

CASE STUDY

Solution to Oil Guns that Jam (2)

The Customer

The Waigaoqiao Power Plant is a 2×1000MW coal-fired power station in Shanghai, China. The tangentially fired boilers, supplied by Shanghai Boiler Works (China), each have 24 oil igniters equipped with QMA type oil igniter.

The Challenges

- 1) The output energy seem to have degraded on the existing High Energy Spark Igniter and it requires multiple attempts to ignite the fuel
- 2) Unsuccessful ignitions cause significant delays during plant startup
- 3) The solenoid valves, mounted on the oil guns, malfunction during operation and need frequent service
- 4) Servicing the solenoid valves and actuator are extremely difficult due to their location
- 5) Oil gun bodies and spark rods jam when the solenoid valves fail

Safe-Fire inc.

www.safe-fire.com

5354 Irwindale Avenue · Unit B

Irwindale · CA 91706

Tel: 626.960.3800

Fax: 626.960.4100



CASE STUDY

Solution to Oil Guns that Jam (2)

Safe-Fire inc.

www.safe-fire.com

5354 Irwindale Avenue · Unit B

Irwindale · CA 91706

Tel: 626.960.3800

Fax: 626.960.4100

The Solution

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



BEFORE



AFTER

- 2) Increased ignition spark energy capacity by replacing the 90 series power unit that has a 12 Joules capacity with Safe Fire's S-80-02 HESI which has 20 Joules capacity



BEFORE



AFTER

- 3) Adjusted the spark rod and oil gun relative positions for optimal ignition
 - (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
-

CASE STUDY

Solution to Oil Guns that Jam (2)

www.safe-fire.com

5354 Irwindale Avenue · Unit B

Irwindale · CA 91706

Tel: 626.960.3800

Fax: 626.960.4100



BEFORE



AFTER

The Results

- ✓ Smooth extension and retraction cycles on Oil gun & HESI rod
 - ✓ Optimized layout provided easier access to oil gun and solenoid valve system
 - ✓ Improved service life of the pneumatic elements
 - ✓ 100% cold-state ignition success rate
 - ✓ Major cost savings from reducing delays and fuel consumption during startup
-