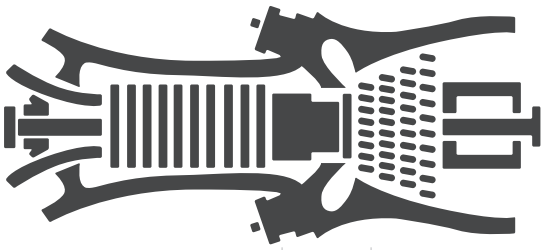
Fuel Profile
GAS

Natural Gas

NG is a naturally occurring mixture of hydrocarbons (e.g., methane [CH_4], ethane [C_2H_6], or propane [C_3H_8]). It is produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions.

OPERATING GUIDE

There can be natural variations in NG composition. As a result, pipeline quality standards exist in many countries. For example, the US Environmental Protection Agency (EPA) definition of NG states that it must either be composed of at least 70% CH_4 by volume or have a gross calorific value between 950 and 1,100 British thermal units (Btu) per standard cubic foot.



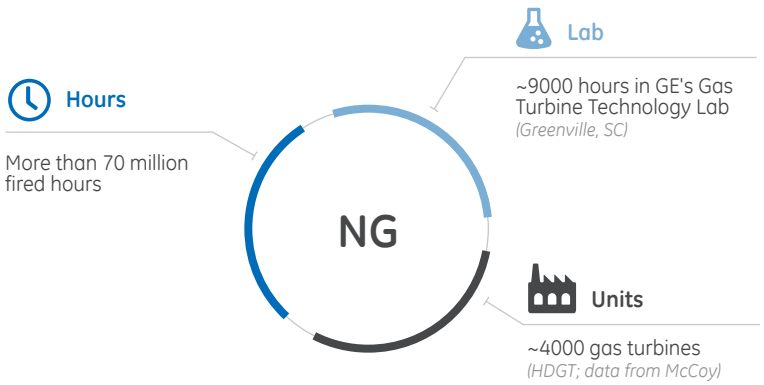
PRE-TREATMENT: Removal, Filtration, Blend, Heat

COMBUSTOR: Startup, Dilute, Controls

POST-TREATMENT: Removal

Gray icons indicate processes not required for this fuel

GE EXPERIENCE



CHARACTERISTICS

		LOW	HIGH
Heating Value	~800-1,100 BTU/scf NG (~29,850-41,000 kJ/Nm³)		NG
Methane	>85% NG		NG
Diluent	<15% NG		NG
Hydrogen	<3% NG	NG	
C_2+	<15% NG		NG
H_2O	~0% NG	NG	
H_2S	<0.3 GRAIN/100 scf NG (~10 ppm)		NG

LOCATIONS AVAILABLE

Available in all locations

MAINTENANCE FACTOR

Follow maintenance recommendations for NG per **GER-3620** (GE Heavy-Duty Gas Turbine Operating and Maintenance Considerations).

OUTPUT

HEAT RATE

EMISSIONS

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Natural Gas

POWER PLANT SCOPE IMPACT

- Performance fuel heaters use steam or feedwater from the heat recovery steam generator (HRSG)
- Requires separate infrastructure and accessory systems for back-up fuel
- If using liquid as a back-up fuel, requires dual fuel combustor configuration and liquid fuel accessory system

KEY — PRE-TREATMENT | COMBUSTOR | TURBINE | POST-TREATMENT

Filtration

Per **GEI-41040** (Specification for Fuel Gases for Combustion in Heavy-Duty Gas Turbines), the fuel gas delivery system shall be designed to prevent the generation or the admittance of solid particulate to the gas turbine (GT) gas fuel system. This shall include but not be limited to particulate filtration and noncorrosive (i.e. stainless steel) piping from the particulate filtration to the inlet of the GT equipment. Fuel gas piping systems shall be properly cleaned/flushed and maintained prior to GT operation.

Heat

Performance heating to increase GT efficiency, or to adjust overall fuel energy input if natural gas variations are causing shifts in heating value. **GER-4189B** (Design Considerations for Heated Gas Fuel) provides details of a "typical" GE gas fuel heating system as well as general system requirements.

Dilute

If run in a standard or multi-nozzle quiet combustor (MNQC), a diluent is required to mitigate nitrogen oxide (NO_x) emissions. Diluent can be nitrogen (N_2), steam or water.

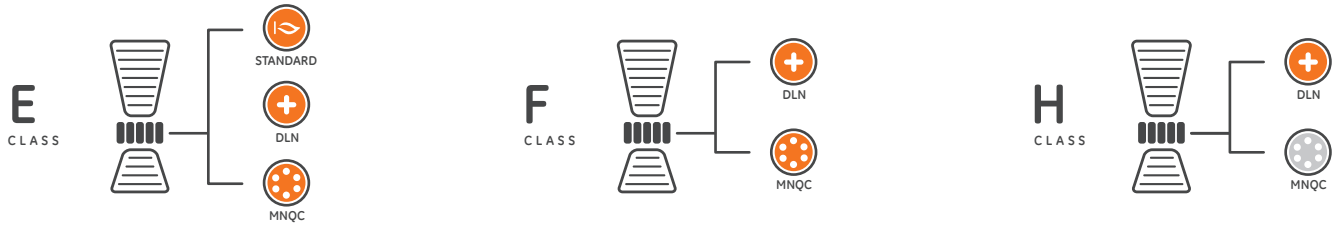
Controls

GE's OpFlex Autotune system uses a full thermodynamic model of the GT with data from a range of sensors to make real-time adjustments to the GT to optimize performance.

Removal

Use of selective catalytic reduction (SCR) to reduce NO_x emissions may be required to meet local and/or national environmental emission regulations. A separate catalyst can be added to reduce carbon monoxide (CO) emissions levels as required by environmental regulations.

TURBINE OPTIONS



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