

**ANNUAL PROJECT REPORT
AS OF DECEMBER 1997**

1. PROJECT SPONSOR:

Energy and Environmental Research Corporation
P.O. Box 153
1345 N. Main Street
Orrville, Ohio 44667

2. PROJECT MANAGER:

Robert A. Ashworth
Manager - Advanced Systems

TELEPHONE: 330-682-4007

3. OCDO GRANT NO. CDO/D-931-10

4. PROJECT UPDATE ___ OR
FINAL REPORT ✓

5. PROJECT TITLE: Atmospheric Fluidized Bed Combustion System
for Small Scale Market Sectors

6. PROJECT TERM: FROM 4/1/94 TO 3/31/97

7. PROJECT	<u>NAME</u>	<u>COST-SHARE</u>
CO-SPONSORS:	OCDO	\$ <u>410,798</u>
	Energy and Environmental Research	\$ <u>117,337</u>
	U.S. Dept. of Energy	\$ <u>56,929</u>
	Ohio Agricultural R&D Center	\$ <u>46,669</u>
	Will-Burt	\$ <u>77,464</u>
	Cedar Lane Farms, Inc.	\$ <u>121,246</u>

TOTAL PROJECT COST: \$ 830,443

I. ABSTRACT

8. OBJECTIVES:

The objective of this project is to demonstrate the commercial and environmental viability of a small scale atmospheric fluidized bed combustion (AFBC) technology for use in the generation of hot water, steam, and/or electricity when firing high sulfur coal. The purpose of the development is to provide a cost effective, simple to operate, high efficiency coal combustion system, that meets and/or exceeds current and foreseen environmental regulations. Each year in the United States approximately 6,000 new boilers are sold that are in the size range to which the AFBC technology may be applied. The goal of this completed project is to now install and demonstrate a commercial size 10 million Btu/hr unit that incorporates all of the new features incorporated in the Cedar Lane Farms (CLF) AFBC. Certain new features will be added to make the unit more operable and cost effective.

Following commercial demonstration, the Will-Burt Company and/or the Energy and Environmental Research Corporation will then market the technology throughout the State of Ohio with the goal of doubling the number of installations in each succeeding year for five to six years, thus increasing the mining and use of Ohio high sulfur coal.

9. WORK DONE AND CONCLUSIONS

The AFBC combustion system at CLF facility includes coal and limestone feeding systems, the combustor, a hot water heat exchanger, and a baghouse for removal of particulate from the flue gas. The system is currently in operation for the 1996-1997 greenhouse heating season.

10. PLANS FOR THE COMING YEAR

The project with OCDO ended on March 31, 1997.

II. HIGHLIGHTS/ACCOMPLISHMENTS

11.

The project was selected by OCDO for the annual Technology Transfer Open House which was held on October 24, 1997. Approximately 70 people attended the Open House with representatives from the State and Federal Government, news media, and potential users of the technology (universities, greenhouses, etc.), engineering and manufacturing companies and consultants.

During the year, a proposal for a 10 million Btu/hr commercial scale unit was prepared for joint funding from private industry, the U. S. Department of Energy (DOE) and the OCDO. The proposals were prepared by EER and were submitted by the Will-Burt Company. At year end, funding approval was in hand from the OCDO, contingent on future funding by the DOE. Funding approval from DOE had not been obtained by year end.

III. ARTICLES/PRESENTATIONS

12.

Ashworth, R. A., Webner, R. L., Keener, H. M. "AFBC-HAGT, an Efficient Small Scale Power Plant"; 14th International FBC Conference, Vancouver, B. C., May 11-14, 1997.