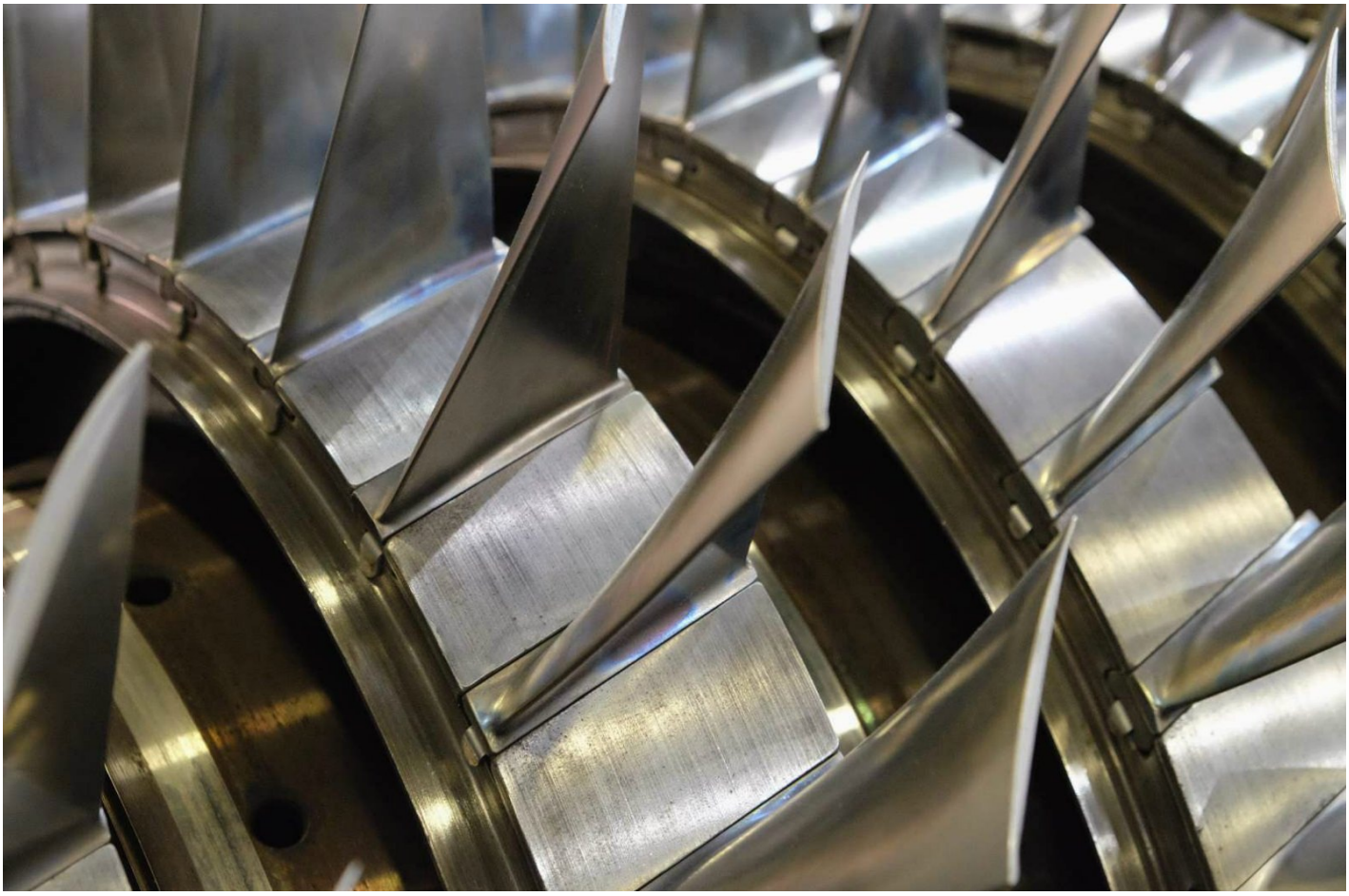
Low Swirl Injector Cuts Gas Turbine Nitrous Oxide Emissions

Lawrence Berkeley Natl Lab



Combustion has been one of the most studied chemical processes throughout history. The process does, however, release large amounts of pollution into the atmosphere that harms the environment and contributes to global warming. Now researchers at Lawrence Berkeley National Laboratory (LBNL) in Berkeley, Calif., have invented an ultra-low emissions combustion technology that significantly reduces greenhouse emissions and pollution from industrial burners and gasturbines for electricity generation.

The Low Swirl Injector (LSI) technology was developed in LBNL's Environmental Energy Technologies Division by a research team led by Robert Cheng. Funding for the work was provided by the U.S. Department of Energy.

Cheng took a non-conventional approach to turbulent fluid mechanics, thermodynamics, and flame chemistry to create the Low Swirl Injector, which releases less than two parts per million of nitrous oxides (NOx) during combustion — almost five times less than its nearest competitor. The LSI is designed to be a drop-in component for gas-burning turbine power plants that requires no significant mechanical refitting. It also burns a variety of fuels, including natural

gas, liquefied natural gas, petroleum production, refinery gases, waste gases and biogases.

> *LSI technology has the potential to eliminate millions of tons of greenhouse gases from the atmosphere every year.*

It is currently being sold by Indiana-based Maxon Corp. Several collaborative research projects are in progress that are testing combustion with different fuel types, including pure hydrogen. LBNL and Solar Turbines Inc. of San Diego are working together to develop an LSI unit for burning carbon-neutral renewable fuels from landfills, petroleum refining operations and other industrial processes.

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