The OEM design service limit is a prediction. MD&A’s Gas Turbine Lifespan Assessment can help decide the best option for your aging fleet. Our goal is to meet your operating strategy for remaining life through validation, repair/coatings, or replacement of life limiting components.

**THINK BEYOND LIMITS...**

To provide the best solutions for your gas turbine rotor, MD&A evaluates your specific needs in addition to assessing rotor inspections:

**Customer Inputs**
- Unit and Rotor Operating History
- Rotor Configuration and TIL status
- Operating Forecast
- Specific Concerns (Vibration Etc)
- Business Goals
- Financial Planning Current and Future
- Schedule Considerations

**Rotor Evaluation Inputs**
- Advanced NDE Results
- Metallurgical Evaluation
- Material Hardness and Composition
- Dimensional, Runout, and Balance Data
- Configuration Assessment
- Stress and Thermal Modeling
- Complete Engineering Analysis

Based on a thorough engineering evaluation, “Think Beyond Limits” solution may include:
- Life extension for additional intervals
- Extension through specific component repairs, replacements, upgrades, and/or modifications
- Rotor Exchange Program
- Rotor Replacement

**Gas Turbine Rotor Technology Expertise**

MD&A’s Gas Turbine Lifespan Assessment Program is supported by MHPS, our parent company and Major OEM. Leveraging MHPS’s proven gas turbine rotor experience, technology, and analysis capabilities, MD&A has generated and validated complete sets of models for the MS7001F/FA and MS7001B/E/EA rotor.

**Lifespan Assessment Program Basis**
- Collectively, MD&A/MHPS has performed over 270 rotor assessments

**Design and Manufacture of Replacement Rotor Components**
- Configuration based on full reverse engineering of OEM design
- Engineered solutions that provide more robust components
Elevated temperatures take a big toll on gas turbine components. Repair enhancements can extend a part’s life by slowing its degradation and pushing out its usable service life.

Our experts at the San Antonio Service Center combine years of experience with state-of-the-art equipment to deliver the right solutions to you.

**Typical Blade Lifetime Extension Clinic Outline**

The MD&A Lifetime Extension (LTE) Clinic program includes evaluation of the condition of components that have reached their serviceable limit to determine if they can operate for one additional service interval.

1. Incoming inspection of the full set.
2. Record part number, serial number, casting number.
3. Select two components from the set for the LTE evaluation.
4. Perform the following non-destructive inspection on the test parts.
   - Visual inspect.
   - Dimensional inspect.
   - X-ray inspect.
5. Perform a full repair heat treat to one of the components only.
6. Mark the components with the corresponding cut up plan.
7. Perform a metallurgical evaluation of the two components.
   - Evaluate coating condition (if present).
   - Evaluate for surface oxidation.
   - Evaluate for surface degradation (alloy depletion).
   - Evaluate the metallurgical condition of the alloy.
   - Characterize the condition of the gamma prime structure.
   - Measure the micro hardness of the alloy.
8. Mechanical testing.
   - Perform mechanical stress rupture and hot tensile testing at various temperatures and stress levels.
   - Review the condition of the external surfaces and determine what surface conditioning will be required for the next service interval.
   - Review the metallurgical results and determine if the heat treatment made an improvement to the alloy. Review the changes in micro hardness, carbides distribution, and gamma prime morphology.
   - Review the change in stress rupture and tensile test results and compare the effects of the heat treatment. Prepare a Larson Miller plot of the results.
10. Prepare a report with a summary of the results and determine if the components can be repaired and operate to one more service interval.

For more information on this product or service please contact MD&A at 210-256-5000.

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