GE Frame 7EA Turbine

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This five-day course begins with a review of gas turbine theory. Next, the major components of the GE Frame 7EA turbine are described then reviewing the air inlet/filtration system, compressor, combustion system, turbine section, support systems, and protection system. Finally, we discuss common turbine failures, how to troubleshoot various turbine problems and Gas Turbine Maintenance.

I. Gas Turbine Theory

- Basic Gas Turbine Cycle
- Comparison to Four-Cycle Engine
- Simple Open-Cycle Gas-Turbine Engine
- Actual Simple Open-Cycle Performance
- Gas Path

II. Air Inlet and Exhaust System

- Air Filtration Needs
- Inlet Compartment
- Inlet Ducting And Silencing
- Exhaust System
- Performance Monitoring System
- Evaporative Cooling System

III. Compressor Section

- Rotor
- Stator
- Variable Inlet Guide Vanes
- Pulsation Protection Control
- Compressor Casing
- Blading

IV. Combustion System

- Combustion Chambers
- Spark Plugs
- Ultraviolet Flame Detectors
- Crossfire Tubes
- Fuel Nozzles

V. Turbine Section

- Turbine Rotor
- Cooling
- Wheelspace Assemblies
- Turbine Stator
- Turbine Nozzles
- Bearings
- Couplings
- Gear Assemblies

VI. Support Systems

- Cooling and Sealing Air System
- Control Air System
- Liquid Fuel System
- Atomizing Air System
- Water Injection System
- Purge Air System
- Gas Fuel System
- Fuel Control System
- Lube Oil System
- Hydraulic Oil System
- Trip Oil System
- Fire Protection System
- Cooling Water System
- Water Wash System
- Ventilation and Heating System
- Inlet Fogging System
- Inlet Chilling System

VII. Protection Systems

- Overspeed Protection
- Overtemperature Protection
- Flame Detection and Protection System
- Vibration Protection
- Combustion Monitoring

VIII. Common Turbine Failures

- Turbine Blade Distress (Erosion/ Corrosion/Impact Damage)
- Compressor Fouling
- Combustor Distress and Plugged Fuel Nozzles
- Foreign/Domestic Object Damage
- Worn Air/Oil Seals
- Fuel Control Problems

IX. Gas Turbine Maintenance

- Borescope Inspections
- Maintenance Inspections
- Combustion Inspection
- Hot Gas Path Inspection
- Major Inspection