

Boiler Burner Energy System Technology (BBEST) for Firetube Boilers

September 2010

Fact Sheet

The Issue

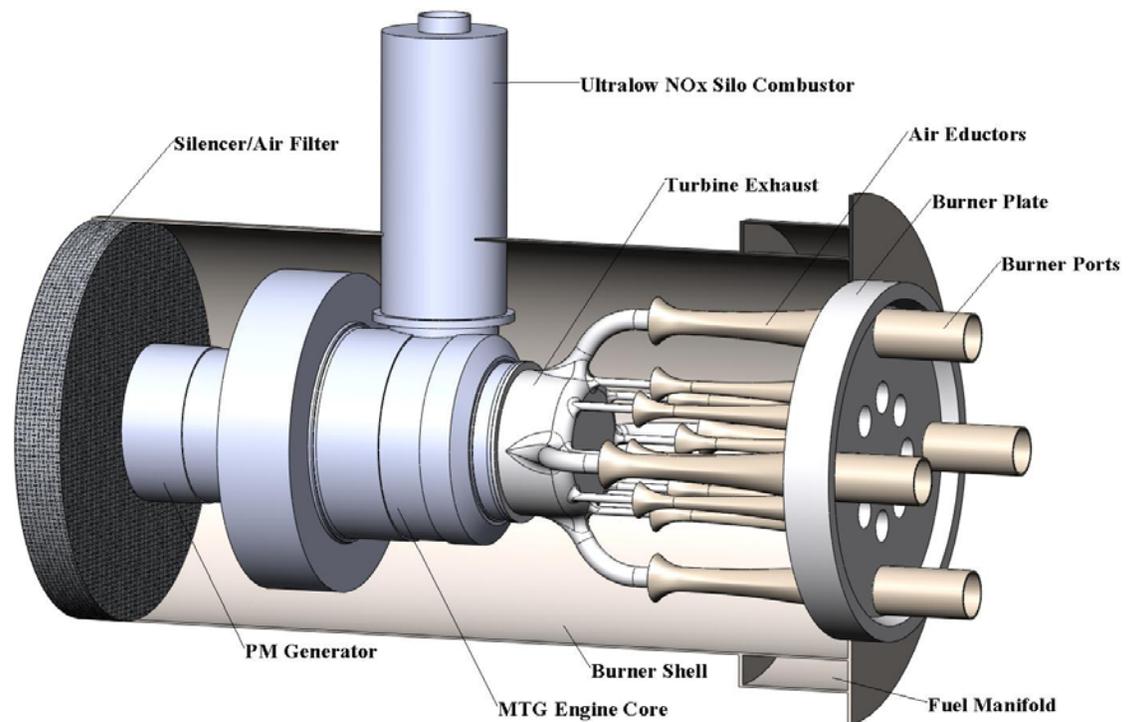
Researchers at Altex Technologies Corporation in Sunnyvale, California are overseeing the design, engineering, fabrication, and demonstration of an innovative, industrial combined heat and power (CHP) boiler burner energy system technology ("BBEST"). Their research efforts will address the issues of integrating a 100-kilowatt, electric (kWe) simple cycle microturbine (unrecuperated) with an ultra-low nitrous oxide (NO_x) boiler burner for firetube boilers.

The project goals include demonstrating a technology that reduces the incremental cost of power generation and achieves high CHP efficiencies with a compact retrofit package.

Firetube BBEST System Illustration
Source: Altex Technologies Corporation

Project Description

The CHP system being demonstrated at Altex Technologies is a 100-kWe microturbine integrated with a low NO_x burner that will reduce firetube boiler emissions to levels below 9 parts per million (ppm) at 3 percent oxygen (O₂) to meet California's emissions regulations. The project will also demonstrate achieving 82 percent overall CHP efficiency by minimizing heat losses in the stack, relative to alternative low NO_x burners, and it will reduce power unit costs by eliminating the recuperator that is typically used.



PIER Program Objectives and Anticipated Benefits for California

The boiler burner research at Altex Technologies will provide California ratepayers, energy experts, and policymakers with state-of-the-art CHP and will:

- Demonstrate reducing the incremental cost of boiler-generated power and providing an estimated payback of 1.5 to 2.0 years for most 100 kWe installations.
- Design a retrofit kit for the 5,000 industrial / commercial boilers (5 to 39 million BTU/hr), which presents a 500 megawatt (MW), approximate, electrical power opportunity in California.
- Support California's goal to encourage the development and adoption of environmentally sound CHP (low emissions, reduced greenhouse gas emissions, and lower fuel use).
- Expand California's portfolio of advanced energy generation.

Project Specifics

Contract Number: PIR-09-012
Contractor: Altex Technologies Corporation
Contract Amount: \$1,493,581
Contract Term: July 2010 to March 2013
Match Funding:
Altex Technologies Corp.: \$234,793
CMC Engineering, Inc.: \$118,000
ST Johnson: \$126,125
AHM Associates: \$2,000

For more information, please contact:

Jean Baronas
California Energy Commission
PIER Program, Renewables Office
Phone: 916-654-4512
E-mail: jbaronas@energy.state.ca.us

John Kelly
Altex Technologies Corporation
Phone: 408-328-8300
E-mail: john@altextech.com

Disclaimer

Although the Energy Commission funds this research, the recipient is responsible for it. The Commission, its employees, and the State of California make no warranty, express or implied, and assume no legal liability for this information or the research results.



Arnold Schwarzenegger Governor
California Energy Commission
Chairman Karen Douglas | Vice Chair James D. Boyd
Commissioners: Jeffrey D. Byron, Anthony Eggert, Robert B. Weisenmiller
Executive Director: Melissa Jones
Chief Deputy Director: Claudia Chandler

California Energy Commission
Public Interest Energy Research
1516 Ninth Street
Sacramento, CA 95814-5512

CEC-500-2010-FS-008