

**Boiler Diagnostics For Real Time
Determination of Cleanliness & Automatic Cleaning Control**

Mitchell J. Pezzi

Diamond Power Specialty Company

"Boiler Diagnostics for Real-Time Determination of Cleanliness and Automatic Cleaning Control"

Authors:

M. J. Pezzi & H. R. Carter

**Diamond Power Specialty Company
Lancaster, Ohio**

ABSTRACT

New diagnostic tools have been developed by Diamond Power Specialty Company for providing direct measurement of boiler cleanliness and other operating conditions. These devices allow for on-line quantification of heat transfer cleanliness and provide input into control systems for process management and automatic cleaning control. Integration of these devices with other on-line plant performance models, such as PMAX, provide for improved operating information for boiler operators. This paper covers the development and introduction of new devices for gas temperature measurement, furnace imaging and cleanliness determination, and heat flux determination.

This report is being delayed due to legal revisions which are currently being made. This report can be obtained by calling Mitchell J. Pezzi at (614) 687-4321, or by writing to Mitch at 2540 East Main Street, Lancaster, OH, 43130.

FEGT/SOOTBLOWER CONTROL

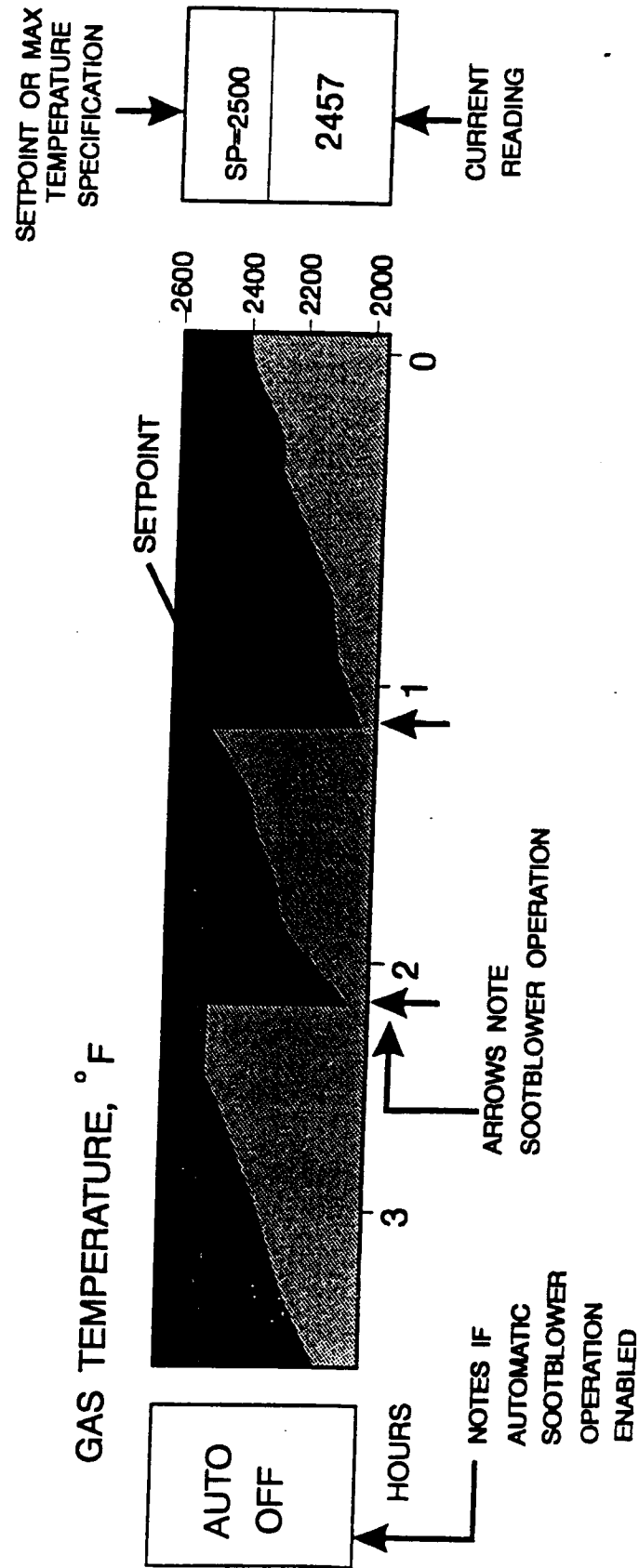
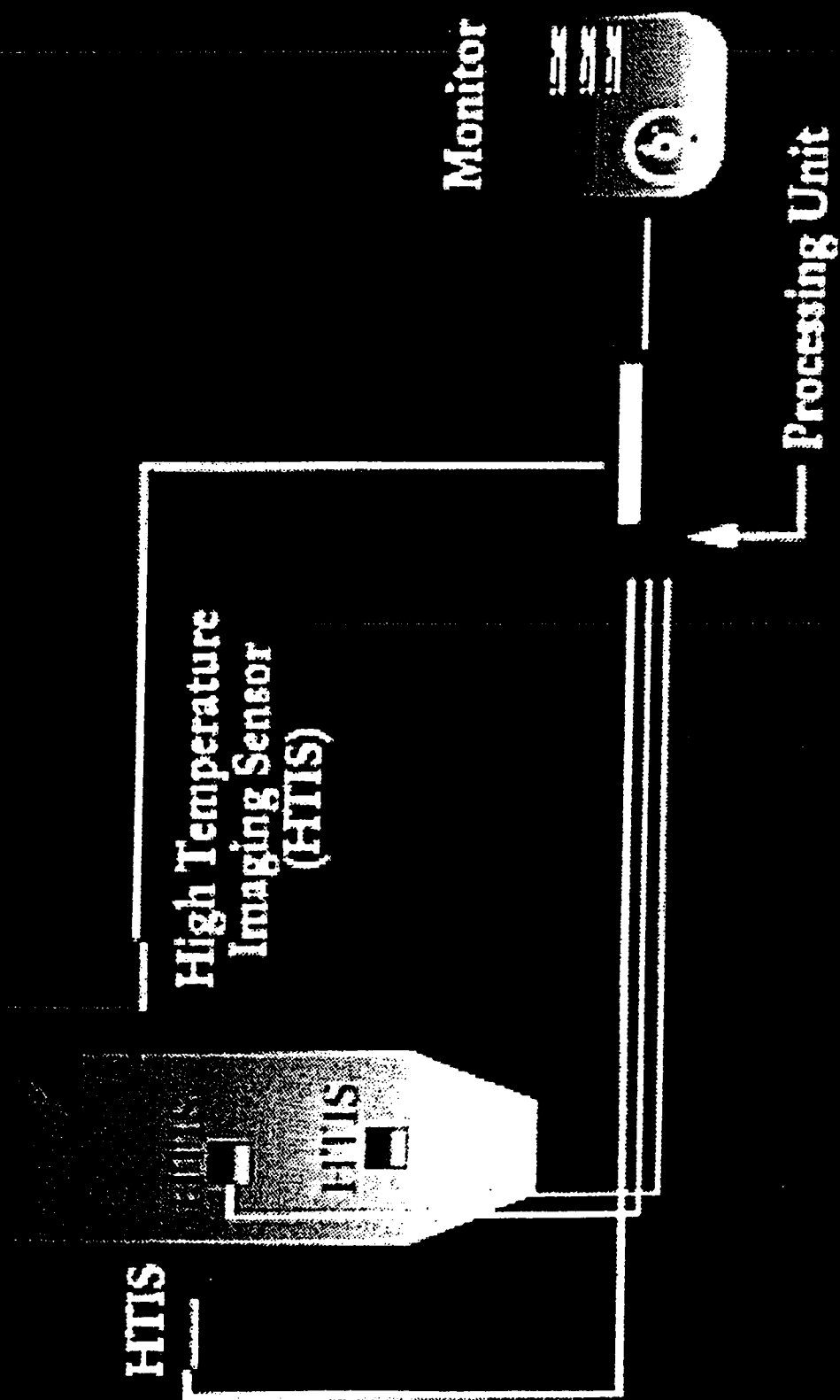


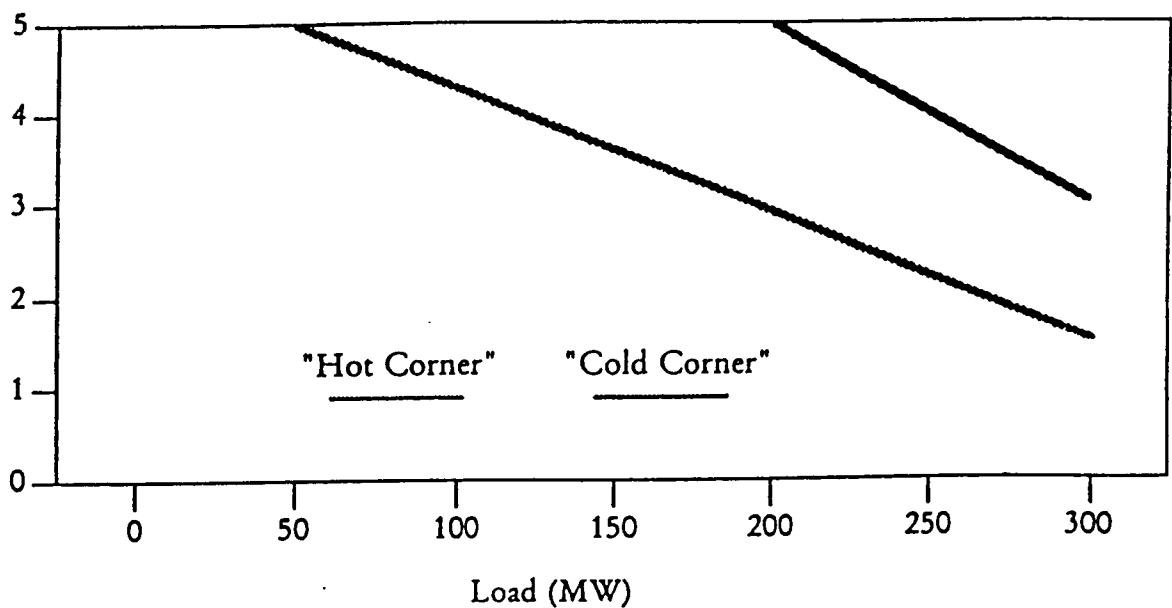
Figure 1

Cleaning Advisor Arrangement



Spatial Resolution With Variances in Load

Time - Clean to Dirty (Hours)

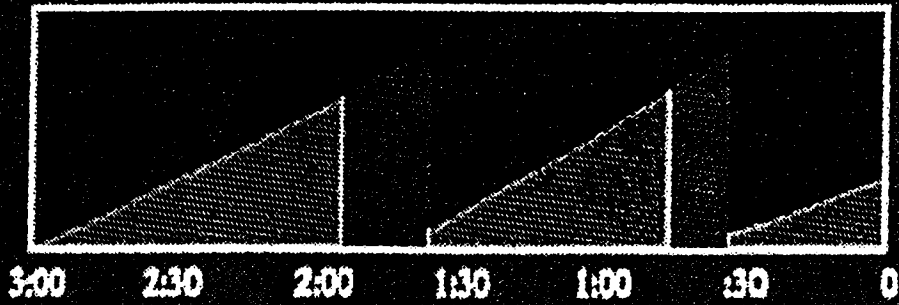


Cleaning Advisor



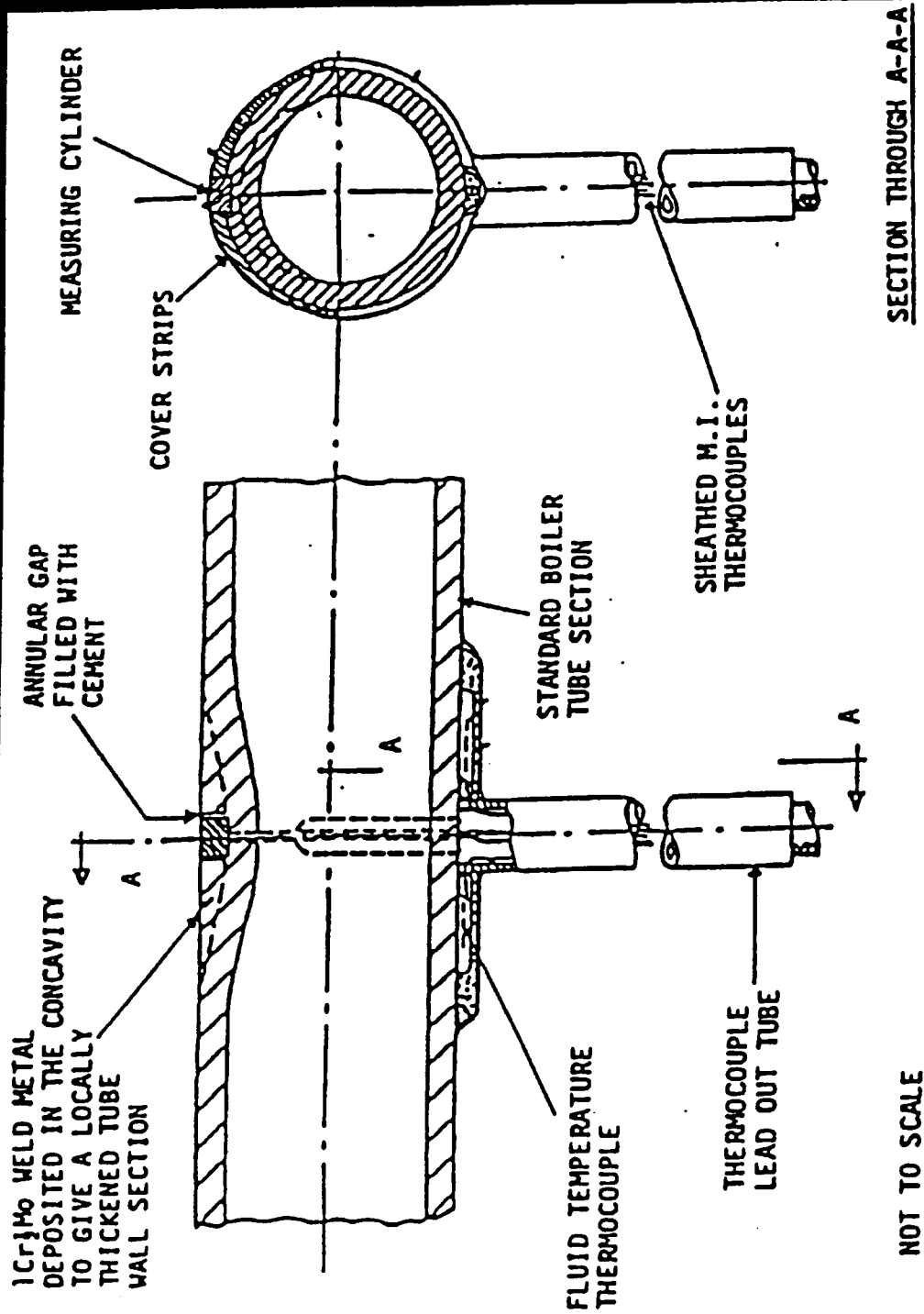
Slag Coverage

100



CAM 1
SC = 45
SP = 75

FLUX TUBE ASSEMBLY



FLUXDOME ASSEMBLY

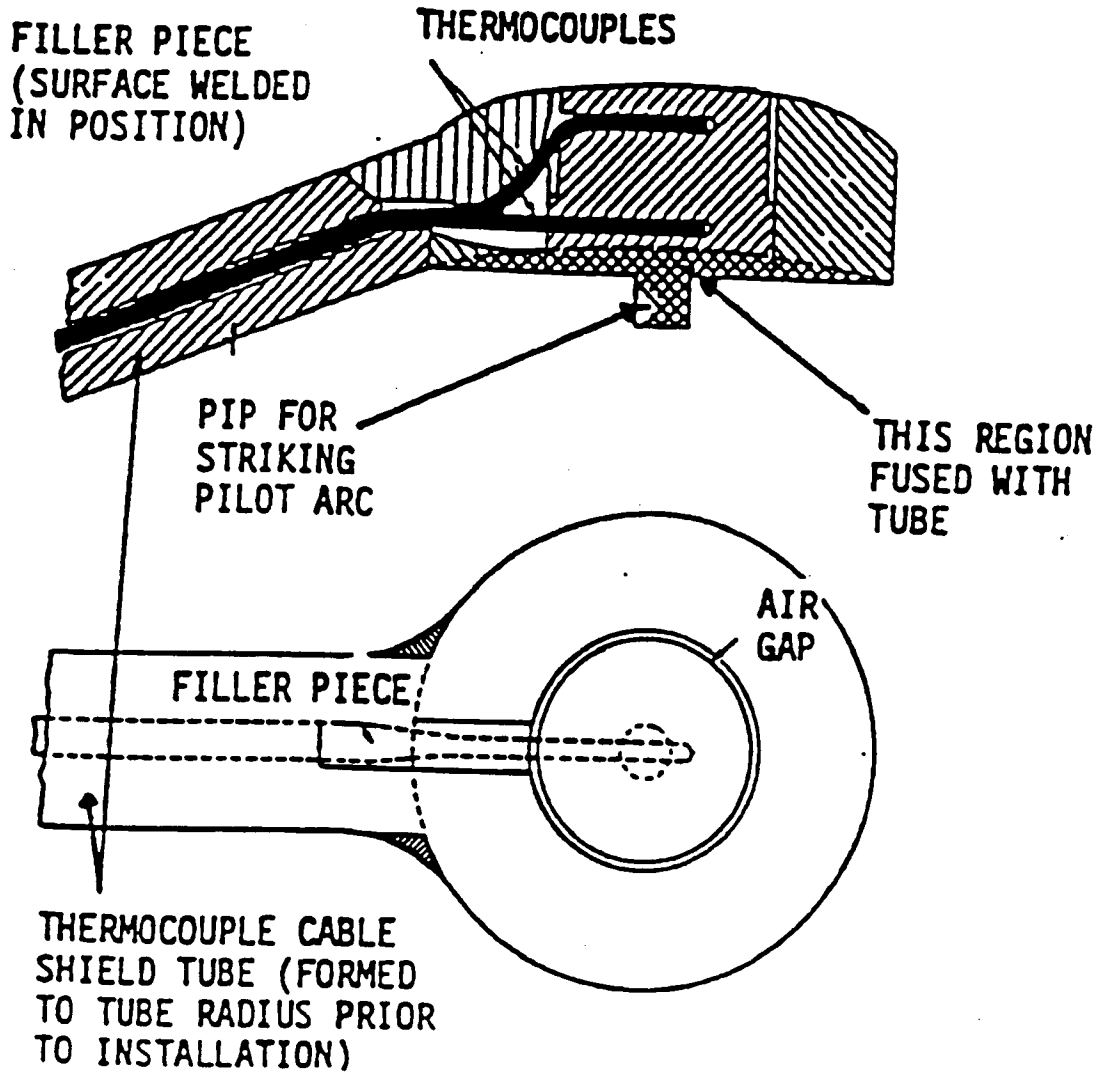
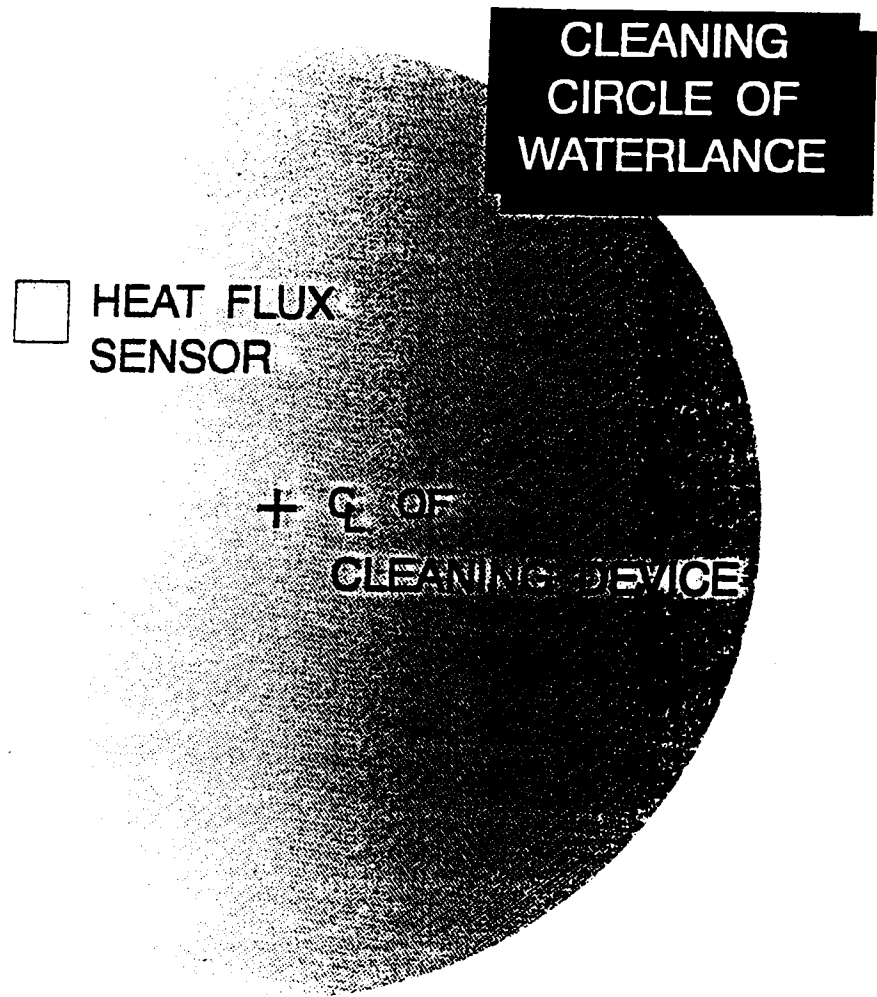
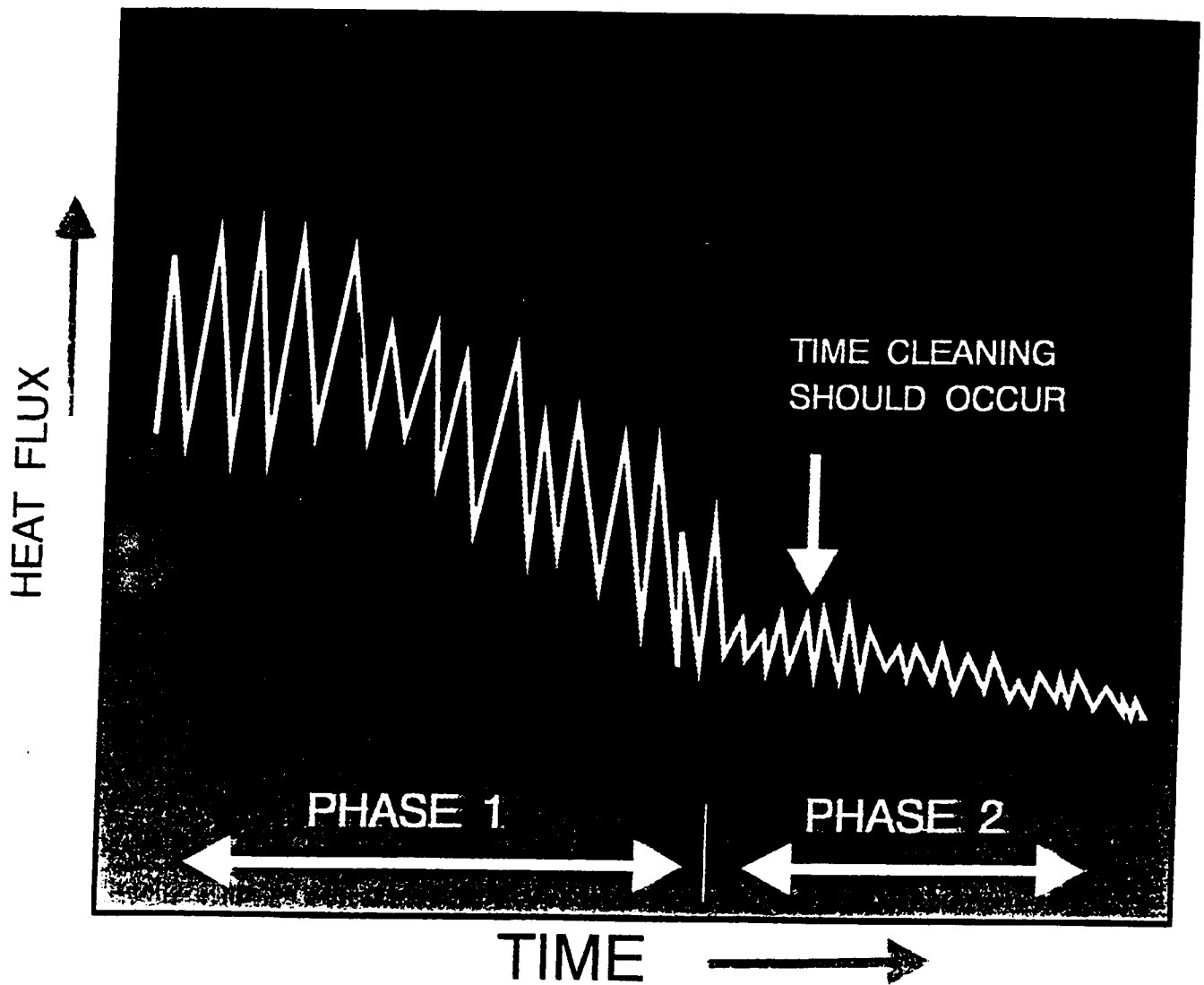


Figure 6



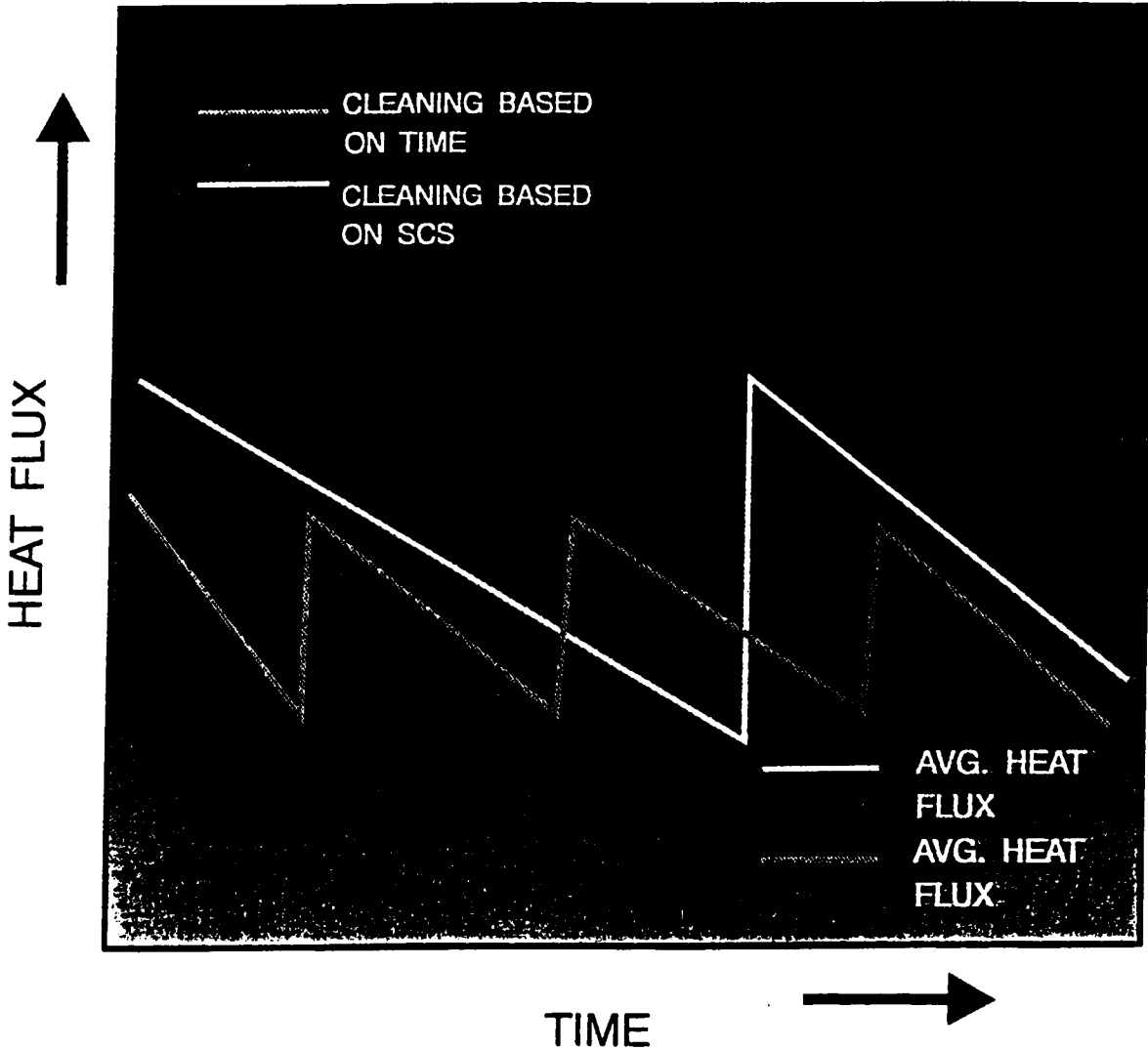
ARRANGEMENT OF CLEANING DEVICE AND HEAT FLUX SENSOR

Figure 7



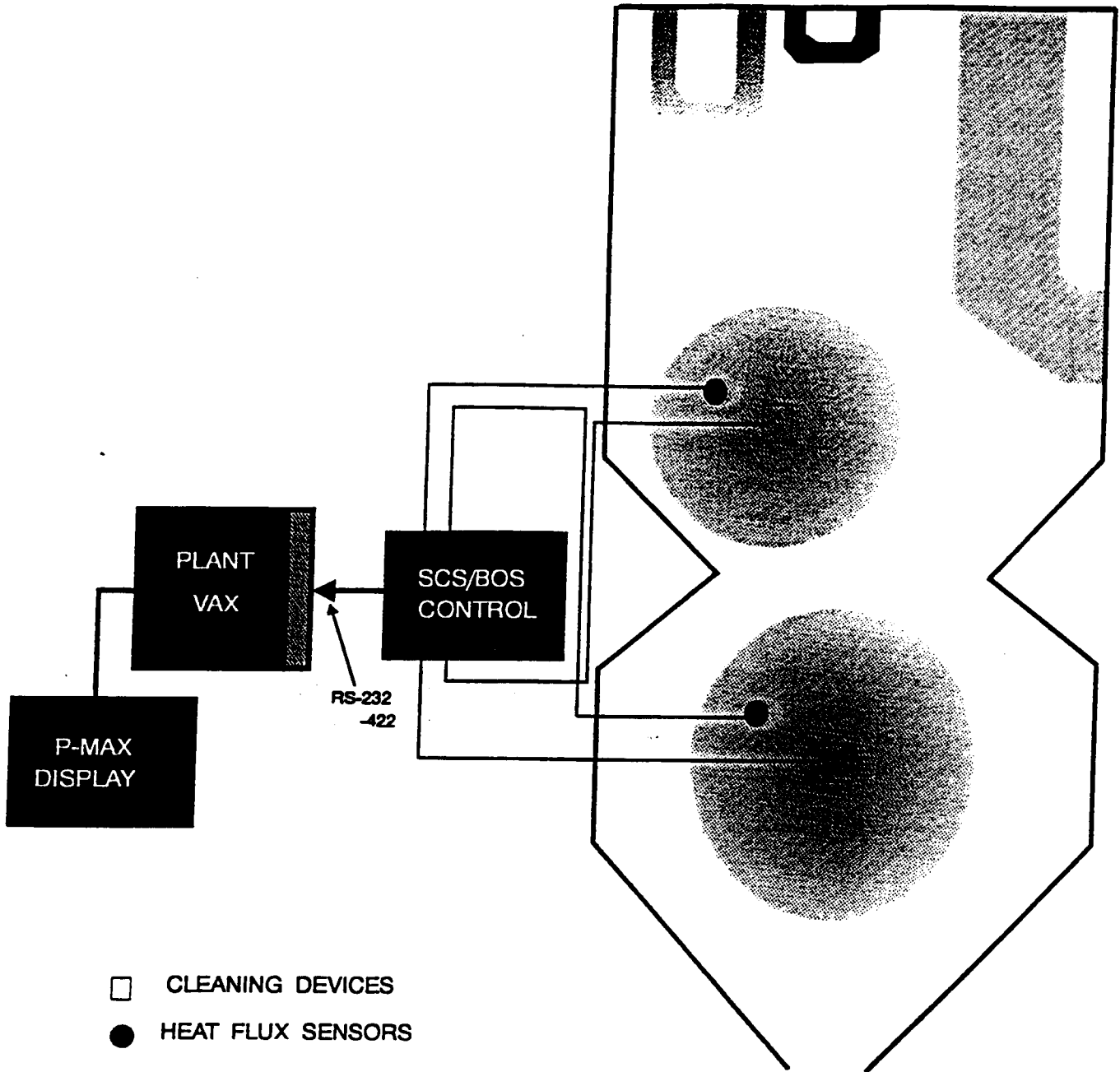
FOULING EFFECTS ON WALL HEAT FLUX

Figure 8



CLEANING RESULTS WITH AND WITHOUT SCS

Figure 9



- CLEANING DEVICES
- HEAT FLUX SENSORS

INTEGRATION OF PERFORMANCE MONITOR AND SCS

Figure 10