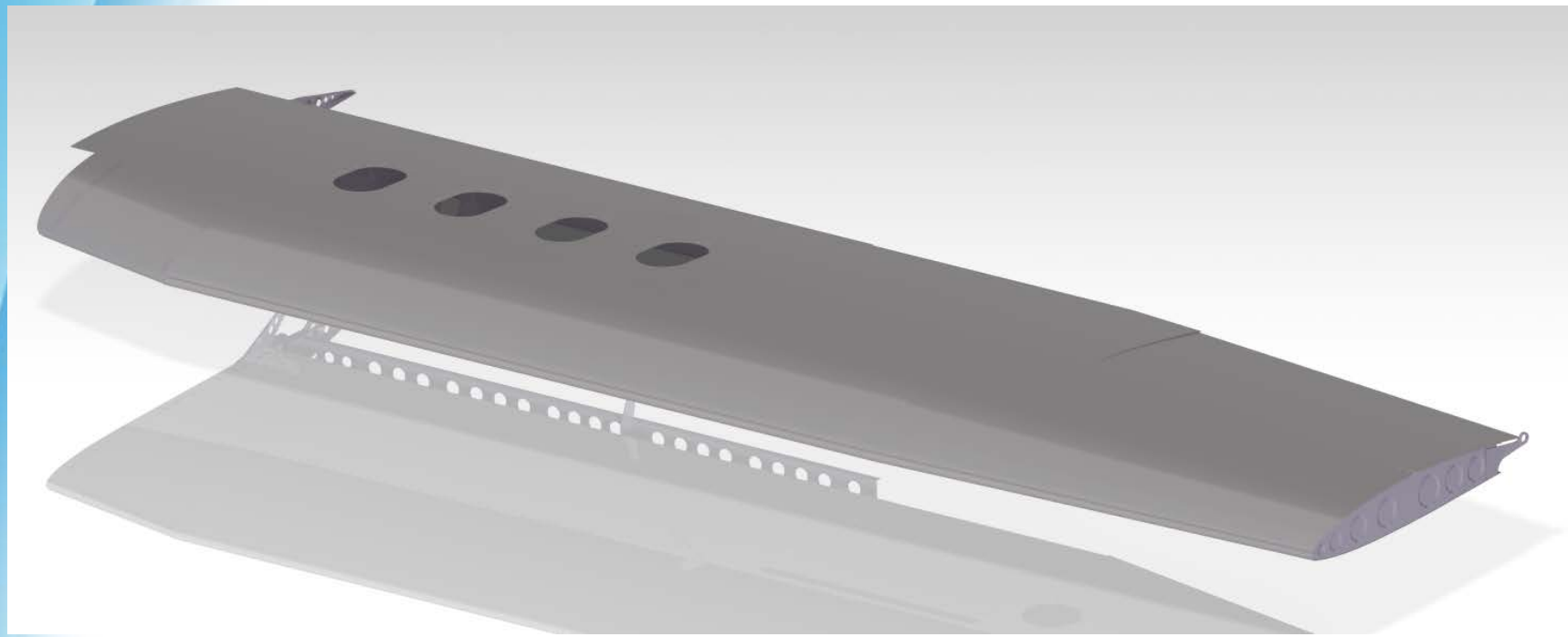
TECNAM P2010



P2010 LAYOUT



Pre-Preg Fabric, Biaxial and Tapes (See Annex for Material Properties and Layup)
- Cured at 80°C
- Hand Layup/CNC Ply Cut/ Vaccum Bag



Wing Span 10.50 m
Wing Area 14.60 m

Wing: metal structure


P2012
Traveller

P2012 Traveller

TECHNICAL SPECIFICATIONS

GENERAL

Crew	1-2 pilots
Capacity	9-10 passengers (seating pitch 32")
Powerplant	2x Lycoming TEO-540-A1A 350 hp ea.
Propellers	Hartzell or Mt 3 blade

DIMENSIONS

Wingspan	44.6 ft	13.60 mt
Length	37,5 ft	11.44 mt
Height	13.4 ft	4.10 mt
Wing area	237 sq.ft.	22.00 mt

WEIGHTS

Ramp Weight	7286 lbs	3305 kg
Max.Take off Weight	7253 lbs	3290 kg
Max. Payload (10 pax*170 lbs)	2877 lbs	1305 kg
Basic Empty Weight	4409 lbs	2000 kg
Max. Fuel Capacity	952 lbs (159 gal)	432 kg (600 lts)

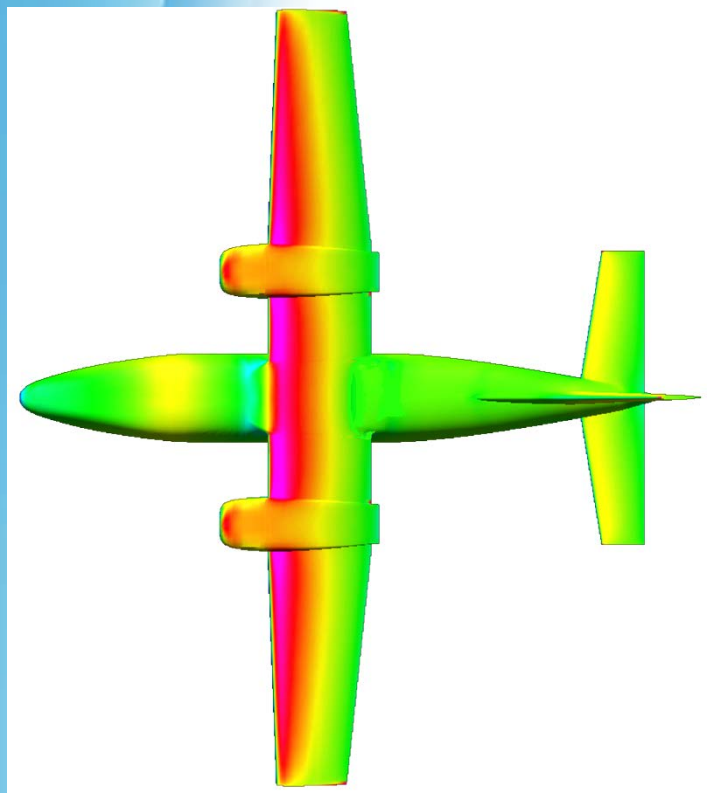
PERFORMANCE

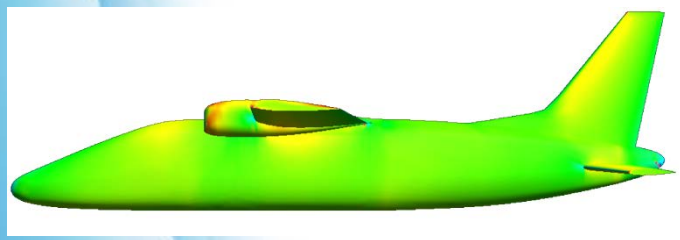
SPEED (kts)	s.l.	6000 ft	8000 ft	10000 ft
full throttle (700 HP)	191	204	208	213
75% (525 HP)	170	181	185	189
65% (420 HP)	160	170	173	177
Rate of Climb (full load, full power)	1600 ft/m'			
Rate of Climb (one engine inoperative)	400 ft/m'			
Stall Speed (Full flaps, Vso)	64 kts			
Take off run	1610 ft			
Take off distance (50 ft)	2100 ft			
Landing run	1000 ft			

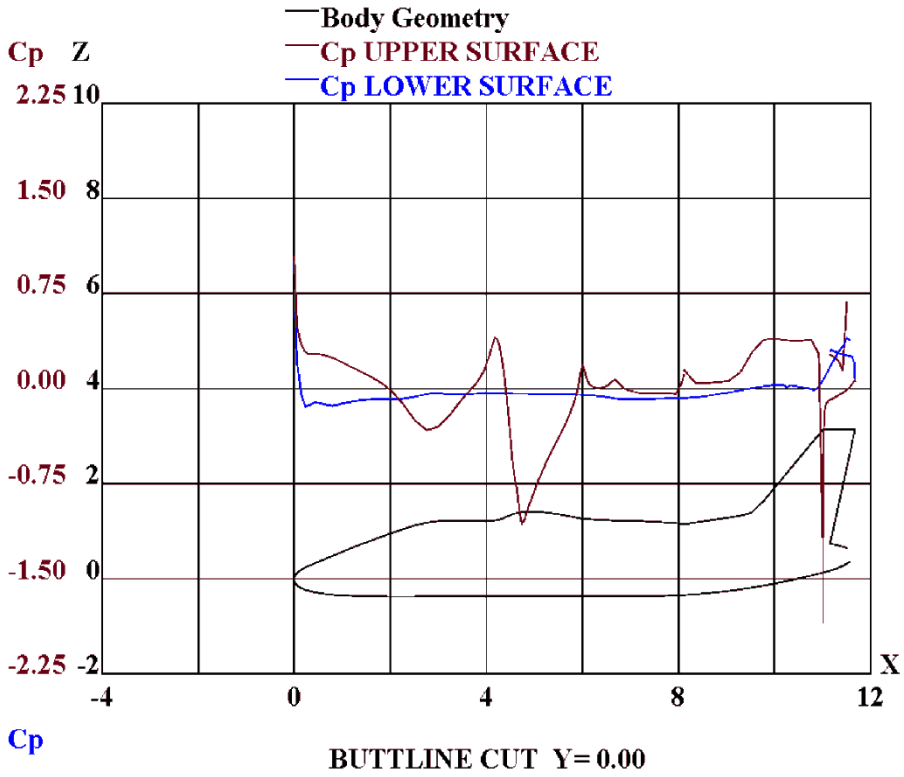

P2012
Traveller
GARMIN

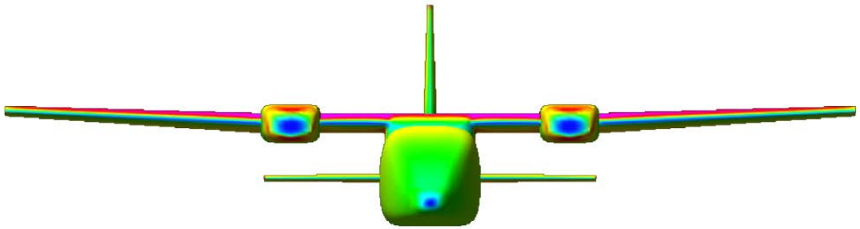
AERODYNAMIC ANALYSIS: RESULTS

PRESSURE COEFFICIENT DISTRIBUTION ON COMPLETE AIRCRAFT – **M=0.25, Re=9.4 Mil, α = 0°**









FOR THE TECNAM TEAM,
DESIGNIN AND BUILDING AIRPLANES
ISN'T JUST A JOB
IT'S AN EXTENSION OF OUR PASSION FOR FLYING

COSTRUZIONI AERONAUTICHE
TECNAM