



Embraer
Empresa Brasileira
de Aeronáutica S.A.

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Brasil

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Supplier Qualification Report

Supplier: TEAMS Testing and Engineering of Aeronautical Materials and Structures S.L.

Address: Wilbur y Orville Wright, 1
Parque Tecnológico Aerópolis
41309 – La Rinconada – Seville – Spain

Embraer's Quality Representative: Kilder Alves Gouveia

Supplier's Representative: Diana Morera Valdera

Period: 10th and 11th of November of 2014

Registered to ISO 17025: Yes No

Results:

Embraer recognizes TEAMS as approved supplier for material testing services.

In order to verify the supplier capability and expertise on materials testing, Embraer's Representatives done a technical visit to TEAMS facilities and evaluated all test related processes, including specimen preparation, dimensional inspection, instrumentation, testing execution, failure inspection and test reports.

This Approval is given after complete evaluation of test processes above and examination of all quality system, management system, equipment, technical staff and accreditations (i.e. ENAC, NadCap).

List of Approved Test and Services

-Metallic materials – Mechanical, Metallographic and Corrosion Testing:

- Tension
- Compression
- Bending, Flexure
- High Cycle Fatigue
- Fatigue Crack Growth
- Fracture Toughness - KIC, K-R Curve
- Impact, Drop Weight Test
- Stress Corrosion Cracking
- Stress Rupture
- Fasteners and Joints (tensile, fatigue and shear)
- Salt Spray
- Metallographic Analysis
- Hardness
- Conductivity
- Chemical Composition determination
- Specimen Preparation
- Specimen inspection and Failure analysis

-Non-metallic materials / Composites –Mechanical Testing:

- Tensile Strength and Modulus
- Compression Strength and Modulus
- Compression After Impact
- Tension After Impact
- In plane shear
- Interlaminar Shear (IILS)
- Interlaminar Tensile Strength
- Flexure (short beam, long beam)
- Impact (Drop Weight
- Fatigue Test
- Fracture toughness (GIC, GIIC, Mixed-Mode-bending)
- Bearing
- Pull-through
- Open/Filled Hole, tension and compression
- Single and double lap shear
- Peel metal-metal
- Flatwise Tensile
- Climbing Drum peel
- Plate Shear
- Specimen Conditioning
- Specimen Preparation (cutting, machining, tabbing)
- Laminates Manufacturing
- Specimen inspection and Failure analysis

-Non-metallic materials/Composites –Physical/Chemical Testing and Thermal Analysis:

- Fiber, Resin Volume Content
- Fiber, Resin, Void Volume Content
- Thermal analysis (DSC, DMA, FTIR)
- Aerial weight
- Density
- Flow
- Volatile
- Micrographic (5x to 1000x), Image Analysis system


-Non-Destructive Testing

- Ultrasonic inspection (Manual Pulse-Echo, Phased array, through transmission, tap coin, thickness measurement)
- Eddy Current
- Liquid Penetrant
- Thermography

This approval includes the possible variations of these tests, covered by international standards (i.e. ASTM), Nadcap Accreditations and according definitions of the Structures and Materials Engineering of EMBRAER S.A

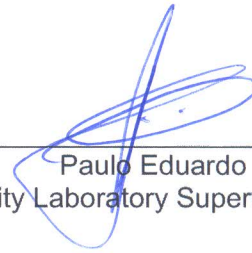
Notes:

- As EMBRAER S.A approved supplier, TEAMS will be audited periodically.
- This approval may be cancelled in case of major incidents detecting on one or more test methods.



Maurisergio Moraes
Gerência da Qualidade
Embraer

Maurisergio Moraes de Melo
Product Quality Manager - Embraer



Paulo Eduardo Moreira
Quality Laboratory Supervisor - Embraer