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CLEAN COAL POWER INITIATIVE: ROUND 2

Research   Coal   Large Scale Demonstrations   Clean Coal Power Initiative

FutureGen

ABSTRACT - PEGASUS TECHNOLOGIES, INCORPORATED

Applicant:	Pegasus Technologies, Incorporated
Address:	100 7th Avenue, Suite 210 Chardon, OH 44024
Congressional District:	Ohio, Lake County, Congressional District 14
Team Members:	NRG Energy, Limestone Plant Jewett, Texas, 75846 Congressional District: Leon County, TX, District 6
Proposal Title:	Mercury Specie and Multi-Pollutant Control
Technology Type:	Advanced mercury specie and multi-pollutant optimization and control
Total Estimated Cost:	$ 15,560,811
Estimated DOE Share:	$ 6,079,480
Estimated Private Share:	$ 9,481,332
Project Site:	NRG Energy, Limestone Plant Jewett, Leon County, Texas 75846 Congressional District: District 6
Type of coal to be used:	Texas Lignite and Powder River Basin (PRB)
Size or scale of project:	14,500 Tons of coal/day input; 890 MW (gross generating capacity)
Duration of proposed project:	50 Months
Primary Contact:	David Wroblewski Senior VP Development Pegasus Technologies, Incorporated 100 7th Avenue, Suite 210 Chardon, State: Ohio, Zip code: 44024 Telephone: 440-358-7039 E-mail: wroblewski@pegasustec.com
Alternative Contact:	Wally Henkel Project Engineer Pegasus Technologies, Incorporated 100 7th Avenue, Suite 210 Chardon, State: Ohio, Zip code: 44024 Telephone: 262-679-1402 E-mail: whenkel@pegasustec.com

Brief Description of Project:

Pegasus Technology will demonstrate on a large utility coal fired boiler the ability to affect and optimize mercury speciation and multi-pollutant control using non-intrusive advanced sensor and optimization technologies. The intent of this proposal is to demonstrate plant wide advanced control and optimization systems on a coal fired steam electric power plant in order to minimize emissions while maximizing the efficiency, and byproducts of the plant as an electricity producer. Advanced solutions utilizing state of the art sensors and neural network based optimization and control technologies will be used to maximize the

portion of the mercury vapor in the boiler flue gas which is oxidized or captured in particle bonds resulting in lower uncontrolled releases of mercury.

Artificial intelligence and simulation technologies will be used to control and optimize all the major facets of the power plant. This will be accomplished in a novel, modular and cost effective manner. During this project critical sensing devices will be added to the unit. Additional sensors represent a modern addition to the plant engineer's knowledge set and best possible integration of the plant assets. The project team has put together all the required best of class technologies to prove that the mercury speciation and multi-pollutant benefits can be measured, optimized, and controlled. This shall demonstrate an environment that is at once both higher in average compliance, and of better control resulting in both a smaller risk of non-compliance to the utility and minimization of capital. The project is intended to demonstrate how integrating sensors, islands of controls and advanced controls into a total plant solution can lead to improved economics while being environmentally compliant.

This project will also demonstrate that there is minimal if any adverse impacts on the commercial aspects of existing byproducts such as ash and will be directly applicable to the existing coal fleet as well as being integrated into future new plant designs.

The demonstration power plant is equipped with a tangentially-fired boiler rated to supply steam to power a turbine generator with a rated capacity of approximately 890 MW. The unit fires a blend of lignite and Powder River Basin sub-bituminous coal. The unit is also equipped with a cold-side Electrostatic Precipitator (ESP) rated at approximately 99.8% particulate removal efficiency and a wet limestone Flue Gas Desulfurization (FGD) system rated at approximately 90% SO_2 removal efficiency. Both of the devices are capable of removing specie optimized mercury from the unit's flue gas.

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