

POWER ENGINEERING

FIELD NOTES

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Illinois Power views combustion via a Lenox FireSight™ heat resistant TV system

By purchasing a solid-state boiler diagnostic system, Illinois Power Co., Decatur, Ill., has saved an estimated \$43,000 in inspection and operating costs. The system shows exact conditions inside the coal-fired boilers at its power stations. Illinois Power purchased the system, a portable version of the FireSight™ System, in

September 1993. FireSight is installed in the wall of a boiler and can withstand temperatures of up to 3,500 F. It televises and videotapes clear color images of flame patterns, steam leaks, slag formation and other conditions. The portable unit is driven to Illinois Power's generating stations, is held in a viewing port of the boiler which needs monitoring, and records the full range of conditions on videotape.

The \$43,000 savings is based on decreased downtime and on the savings from eliminating outside inspection personnel to examine the boilers. According to Jim Yagen, Illinois Power maintenance specialist, the system saved costly downtime when it was first used to record a malfunction in one of the new low-NO_x burners. "By studying the videotape in slow motion, the contractor for the burner determined that the malfunction was not damaging other equipment," Yagen said. "It could therefore be repaired in a scheduled outage rather than shutting down the boiler in a costly unscheduled outage as the contractor had originally planned. FireSight showed such things as premature burning of the coal and turbulence at the nozzle." The FireSight has been used with a right-angle, 90-degree lens which can be rotated to pan across desired areas. Panning across from the top, center and bottom of each of the four burner corners allows viewing for all conditions for each type of coal—from entry of the fuel to initiation of the fire, color of the fire and to the number of burners operating. It also shows how well the burners are linked together.

According to Yagen, FireSight will be used to monitor leaks in the tubes which carry water through the boilers and to observe burners in other Illinois Power boilers. The FireSight System is based on a high-temperature-resistant quartz lens protected against heat by an air-cooled lens tube and a charge couple device solid-state TV camera within a heat-resistant nylon housing. The FireSight System is available as a permanent model which can be mounted within a special protective wallbox in the wall of the boiler or as a portable model for diagnostic applications. Because conditions inside the boiler are closely monitored, control room personnel can quickly adjust the fuel mixture to avert costly problems, meet Environmental Protection Agency guidelines, and improve boiler efficiency and safety.

FireSight™ System is inserted into viewing port of boiler at Illinois Power Co.'s generating station.



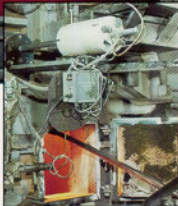
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Actual image taken
through FireSight lens.

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FireSight unit mounted through wall of boiler. Portable unit available for multi-boiler use.

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