

FY99-XXXIII-92
APPLICATION FOR A GRANT FOR PARTIAL FUNDING OF TRI
VARIABLE SPEED FLUID DRIVES FOR INDUCED DRAFT FANS AT
THE LELAND OLDS STATION, BASIN ELECTRIC POWER
COOPERATIVE

CONTRACTOR: Basin Electric Power Cooperative

PRINCIPAL INVESTIGATOR: Dick Shaffer
 Phone 701-223-0441 (ext 2101)
 FAX 701-224-5322
 rshaffer@bepc.com

PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
Basin Electric Power Cooperative ND Industrial Commission	\$563,000 (see status report #1) \$180,000
Total Project Costs	\$743,000

Project Schedule - 16 Months

Contract Date - 5/13/99
 Start Date - 9/1/99
 Completion Date 11/30/00

Project Deliverables

Status Report - 1/31/00 ✓
 Status Report - 5/31/00 ✓
 Status Report - 6/30/00 ✓
 Status Report - 8/31/00 ✓
 Final Report - 5/15/01 ✓

OBJECTIVE / STATEMENT OF WORK

The purpose of this project is to demonstrate the feasibility of using variable speed fluid drives (VSFD) and the potential benefits that can be derived from their installation on large horsepower equipment at coal-fired power plants. The primary objectives of this project are to confirm that VSFD between each motor and induced draft (ID) fan will increase plant efficiency (heat rate), reduce fan maintenance, and result in reduced CO₂ emissions (CO₂/MWh).

STATUS

Variable Speed Fluid Drives(VSFD) were installed between the motor and fan for each of the Induced Draft fans on Unit # 2 at the Leland Olds Station. The use of the VSFDs to drive the ID fans provides substantial electrical power savings at the following loads: 1) 400 MW - 2.4

MW savings, 2) 300 MW – 2.9 MW savings, and 3) 200 MW 3.9 MW savings. This savings represents an annual savings of 19,200 MW-hours and an improvement of nearly 0.6% in overall heat rate.

Additional benefits include:

- Vibration is reduced and balance weights not required
- During startup the ID fan reaches full speed at 3.5 seconds versus 17 seconds prior to conversion
- Pressure of the air/flue gas within the boiler is easier to control
- This location is the largest demonstration of this VSFD application