

CASE STUDY

Solution to Oil Guns that Jam (1)

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The Customer

The Lakvijaya Power Plant is a 3x300MW coal-fired power station in the Puttalam District in the Northwestern Province of Sri Lanka. The tangentially fired boiler was supplied by Harbin Boiler Works (China). Each unit has 12 oil burners and 20 coal burners. Each oil burner is equipped with a QMA type oil igniter.



The Challenges

End users at the Lakvijaya power plant requested Safe Fire's assistance to troubleshoot and correct jamming and ignition problems on their oil igniters. The following issues were observed:

- 1) The solenoid valves, which are mounted on the oil guns, malfunction during operation and need frequent service
- 2) Servicing the solenoid valves and actuator are extremely tough due to their location
- 3) Oil gun bodies and spark rods jam when the solenoid valves fail
- 4) The high energy spark igniters often have a very difficult time lighting the fuel
- 5) Unsuccessful ignition causes major delays during plant startups



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Solutions

- 1) Relocate the solenoid valve enclosure to an open area near the oil igniter but away from the high heat zone
 - (a) Removed solenoid valve assembly from the oil igniter and re-plumbed actuator air supply



BEFORE



AFTER

- (b) Preplaced existing solenoid valves and cabinets, and added a supply air filter with a regulator
- (c) Down-sized the existing junction box and installed the new SVC(solenoid valve cabinet) near the HESI



BEFORE



AFTER

- 2) Adjusted Spark rod and oil gun's relative positions for optimal "light-off"
 - (a) Repositioned the spark rods to be in the atomization area of the oil gun during the ignition cycle
 - (b) Serviced and cleaned oil gun bodies and tips. Ensured the atomizer is free of obstructions



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Results

Safe Fire's solenoid valve retro-fits and oil gun service drastically improved ignition performance at the power plant.

- ✓ Cold-state ignition success rate is now 100%
- ✓ Smooth extension and retraction cycles on Oil gun & HESI rod
- ✓ Optimized layout provides easier access to oil gun and solenoid valve system
- ✓ Extended service life of the solenoid valves
- ✓ Major cost savings from reducing delays and fuel consumption at startup