

One Source for Asset Protection Solutions®





# **OVERVIEW**

As a global leader in asset protection, MISTRAS Group (NYSE: MG) empowers aerospace manufacturers to maximize safety and performance while streamlining production.

MISTRAS® partners with our clients to serve as their One Source for Asset Protection Solutions®.

With a multinational network of state-of-the-art laboratories, MISTRAS can perform individual component inspections, or centralize multiple testing and machining services throughout the production cycle, including:



Laboratory Inspections

3D Metrology



Laboratory

Testing

**Finishing** Services



Mechanical/ Machining



# **ACCREDITED & APPROVED**

MISTRAS Group's industry-accredited laboratory network employs Level-III experts and has the certifications, accreditations, and approvals to ensure the highest levels of quality standards, earning the trust of dozens of major prime manufacturers and aerospace organizations, including...











Field Inspection (NDI)

# ONESOURCE™ APPROACH

One-stop-shop for streamlined pre- and post-inspection processes from a single provider.

MISTRAS offers the resources, technical capabilities, and expertise to integrate into manufacturing supply chains, significantly optimizing production cycles by centralizing pre- and post-inspection processes under one roof.

#### PRE-INSPECTION



- Machining Chemical Processing

#### INSPECTION



- Non-Destructive Inspection (NDI)
- Mechanical/Destructive Testing (DT)

## POST-INSPECTION



- Chemical Processing
  - Dimensional Inspection
  - Finishing
  - Field Inspection

### IN-HOUSING PRODUCTION BENEFITS

- Centralization of Processes Between Initial Forging and Final Assembly
- Optimized Production Cycle Logistics
- State-of-the-Art Inspection, Testing, and Machining Technology
- Dedicated Transportation
- Existing Expertise and Trained Personnel



**Avoid Logistical Nightmares** of Sending Parts To and From During Each Process



Parts Arrive After Manufacturing and Depart Before Final Machining for Real Savings



Proprietary Technology

Enhances Quality and

Decreases Turnaround Times



MISTRAS' Technology and Centralized Inspection Program Eliminated up to **8 Weeks** out of a Major Aerospace Manufacturer's Production Cycle

# Laboratory Inspections

MISTRAS offers advanced and traditional non-destructive inspection (NDI) solutions for QA/QC of metallic components, raw and composite materials, and fabricated structures. Our NDI solutions help to identify manufacturing flaws and wear-related defects in bars, billets, plates, extrusions, turbine disks, engine fans, and more.

# **LABORATORY INSPECTIONS**

- + Acoustic Emission (AE)
- + Digital Radiography (DR)
- + Eddy Current (EC)
- Magnetic Particle (MT)
- + Penetrant Inspection (PT)
- + Computed Tomography (CT)
- + Radiography (RT)
- + Nital Etch
- + Macro Etch

- Pre-Penetrant Etching
- Ultrasonic Testing (UT)
  - Immersion UT
  - Phased Array (PAUT)
  - Contact UT
- Visual Testing (VT)
  - Borescope
  - Dimensional Inspection

## MACRO ETCH

MISTRAS' macro-etch inspection services are used to identify potential grain structure (metallurgical) defects that require further investigation, all done in a single facility to reduce turnaround time and logistical headaches.



SCAN THE QR CODE



# Laboratory Testing

Our network of in-house testing laboratories apply destructive (DT), mechanical, and metallographic testing to characterize and validate aerospace component properties. These OA/ OC tests mirror the extreme conditions in which these components operate, ensuring reliability and conformity to all necessary industry, manufacturer, and customer standards.

# **LABORATORY TESTING**

### DESTRUCTIVE TESTING (DT):

- + Applied Force
- + Bending
- + Hardness Testing (HT)
- + Sample Preparation
- + Impact
- + Nick Break

- + Shear
- + Tensile
- + Wire

# METALLOGRAPHY & MATERIALS TESTING:

- + Carbon Fiber Porosity Analysis
- + Deposit Weight Density Determination
- + Differential Scanning Calorimetry
- + Duplex Ferrite Analysis
- + Failure Analysis
- + Grain Size Determinations
- Macrography

- Micrography
- Traction Testing
- + Hydrogen Determination
- + Microstructural Evaluation
- + Optical Emission Spectroscopy
- + SEM/EDX



## **DESTRUCTIVE TESTING**

Destructive testing (DT) is often performed on low-cost, high-volume components. In opposition to nondestructive testing (NDT), in which inspections are performed without material damage to the asset's structural integrity, destructive tests stretch, bend, fracture, and otherwise strain the component until mechanical fracture occurs in a controlled environment.

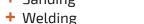




MISTRAS' pre-machining capabilities prepare your components to be inspected by forging them into their final shape. By centralizing multiple milestones within the production cycle, we help our customers save time and costs on otherwise lengthy, complicated logistics schedules.

# **MECHANICAL/MACHINING**

- + CNC Milling
- + CNC Turning
- CNC Prepreg Cutting
- + CNC Circular Wet Cutting
- + Conventional Sample Creation Milling and Turning
- + Drilling
- + Grinding
- + Polishing
- + Sawing
- + Sanding



## CNC MACHINING

MISTRAS goes beyond the role of the traditional inspection provider by offering CNC machining services to help form aerospace components into their final shape, all in a single facility.





# How We Help

# 3D Metrology

MISTRAS performs 3D Metrology with highprecision measurement technology. These services are executed on components, parts, and systems, with solutions for tactile and nontactile measurement and 3D Digitization.

# **3D METROLOGY**

- Industrial Measurement/Surveying
- + Creation of Test Plans and Measurement Concepts
- + 3D Digitization
  - Point Cloud Scanning
  - Reverse Engineering
- 3D Printing + Laser Tracker Calibration Services

# LASER TRACKER CALIBRATION

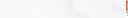
MISTRAS Group's DAkkS-accredited laser tracker calibration services help ensure equipment accuracy and precision. Offered in our state-ofthe-art labs or on-site at our customers' facilities, we streamline the calibration process from months to days.

**LEARN MORE!** SCAN THE QR CODE













# **FINISHING SERVICES**

- + Anodize Type I, II, III
- Coating Application
- + Dry Film Lubrication
- + Baking/Curing
- + Painting
- + Passivation + Teflon Rubberized Coating

- + Abrasive Blasting
- + Chemfilm Type II
- + Chemical Cleaning
- + Chemical Conversion Coating
- + Deoxidizing
- + Chem Mill

## **PASSIVATION**

Passivation prepares alloys and other aerospace assets for sustainable, in-flight operations and helps to achieve metal longevity and corrosion resistance.





# **FIELD INSPECTION (NDI)**

# **NON-DESTRUCTIVE INSPECTION (NDI):**

- + Acoustic Emission (AE)
- + Eddy Current (EC)
- + Ground Penetrating Radar (GPR)
- + Magnetic Particle (MT)
- + Computed Radiography (CR)
- + Positive Material Identification (PMI)
- + Certified Weld Inspection (CWI) **AIRPORT FACILITY & EQUIPMENT SERVICES:**

- + Penetrant Inspection (PT)
- Phased Array (PAUT)
- Radiographic Testing (RT)
- Thermography/Infrared
- Ultrasonic Testing (UT)
- Vacuum Box Testing
- Visual Inspection (VT)

# **AIRPORT INSPECTIONS**

MISTRAS' experienced team of field technicians perform non-destructive inspections (NDI) of composite materials and fabricated structures within airports to ensure quality and integrity. Other services include:

- Facility Maintenance
- HVAC Inspection Services
- Ground Support Inspection
- Structural Health Monitoring (SHM)



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+ Runway Inspections

+ FAA Repair Stations

+ Predictive Maintenance Programs (PdM)

# **MISTRAS AEROSPACE LAB NETWORK IN NORTH AMERICA** HARTFORD, CT ELLABELL, GA ■ MISTRAS AEROSPACE LABS ■ OTHER MISTRAS BRANCHES

# **LABORATORY CERTIFICATIONS**

NORTH AMERICA	Auburn, MA, USA	Cudahy, CA, USA	Ellabell, GA, USA	Hartford, CT, USA	Heath, OH, USA	*Kent, WA, USA	New Kensington, PA, USA	Phoenix, AZ, USA	Richburg, SC, USA	St. Lambert, Quebec, CA
NADCAP	NDT, PT, RT	NDT, Chemical Processing, Quality System AC7004	UT, PT, Etch	PT, MT, RT	NDT	NDT, FAA Repair Station	UT, PT	NDT, Chemical Processing, Quality System AC7004	UT	PT, RT, MT
AS9100D	X	X	✓	X	✓	<b>✓</b>	✓	X	✓	<b>~</b>
ISO 9001-2015	<b>~</b>	X	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>~</b>	X	<b>~</b>	<b>✓</b>
ITAR Registered	✓	x	✓	✓	✓	✓	✓	X	✓	✓

\*FAA Repair Station for NDT Services

# MISTRAS AEROSPACE LAB **NETWORK IN EUROPE**



# LABORATORY CERTIFICATIONS

EUROPE	Le Creusot, FR	Rosselange, FR	Augsburg, GER	Dusseldorf, GER	Friedberg, GER	Nordenham, GER	Stade, GER	Varel, GER
NADCAP	NDT	Non-Metallic Materials Testing, Metallic Materials Testing	NDT, Non-Metallic Materials Testing	NDT	NDT	Materials Testing	NDT, Non-Metallic Materials Testing	x
ISO 17025	x	<b>~</b>	x	x	x	x	x	x



QUICK MISTRAS continuously invests in R&D for inspection, testing, and machining technologies that reduce human error, automate reporting, and optimize turnaround times.

# **OneSource**<sup>™</sup> means...



# finality

OneSource means we don't just put a few pieces together; we deliver value by solving your asset protection puzzle.



# availability

OneSource means Local Presence, Global Reach. We support your individual operations with a worldwide resource, knowledge, and support network.



# centralization

OneSource means we centralize component production by going beyond the role of the typical aerospace inspection provider.



# expertise

OneSource means we're right by your side and that there isn't a problem we haven't met, faced, and solved in our decades of operations.



# strength

OneSource means we have the resources and experience to cover your asset protection needs, whenever and wherever you need us, no matter the scope.



# quality & safety

OneSource means we do what we do to maximize uptime and safety, backed by strict quality standards.

# **Knowledge Resources**





Ellabell, Georgia - Aerospace & Defense Hub Case Study





Integrated Aerospace Protection





Visit Us Online



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Scan or visit aerospace.mistrasgroup.com to start maximizing uptime and safety.



