

PCI's catalytic pilot burners allow conventional natural gas-fired Dry Low NO_x (DLN) gas turbine engines to achieve lowered NO_x emissions with high combustion stability over a wide turndown, with robust operation up through F-class firing temperatures. These compact devices have been developed to fit into existing DLN combustor envelopes, providing a low cost design upgrade for new machines and the potential for a retrofit product for installed machines.

The PCI Rich Catalytic Lean burn (RCL[®]) Catalytic Pilot Burner offers many desirable features such as:

- Demonstrated low emissions (NO_x<5, CO<5) at 10-17 atm
- Low acoustics (<0.4 psi)
- Excellent performance over a wide range of firing temperatures
- Compact—capable of fitting to existing engine envelopes
- Low cost retrofit

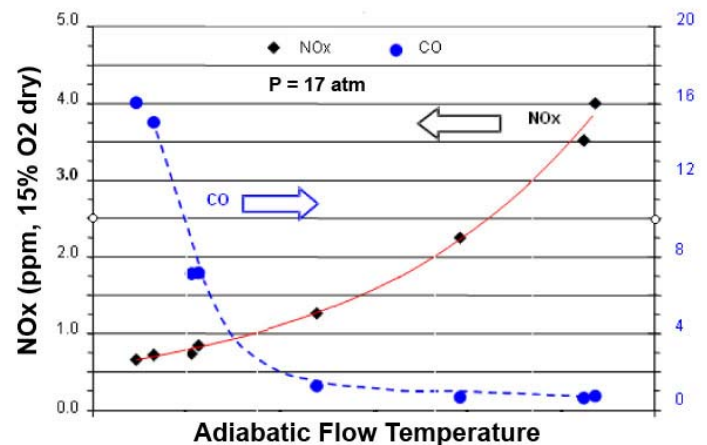
RCL[®] catalytic combustion technology addresses multiple issues inherent in gas turbine applications. The rich reactor chemistry enables start-up and operation at relatively low temperature. The lower operating temperature and rich kinetics are supportive of long catalytic surface life. The rich reactor also leads to the catalytic reactions being controllable by available oxygen, enabling broad fuel flexibility with even highly reactive fuels such as hydrogen, syngas, refinery gas, blast furnace gas, and other industrial gases. Early autoignition is limited by the absence of oxygen in the reactor discharge and the absence of fuel in the cooling flow. A key enabling feature for retrofits is the simple, compact, no moving-part design able to fit into existing combustor packaging. The integral cooling system lowers catalyst wall temperatures resulting in longer material durability. RCL[®] catalytic combustion technology enables combustion turbines to directly achieve low single digit NO_x emissions without the substantial capital, operating cost, efficiency and ammonia penalties of post-combustion controls such as Selective Catalytic Reduction (SCR), while offering the potential for reduced OEM costs now associated with lean premix combustion dynamics.



RCL[®] pilots installed inside Dry Low NO_x (DLN) injectors



Close-up of an RCL[®] catalytic pilot flame



Graph taken from the paper "Rich-Catalytic Lean-Burn Combustion for Low-Single-Digit NO_x Gas Turbines", *Journal of Engineering for Gas Turbines and Power*, January 2005, Volume 127, Issue 1, pp 27-35.

To learn more about how this technology may be applied in your gas turbine application, please contact:

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