Solar has a long history of installing gas turbines around the world using a broad range of gaseous and liquid fuels, while at the same time reducing emissions.

As the world’s energy demands expand, concerns about gas turbine emissions and fuel consumption have likewise grown. Maintaining its industry leadership position, Solar continues to improve its conventional combustion system and SoLoNOx™ dry low-emission combustion system—developing new products and adapting existing units to utilize a broader range of fuels and operate more efficiently while minimizing emissions.

Benefits
- Reducing emissions decreases costs to stay compliant today, while meeting more stringent emission standards in the future.
- Combustion improvements add to operational flexibility while maintaining or increasing reliability, availability and maintainability.
- Adaptability to a broad range of fuels, providing more flexibility when operating in isolated regions where conventional fuels are unavailable.
- Ability to use less costly fuels.

Technology Advancements for CleanerCombustion
Driven by the concept that it’s more efficient to prevent pollution up front rather than clean up exhaust emissions at the tail end, Solar has developed a robust set of emission control tools that enable its gas turbines to operate more cleanly.

Augmented Backside-Cooled Liner
The most significant change to reducing emissions on Solar® gas turbines has been the introduction of the Augmented Backside-Cooled (ABC) liner. With backside cooling, the cooling air does not mix with the combusting mixture in the combustor primary zone. This eliminates a significant amount of quenching, which means inherently lower CO emissions. This allows the combustor to be designed for a cooler flame that reduces NOx emissions as well.

More Precise Fuel Controls
Fuel control for pilot and main fuel has been designed to provide more accurate and precise control of pilot fuel flow—key to achieving consistently low emissions.
Combustion Technology

Using Alternate Gaseous Fuels
Conventional combustion gas turbines can use a broad range of gaseous fuels including gases associated with oil production, biogas, coke oven gas, natural gas liquid and liquefied petroleum gas. SoLoNOx qualification for a broader range of fuels including the higher BTU associated gases and the lower BTU landfill and digester gases continues.

Improved Liquid Fuel System Robustness
While much attention has been focused on gaseous fuel operation, Solar is also developing new solutions to cleaner, more efficient operation of liquid-fueled systems.

- SoLoNOx injectors have been improved to increase the amount of insulation around the liquid fuel passageways to lower wall temperatures, which reduces injector coking.
- On conventional combustion and SoLoNOx systems, the purge system is being improved to make sure that all liquid fuel is removed on shutdowns and fuel transfers to prevent injector coking.

Lower Emissions at Lower Ambient Temperatures
As a result of these many improvements at cold ambient temperatures, SoLoNOx low emissions range has been expanded to -20F (-29C) at a tiered NOx guarantee level from 0F to -20F.

Making Your Move to Cleaner, More Versatile Combustion
Several conversions are possible to upgrade your existing Solar gas turbine packages to SoLoNOx or dual-fuel capabilities, or to improve your existing SoLoNOx system.

Additional Information
For more information about Solar’s combustion system improvements and retrofits, contact Solar’s Field Office nearest you or visit us at www.solarturbines.com.

Conventional and SoLoNOx ABC Combustor Liners
Parallel Fuel Valve Module
Conventional Low BTU Fuel Injector