

**OHIO COAL DEVELOPMENT OFFICE
PROJECT ABSTRACT
as of October 1, 2010**

1. PROJECT SPONSOR:
Touchstone Research Laboratory

2. PROJECT MANAGER:
Drew Spradling

3. OCDO GRANT NO.
CDO D-10-01

4. PHONE: (304) 547-5800
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5. PROJECT TITLE: "Study of Hybrid Fluidized Bed Gasifier for Industrial Applications – Phase I, System Design"

6. PROJECT TERM FROM: February 9, 2010 **TO:** September 30, 2010

7. PROJECT UPDATE **--OR-- FINAL REPORT**

8. BUDGET:

CO-SPONSOR'S NAME

COST-SHARE

OCDO	\$250,000
DOE-NETL	\$250,000
Touchstone	\$24,938
Cedar Lane Farms	\$15,000
Air Products	\$50,000
Grand Total	\$647,272

Abstract:

This project is a phase-one study on the capture of flue gas CO₂ by passing the gas through an algae pond. The phase-one work with co-funding by DOE-NETL, addresses the control of water evaporation; invasive species; and temperature fluctuations in open-pond algae production. Also, in this proposal anaerobic digestion of residues from the oil extraction process will be conducted at the Ohio Agricultural Research and Development Center in Wooster. This step in the proposed process will yield methane gas for power production and the residues from the digestion will provide growth nutrients back to the next batch of algae. This project will confirm that the anaerobic digestion residues are a good growth media for algae. This phase-one project will be concluded in about six months. The final goal is completion of the engineering design and cost estimates for a phase-two program wherein a pilot system would be constructed to demonstrate CO₂ capture.

Assuming that all results of the phase one work are positive, it will be proposed to DOE-NETL that a demonstration project be built at Cedar Lane Farms (CLF) in Wooster Ohio. The flue gas source for the phase-two demonstration will come from a slip stream of the

atmospheric fluidized combustor that was demonstrated in OCDO project D-97-12. The algae ponds will be constructed in unheated green houses at CLF. The goal of the phase-two project will be annual production of about 2000 gallons of oil from a ½ acre pond. At this time it is estimated the cost of a phase-two project would be about \$5,000,000. DOE-NETL would be the primary funder. A request to OCDO for phase II funding would be about \$400,000. Proposals for OCDO co-funding of a phase-two project will have to be reviewed by the TAC and approved by the OAQDA upon successful completion of the phase-one project.

Status: The first draft of the final report has been received for ODOC's review. All project tasks have been completed.