



Lignite Fuel Enhancement

Quarterly Technical Progress Report:

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Lignite Fuel Enhancement

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Abstract

This 2nd quarterly Technical Progress Report for the Lignite Fuel Enhancement Project summarizes activities from October 1st through December 31st of 2004. It also summarizes the subsequent purchasing activity and final dryer/process design.

Acknowledgement

The authors wish to acknowledge the contributions and support provided by various project managers: Dr. Sai Gollakota (DOE), Matt Coughlin (Barr) Dave Rian (Barr), John Wheeldon (EPRI), Tony Armor (EPRI) and Mark Ness (GRE).

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Executive Report

Progress:

The Design Team continued to conference this quarter. Their primary task during this timeframe was to finalize the dryer design based on information learned from the NDIC Pilot work and detailed design discussions at Barr offices in August. Heyl-Patterson was tasked with incorporating all comments and drafting drawings. They submitted a preliminary proposal which spawned detailed discussions about tube bundle, air locks, and fire suppression systems. The type of fire protection specified dictated the final structural arrangement. Three meetings were spent discussing the pro's and con's of suppression vs. ventilation systems. In the end, the dryer and bucket elevator will have suppression systems and the remaining equipment will be explosion vented. This is in agreement with GRE's current insurer, FM Global. Three inlet airlocks were reduced to two and four outlets were reduced to three. The inlet plenum was subdivided for greater flexibility and sparging air added in the outlet plenum. It was also decided to use bundles with varied material, diameter, and tube & fin spacing. This will be completed in an effort to identify for us which configuration has the best heat transfer characteristics using coal as the fluidizing medium. The dryer will also be delivered in four pieces. This will allow for installation through the current access door on the Air Heater deck. The Input/Output list and functional description was completed and forwarded to Honeywell to finalize controls.

Major pieces of equipment received this quarter were the Bucket Elevator, Liewell Screen, conveyors, and Motor Control Center. ICI completed removal of the wall separating Silo 28 from the dryer area; handrail and grating between the two areas has also been removed. They relocated a blowdown line. They moved an Air Heater basket access hatch.

A Request for Proposal was sent to eleven companies interested in commercializing our technology. Meetings were held within GRE to decide what we wanted from a commercialization agent and who should all be included. Proposals are expected in February.

Invoices #3 & #4 we submitted and paid. Invoice #5 is pending EPRI invoicing.

Mark Ness, project technical lead, gave a presentation of the technology at the 19th Low Rank Coal Conference in Billings, Montana.

Problems Encountered:

Two problems presented last quarter remain. Preliminary dryer estimates indicate it will cost well over the estimate. This is in part because of higher steel prices but also due to the complexity of the design, the number of air locks, explosion suppression system, sparging air addition, added steel for explosion suppression. The second problem involving Lehigh University has been evolving. The pace has quickened as their response to our basis was received in early December. We expect the issue to be resolved before a commercialization agent is hired.

Plans for the next reporting period:

Dryer will be ordered as well as all remaining equipment. Installation of equipment will begin, controls will be accepted, and construction will be in full swing. Project update to the NETL will be completed.

Prospects for future progress:

The prospects are quite good that all the next Quarter deliverables will be met. Dryer procurement delays may hinder longer range start-up/system checkout.

Experimental Apparatus:

Details of the dryer and system, P&ID's, schematics, and drawings contain "Limited Rights" information which cannot be disclosed at this particular time.

Experimental & Operating Data:

Demolition and Construction phase currently ongoing therefore no data to report at this time.

Data Reduction:

No data

Hypothesis & Conclusions:

Hypothesis remains the same. We will be able to dry lignite an increment to benefit the performance of and reduce emissions from a coal burning electric power generating station.