



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

METCUT RESEARCH INC.
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Cincinnati, OH 45209
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MECHANICAL

Valid To: June 30, 2024

Certificate Number: 0296.01

In recognition of the successful completion of the A2LA evaluation process (including compliance to R223 - Specific Requirements - GE Aviation S-400 Accreditation Program), accreditation is granted to this laboratory at the location listed above as well as the one satellite laboratory location listed below to perform the following types of tests on metallic and nonmetallic materials:

Mechanical Testing Capabilities

Load, Strain and / or Stroke control, uniaxial to 15 axis multi-axial.
Load Capacity: 2 lbs (1000g) to 200,000 lbs. (890kN)
Strain Capacity: +/- .5% to +/- 20%
Frequency Capacity: Indefinite hold to 80Hz
Temperature Capability: -320°F (-196°C) to 2600°F (1427°C)

Test Name (Specific Methods)

Test Method(s)

Physical Testing

Compression	ASTM E9, E209
Fatigue Crack Growth	ASTM E647
Flat Bending Fatigue	ASTM E466
Fracture Toughness	ASTM E399, E1820
High Cycle Fatigue	ASTM E466; GE: E50TF148
Low Cycle Fatigue	ASTM E606; GE: E50TF148
Rotating Bar Bending Fatigue	ISO 1143
Tensile – RT	ASTM B557, E8/E8M
Tensile – ET	ASTM E21
Young's Modulus & Shear Modulus	ASTM E1875

Specimen Preparation

Conventional Machining	Metcut MRI Series 200 Procedures; GE: P1TF79
Electron Discharge Machining	Metcut MRI Series 200 Procedures; GE: P1TF79
Low-Stress Grinding & Polish	Metcut MRI Series 200 Procedures; GE: P1TF79

Test Name (Specific Methods)

Test Method(s)

Specimen Preparation (cont'd)

Inertia Welding (Less than 1.0 in)

Metcut MRI Series 200 Procedures;
GE: P1TF79

Structural Testing within the following envelope: MRI 500.7 and customer requirements

Load, Strain and / or Displacement control
Uniaxial to 27 axis axis-controlled loading
Load Capacity Tension: 2 lbs (1000g) to 200,000 lbs (890kN)
Load Capacity Compression: 600,000 lbs. (2668kN)
Strain Capacity: +/- .2% to +/- 20%, 1-300 channels
Pressure: 150000 psi, Static & Dynamic
Strong Floor: 22' by 82'
Strong Wall: to 16'
Actuator Displacement: ≤ 36"
Frequency Capacity: Indefinite hold to 80Hz
Temperature Capability: -320°F (-196°C) to 2600°F (1427°C)

Biaxial Tensile Testing: 75°F (23°C) to 1000°F (537°C) ISO 16842

This accreditation covers testing performed at the main laboratory listed above, and the following satellite laboratory listed below:

Metallography Lab
1775 Carillon Blvd.
Cincinnati, OH 45240

Test Name (Specific Methods)

Test Method

Physical Testing

Creep/Stress Rupture ASTM E139, E292
Erosion Testing by Solid Particle Impingement using Gas Jets ASTM G76

Metallography

Case Depth ASTM B934, F2328/F2328M
Hardness – Rockwell (B, C, 15N, 15Y) ASTM E18
Inclusion Content ASTM E45 (Method A)
Microhardness
Knoop (500 gf) ASTM E384/E92
Vickers (100, 300, 500 gf) ASTM E384/E92
Met. Preparation & Evaluation ASTM E3; GE: P29TF25
Macroetching/Microetching ASTM E340, E381, E407
Grain Size ASTM E112, E1181, E930; GE: E50TF133
Depth of Decarb ASTM E1077; SAE J419, J423
Alpha Case (Titanium) AMS 2380; GE: P3TF19
IGA & Pitting for Aircraft Chemical Processes ASTM F2111



Test Name (Specific Methods)

Test Method

Metallography (cont'd)

Metallographic Inspection of Turbine Blades/Vanes	GE: P29TF34
PM Density Measurement	ASTM B311
Surface Integrity Acceptability	GE: P29TF73

Coatings Testing & Evaluation

Bond Strength of Thermal Sprayed Coatings	GE: E50TF60; ASTM C633
Hoffman Scratch Test	GE: E50TF61
Met. Prep. & Eval. Of Thermal Sprayed	GE: E50TF65
Lap Shear Bond Strength of Thermal Sprayed	GE: E50TF66
Room Temp. Erosion Test Method for Coatings	GE: E50TF121

Failure Analysis

Fractography	ASM Handbook (Volumes 7, 9-12)
Macroscopic and Microscopic Analysis	ASM Handbook (Volumes 7, 9-12)
Scanning Electronic Microscopy (SEM)	ASTM F1372
Energy Dispersive Spectroscopy (EDS)	ASTM E1508
Optical Emission Spectroscopy (OES)	
<u>Iron-Based Alloy</u> (Al, As, B, Bi, C, Ce, Co, Cr, Cu, Fe, Mg, Mo, Mn, N, Nb, Ni, P, Pb, S, Si, Sn, Ti, V, W)	ASTM 415, E1086, E1999
<u>Nickel-Based Alloy</u> (Al, As, B, C, Co, Cr, Cu, Fe, Mg, Mn, Mo, N, Nb, Ni, P, S, Si, Sn, Ti, V, W)	ASTM E3047
<u>Cobalt-Based</u> (Al, C, Co, Cr, Fe, Mn, Mo, N, Nb, Ni, Si, Ti, V, W)	MRI 700.13
<u>Titanium-Based</u> (Al, C, Cr, Fe, Mo, N, Ni, Si, Sn, V)	ASTM E2994
<u>Aluminum-Based Alloy</u> (Al, B, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si, Sn, Ti, V, Zn, Zr)	ASTM E1251
<u>Copper-Based Alloys</u> (Ag, C, Cu, Fe, Mn, Ni, Pb, Sb, Si, Sn, Zn)	MRI 700.13





Accredited Laboratory

A2LA has accredited

METCUT RESEARCH INC.

Cincinnati, OH

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 23rd day of May 2022.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0296.01
Valid to June 30, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.