Embraer
Empresa Brasileira
de Aeronáutica S.A.

Av. Brigadeiro Faria Lima, 2.170
12227-901 - S. J. dos Campos - SP
Brasil

Tel.: +55(12) 3927-1662

Supplier Qualification Report

Supplier:

Exova
Testing, calibrating, advising

Crosslands House
White Cross, South Road
Lancaster
LA1 4XQ
United Kingdom

Embraer's Quality Representative:

Jackson Campos Rodrigues (Quality Technician Materials Testing Laboratory)
Carlos Eduardo Diniz (Product Development Engineer)

Supplier's Representative:

Chris Martin (Commercial Engineer - Aerospace Europe)

Period: 13th and 14th of December of 2016

Registered to ISO 17025: ☒**Yes** ☐**No**

Results:

Embraer recognizes Exova as approved supplier for material testing services.

In order to verify the supplier capability and expertise on materials testing, Embraer Representatives done a technical visit to Exova 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. NadCap).

Approved Test and Services:

UKAS	BS 7448:Part 1:1991,	Fracture Toughness: K1C	(Temperature range -196°C and -100°C to 1150°C)
	BS 7448:Part 2:1997 (Withdrawn)		
	BS EN ISO 12737:2010		
	BS EN ISO 15653:2010,		
	ASTM B645-10,		
	ASTM E399-12e3,		
	ASTM E740M-03 (2010) e2		
UKAS	ASTM B646-12,	Fracture Toughness: KRCO	(Temperature range -196°C and -100°C to 1150°C)
	Documented In-House Method		
	developed using procedure E-E-OP-AS-SOP002		
UKAS	ASTM E561-10e2	Fracture Toughness: R-Curve	
UKAS	BS 7448:Part 4:1997 inc. Cor 1	Fracture Toughness: JCRIT	(Temperature range -196°C and -100°C to 1150°C)
UKAS	ASTM E561-10e2	Fracture Toughness: KAS	
	BMS 7-323D 21/01/03		
UKAS	BS 3518 Part 1:1993,	Fatigue Low and high cycle, tensile/compressive and complex waveforms with: (a) Force control, (b) Strain control, (c) Displacement control	(Temperature range -196°C and -100°C to 1150°C) (Forces up to ±500 kN)
	BS 3518 Part 3:1963(1984),		
	BS 6072:2010,		
	BS 7270:2006,		
	BS EN 3987: 2009,		
	ASTM E466-07,		
	ASTM E606/E606M-12,		
	prEN 3874		
	prEN 3988		
	ISO 1099:2006 Ed 2,		
	ASTM D3479/D3479M-12,		
	ASTM E606/E606M-12		
UKAS	BS ISO 1143:2010	Rotating Bend	
	Documented in house Method developed using procedure E-E-OP-AS-LA-SOP002		
UKAS	BS EN 3873:2010,	Crack growth rate and threshold determination	
	BS ISO 12108:2012,		
	ASTM E647-13a,		
	Documented In-House Method		
	developed using procedure E-E-OP-AS-SOP002.		
UKAS	Documented In-House Method	Proof loading: (Forces up to ±1200kN)	
	developed using procedure E-E-OP-AS-SOP002.		
	Documented In-House Method		
	E-E-OP-AS-ME-LA-MP-07		
UKAS	ASTM D3479/D3479M-12	Low Cycle Fatigue (Plastics, including Rigid and reinforced Plastics and	Performed in a controlled environment 23 Deg C +/-2 Deg C and Rh 50% +/-5%; temperature range -65 Deg C to 300 Deg C
	Documented In-House Method E-E-OP-AS-LA-SOP002		
UKAS	GE Aviation S-400 (15 OCT 2012)	Low Cycle Fatigue (AIOY)	
		High Cycle Fatigue (AIOO)	
		Fracture toughness (AIOP)	
		Crack Propagation (AIXE)	

Nadcap scope:

Standard / Specification	Test Method	Nadcap Code
	Curve (resistance to Fracture) Testing	KR
ASTM E466	High Cycle Fatigue	O
ASTM E399	Fracture Toughness Test	P
ASTM E647	Crack Propagation / Crack Growth Testing	XE
ASTM 606	Low Cycle Fatigue	Y
	Standard Specimen Machining	Z
	Low stress Grinding and Polishing	Z2

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, Exova will be audited periodically.
- This approval may be cancelled in case of major incidents detecting on one or more test methods.

Maurisergio Moraes de Melo
Quality manager

Toni Douglas da Gama de Sousa
Quality supervisor

Jackson Campos Rodrigues
Quality Technician Materials Testing Laboratory

Carlos Eduardo Diniz
Product Development Engineer