

7.2 Research on Fundamentals of Electrostatic Augmentation of Fabric Filtration

Objective: Develop a technological basis for electrically enhanced fabric filtration in baghouse operating on utility and industrial boilers and spray dryers, controlling SO_x.

Approach: Field assessments of Electrostatic Augmentation of Fabric Filtration (ESFF) are being made in a pilot plant utilizing both pulse jet and reverse air cleaning mechanisms. Laboratory studies are planned to explore advanced ESFF modifications of electrodes or filter bags for incorporation into the field operation at any convenient stage. Finished assessments are to include cost information on ESFF technology. In-house experiments are designed to determine the mechanism by which ESFF operates to give improved filtration, and to develop the technology required to extend ESFF to filtration systems on spray dryers for SO_x removal.

Rationale: Fabric filtration is a preferred method of emission control in some industrial and utility applications because of its recognized high efficiency. The ESFF concept shows promise of removing the energy penalty associated with fabric filtration by as much as 50%, thereby providing support for 1983 and subsequent reviews of industrial and utility boiler New Source Performance Standards. The potential for ESFF in pulse-jet baghouses has been strengthened by the discovery that the inside support cage can double as electrodes to generate the electrical field. For reverse air application, an investigation into the optimum electrical characteristics for a fabric-electrode system is needed. Extension of ESFF for use in dry SO_x systems promises to provide a very cost effective pollution control system for both particulate and SO_x control.

Resources (\$1000's):

FY81	FY82	FY83
1139	700	670

Milestones:

- ° ESFF pulse-jet pilot plant report; 4/82
- ° Report on advanced ESFF laboratory work; 8/82
- ° Complete ESFF reverse air work on 1000 ACFM pilot unit; 9/82
- ° Complete in-house investigation of ESFF effectiveness on spray-dryer emissions; and 7/83