



ASME IGTI *Oil & Gas* Committee Tutorial of Basics

Industrial Gas Turbines

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Abstract

Gas Turbines are widely used as prime movers for Industrial Applications, driving generators, pumps, and gas compressors. The tutorial explains the aerodynamic and thermodynamic relationships, as well as the function of individual components, together with their impact on the performance characteristics. Gas turbine and Gas Turbine component off design behavior is explained. Particular emphasis is on emissions and combustion systems. Additional systems, such as air filtration, fuel and lube oil systems required are described. Fuel capability is addressed. The interaction between performance and engine deterioration, air filtration performance and fuel quality are discussed, and specific recommendations are made.

Since a variety of industrial gas turbines is used, general differences between heavy industrial, light industrial and aero-derivative gas turbines is analyzed. Lastly, and outlook into the future and the future requirements of industrial gas turbines is given, and the methodology for new technology developments, based on user input, are given.