



Technology Training that Works

Workshop Summary

PRACTICAL GAS TURBINES – MAINTENANCE, INSPECTION & TROUBLESHOOTING FOR ENGINEERS AND TECHNICIANS

INTRODUCTION

Overview of Gas Turbines

- Industrial heavy duty gas turbines
- Aircraft-derivative gas turbines
- Medium range gas turbines
- Major gas turbine components
- Heat recovery steam generators

Fundamental Thermodynamics

- Reversible cycles with ideal gases
- Actual gas turbine cycles
- Air compressor performance characteristics
- Combustion processes
- Gas turbine performance calculations
- Comparison of basic specifications

Mechanical Equipment Standards

- Applicable API standards
- AINSI PTC22
- International standards (ISO)
- Specifications



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Gas Turbine Components

- Axial-flow compressor
- Radial-inflow turbines
- Combustors, construction, types
- Ignitors
- Fuel nozzles
- Hot path components
- Axial-flow turbine
- Firing concepts and emission control

Materials of Construction

- General metallurgical behavior
- Gas turbine blade materials
- Turbine wheel alloys
- Corrosion problems
- Wear problems
- Future materials
- Coating technology

Bearings and Seals

- Bearing design principles
- Bearing materials
- Non-contacting seals
- Mechanical seals

LUBRICATION SYSTEMS

- Basic components
- Oil cooling/warming
- Oil cleaning and conditioning
- Lube oil selection

Fuels and Fuel Supply Systems

- Fuel specifications
- Fuel properties
- Fuel treatment
- Heavy fuels
- Fuel measurement
- Fuel supply systems
- Cleaning of turbine components



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Combustion Air Filters

- Combustion air quality requirements
- Function of gas turbine air filters
- Environment and type of inlet filters
- Selection principles
- Operation and maintenance

Exhaust Systems

- Sound abatement
- Inspection openings
- Chimneys

Auxiliary Components and Systems

- Starting systems
- Washing systems
- Gear boxes
- Couplings

Control Systems and Instrumentation

- Pressure measurement
- Temperature measurement
- Vibration measurement
- Performance measurement
- Control systems
- Monitoring and diagnostic systems

Gas Turbine Operations and Maintenance

- Operating philosophies
- Analytical on-line condition monitoring
- Borescopy
- Selecting maintenance approaches
- Maintenance planning
- Spare parts and special tools
- Inspection, overhaul and repair
- Maintenance control and documentation
- Evaluating gas turbine maintenance effectiveness
- Establishing and tracking performance indices

Summary, Open Forum & Closing