



Oil Horn Ignitor for Corner-Fired Boiler Applications

The Babcock & Wilcox Company (B&W) is the exclusive source in the United States for the Fossil Power Systems (FPS™) oil horn ignitor equipment. The FPS oil horn ignitor is a careful integration of electrical-mechanical components optimizing performance in ignition reliability, fuel atomization, combustion, flame stability and flame monitoring.

The FPS oil horn ignitor provides up to six million Btu per hour heat input. A booster may be added to the ignitor to increase heat input (see Options section for details). Each ignitor is supplied with a mounting plate and gasket custom designed to mount on the existing boiler front bolt arrangement, making ignitor installation very simple.

The ignitor is shop assembled onto the mounting plate so that the ignitor internal components insert through the windbox air chamber and into the ignitor horn. Quick disconnect couplers at the manifold allow for quick removal of the atomizing air and fuel hoses so the ignitor assembly can be easily withdrawn for maintenance. Ignitor dimensions are determined from the burner arrangement drawing.

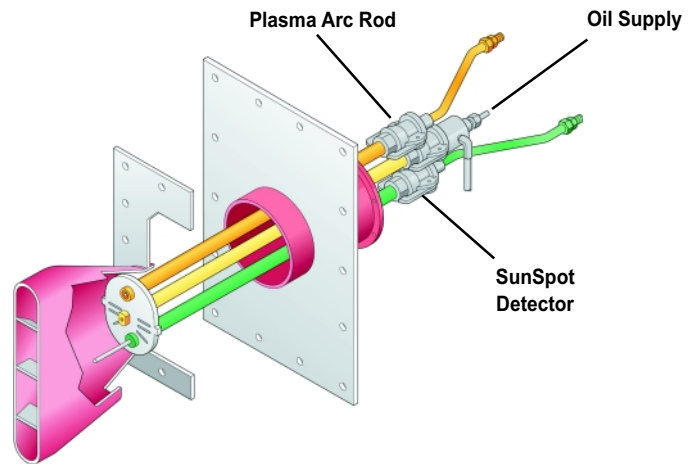
The oil horn ignitor requires primary air for combustion sourced either from the windbox or from an external air supply. For most installations, the existing air supply provides an ideal source.

The internal guide tube assembly places a fuel/air mixing plate (eddy plate) at a precise location in the horn. This in turn accurately positions the fuel atomizer, spark plug and the SunSpot flame rod. The fuel/air mixing at this specially designed plate serves as the initial point of ignition and creates an environment for flame stability.

A turbulent, fan-shaped flame is created as the flame exits the horn propelled by the differential air pressure between the combustion air source and the furnace. The well directed blow torch flame penetrates the main fuel stream for a positive light-off.

Plasma Arc Ignition System

To prevent the common problem of spark plug fouling on oil horn ignitors, and to ensure reliable light-off over the long term, FPS oil horn ignitors are equipped with the FPS Plasma Arc Ignition (PAI) system which provides pulsed high energy sparks during the ignition trial time.



Cutaway illustration of the FPS Oil Horn Ignitor

Flame Detector

The FPS oil horn ignitor is equipped with the integral SunSpot flame detector. The SunSpot flame detection system relies on ionization of gases in the combustion process.

Construction and placement of the SunSpot flame rod assembly is similar to the spark assembly. The tip extension on the flame-sensing probe (flame rod) intersects the ignitor flame envelope.

Gas ionization in the ignitor flame creates current flow from the SunSpot electronics down the flame rod assembly and through the flame envelope to the ignitor horn (i.e., to ground).

The conductivity of the burning flame gas is not constant, changing as the flame flickers. The SunSpot proves flame only when both conductivity and this inherent frequency component are sensed.

The SunSpot is factory calibrated for the expected performance of the ignitor. Advantages of the SunSpot include:

- Discrete flame detection
- No periodic maintenance requirement
- No field calibration
- No delicate optics to break or get dirty

It is critical to have reliable flame detection on ignitors. Applications where single flame scanners monitor both main flame and ignitor flame can be significantly improved with discriminating flame sensing devices like the SunSpot.

Ignitor Peripherals

Each FPS oil horn ignitor is supplied with the following environmentally sealed peripheral components:

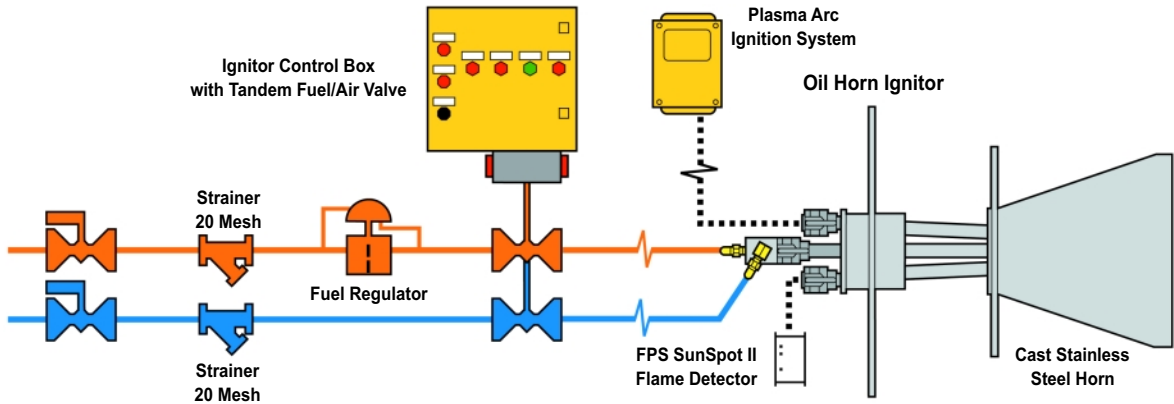
- PAI power pack in NEMA 4 enclosure
- SunSpot flame detector electronic module
- Oil hose with quick disconnect coupler
- Atomizing air hose with quick disconnect coupler
- (2) Brass braided flex conduit assemblies for ignitor electrical connections (flame detector and spark)
- Ignitor mounting plate with gasket

Options

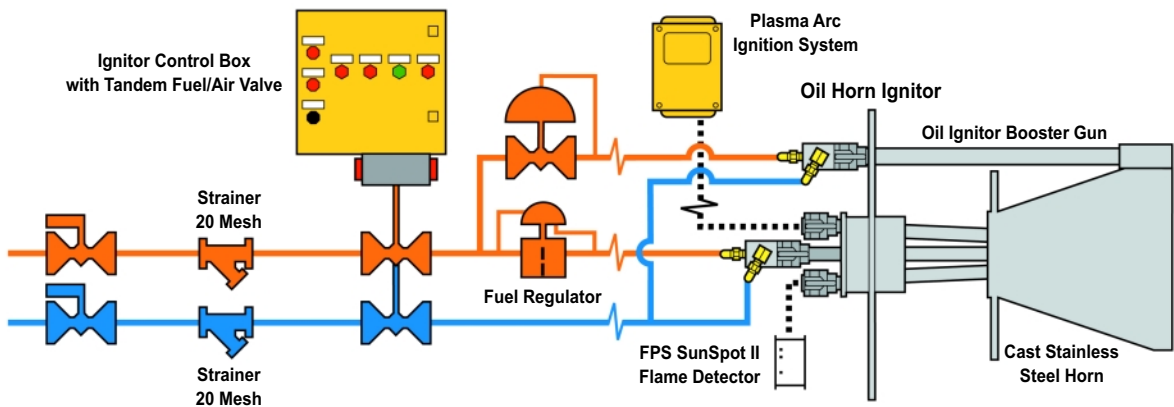
FPS also offers an oil flow regulator, which is designed to improve the operation of oil horn ignitors. The flow regulator limits the ignitor oil supply to the optimal level required to achieve efficient fuel atomization and burning within the environment of the horn. Many sites are equipped with flow regulators that can be retained and used with new FPS horn ignitors.

A booster package is available for the FPS oil horn ignitor. The ignitor booster provides an additional 14 million Btu/hour heat input, to bring the total heat input to 20 million Btu per ignitor. The booster package includes the ignitor booster as well as oil and atomizing air hoses with quick disconnect couplers. Minor modifications are required to the ignitor mounting plate and horn when the ignitor booster is installed.

(Continued on reverse side)



Typical Oil Fuel Schematic - Up to 6 MBtu Input



Typical Oil Fuel Schematic with Booster Gun Option - Up to 20 MBtu Input

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