GE Power

Plasma Ignition System* Flame Stabilization and Cold Start

Reduce OPEX and improve low load flame stability on tangential coal fired units.

Eliminate Oil/Gas Start-Up System and all associated O&M costs.

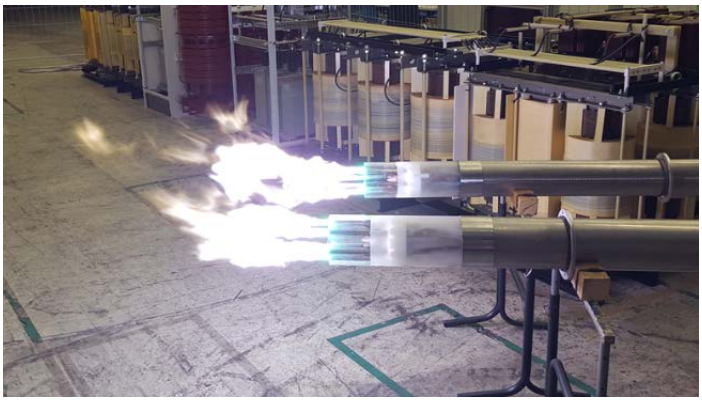
GE's new Plasma Ignition System reduces overall operating costs by improving low load operation and eliminating dependence on expensive support fuels, oil or gas. GE's Plasma Ignition System Is also designed to operate continuously, supporting low load operation.

How it works

The system produces a high energy plasma which supports volatile release and subsequent coal ignition. The released volatiles ignite and produce further heat for increased fuel devitalization and full flame formation at the burner mouth.

Features and Benefits

- Eliminate use of oil/gas support fuels for flame stabilization when operating at low loads.
- Reduce coal consumption. Unit can maintain stable operation at lower loads without support fuel.
- Plasma Intermediate Temperature (PIT) design is based on Alternating Current (AC) technology, providing the following benefits.
    - Operating at lower temperatures eliminating the need for demineralized cooling water system.
    - 90%+ system efficiency compared to Direct Current (DC) powered systems (~75% efficiency).
    - Longer electrode life compared to DC systems, reducing material cost and labor required to replace electrodes.
- Eliminate Oil/Gas Start-up system and O&M support



Installation

GE's Plasma Ignitor System is installed on an elevation basis on tangentially fired coal steam generators to minimize system fuel and air imbalance. Typically, two elevations of Plasma Flame Stabilizers are recommended to ensure continuous stable low load operation, and to avoided unit trips in the event a mill excursion occurs when operating the system on a single mill application.

GE's Plasma Ignitor System lance assemblies are designed to be installed within the existing windbox. A typical modification includes replacing the existing coal compartment assemblies on one or two elevations, including the fuel pipe inlet elbow at the burner front.

Power supplies, control cabinets, and cooling air fans are supplied to complete the system installation.

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Fact sheet

Operation

During normal operation when ignition support is not required, GE's Plasma Ignition System is de-energized and does not impede normal unit operation. As load drops, or when ignition stability is required, the Plasma Ignition System can be energized to ensure flame stability.

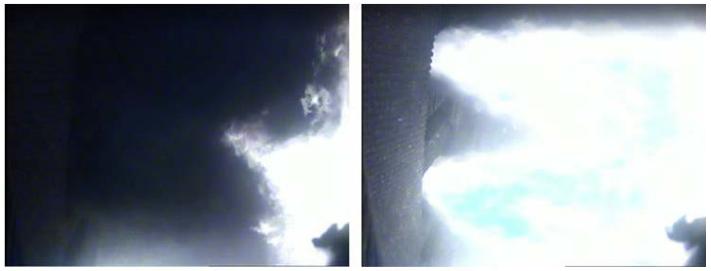
Application

GE's Plasma Ignition System is designed to support low load operation on Tangential, Pulverized coal fired units. The system is also designed for cold start applications.

Savings

In addition to eliminating Oil/Gas start-up systems and all associated O&M, a significant reduction in operating costs (OPEX) may be realized with GE's Plasma Ignition System installed. Assuming two elevations are installed on a 600 MW unit, these saving are:

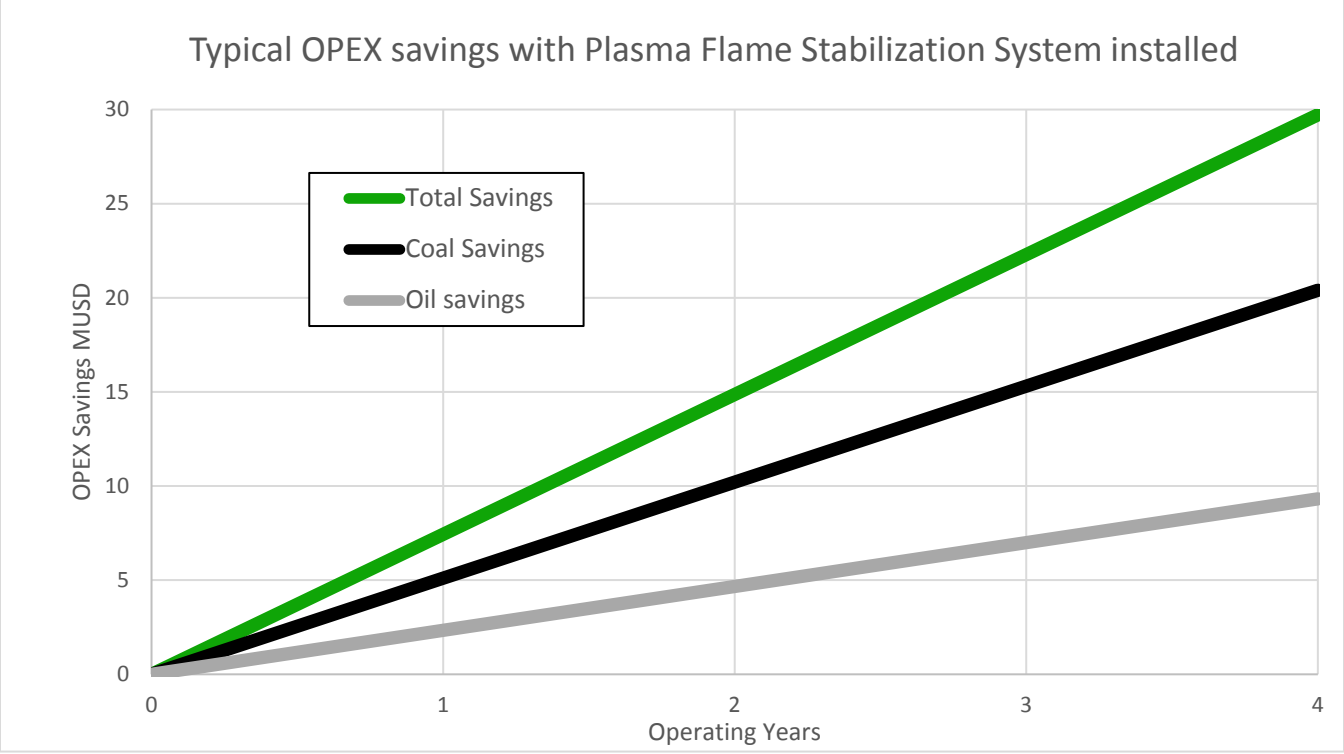
With Mill at 50% load



Plasma Off | Plasma On

Assumptions

1. 600 MW unit, 4 corners, 6 fuel elevations
2. Coal costs, $2.70/MMBtu
3. 70 % capacity factor
4. Minimum load on coal without Plasma Combustion Stabilizers, 35% MCR
5. Minimum load on coal with Plasma Combustion Stabilizers, 20% MCR
6. Oil heat input, 80 MMBtu/Hr
7. Oil costs, $2.00/Gal



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