

COEN SIDEWALL HORN IGNITER

Technical Specifications

Igniter Fuel:	No. 2 Fuel Oil
Atomizing Media:	Air
Igniter Windbox Air:	4-6 inches WC above furnace pressure

Igniter Heat Input, MMBtu/hr	Number of Igniter Guns per Igniter	Oil Flow, gph (approx)	Oil Pressure, psig	Atomizing Air Flow, scfm (approx)	Atomizing Air Pressure, psig
4	1	28	50	5.4	60
6	1	42	50	8.0	60
8	2	57	50	10.8	60
10	2	72	50	13.6	60
12	2	85	50	16.3	60

COEN 12 Joule High Energy Electric Igniter

Input Voltage:	120 - 240 VAC, 50 /60 Hz
Output Energy:	12 joules per spark
Output Voltage:	2000 VDC
Spark Rate:	10 sparks per second nominal



Power:	24 VDC nominal, 2.9 VA (120 mA), 20-28 VDC operational
Inputs:	Two digital remote file selects
Relay Output:	One normally open voltage free (dry) flame relay contact
Analog Output:	4-20 mA (current source)
Display:	Internal scanner temperature
Communications:	RS485, 19.2 KB, 127 scanners per loop, up to 5,000 ft (1,500 m)
Response Time:	1-4 seconds adjustable (FFRT, FON, marginal flame)
Models:	NEMA 4X, Class 1 Div 1 & 2, Group B, C, & D, ATEX
Approvals:	FM, UL, CSA, CE, ATEX, APAVE, CB
Warranty:	Two (2) years
Software:	Included (all upgrades free)



COEN FAMILY OF IGNITERS:

PARTIAL OR COMPLETE RETROFIT, WALL-FIRED, T-FIRED, CYCLONE, TURBO, ETC. OIL, GAS & DUAL FUEL, RETRACTABLE OR FIXED

COEN IGNITER BENEFITS

- RELIABLE LIGHT-OFF
- REDUCED IGNITER MAINTENANCE
- LOW OPACITY, <5% AT START-UP
- DECREASED START-UP TIME
- REDUCED IGNITER FUEL USAGE

SIDEWALL HORN IGNITER FIRING SYSTEM

Utility Combustion Systems

COEN's Sidewall Horn Igniter System is a low-cost performance upgrade to the original oil-fired igniter equipment on tangential-fired boilers. Total replacement of igniter components is typically not required. It is the reliable and practical solution for overcoming problems such as high opacity, soot and carbon build-up in the horn, fouled flame rods, plugged ΔP Tubes, and unburned fuel dripping from the horn.

COEN's system easily overcomes these problems by modifying the atomization process to produce an optimum spray pattern and fuel oil droplet size distribution to match the aerodynamics of the igniter horn. This atomization technique is derived from COEN's patented **Smokeless Igniter Technology**.

The result is a clean flame that burns all of the fuel and does not produce soot or coke. Additional benefits include improved reliability of the existing flame detection and spark equipment, reduced opacity, and elimination of unburned fuel carryover into the backpass of the furnace, air heater, ESP or baghouse.

COEN's Sidewall Horn Igniters can be applied as either single gun or dual gun systems, with heat input ranging from **4-12 MMBtu/hr**. Depending on the heat input, the COEN Sidewall Igniter can be classified as either an NFPA Class I or Class II Igniter, rated for continuous operation, or Class III.

PRIMARY COMPONENTS

- Igniter Gun and Atomizer Assembly (with Pressure Control)
- Sidewall Igniter Control Cabinet
- High Energy Electric Ignition System
- Flame Detectors (COEN iScan or Flame Rods)

COEN HAS UPGRADED MORE THAN 1,000 SIDEWALL IGNITERS AT POWER PLANTS WITH A CUMULATIVE GENERATING CAPACITY IN EXCESS OF 15,000-MWE.



IGNITER GUN AND ATOMIZER ASSEMBLY WITH PRESSURE CONTROL

Smokeless igniter performance in a sidewall horn requires superior oil atomization and an oil spray pattern that matches the aerodynamics of the horn. COEN's atomizer assembly for sidewall igniters is a special adaptation of our patented **Smokeless Igniter Atomizer**. Our uniquely designed internal-mix atomizer provides an optimum spray pattern and fuel oil droplet size distribution within the physical constraints of the igniter horn. A new igniter gun is supplied with the internal-mix atomizer, and is a direct replacement of the original gun. No modifications are required to the mounting assembly.

To achieve optimal atomization, control of fuel oil and atomizing air pressures at the igniter gun is critical. As part of the retrofit, COEN supplies oil pressure and atomizing air pressure regulators that are installed between the igniter shutoff valves and flexible hoses.

The COEN retrofit eliminates the existing igniter oil flow control valve. This valve is typically unreliable and does not provide adequate pressure control to the individual igniter. Pressure control is achieved with the new oil pressure regulator. Furthermore, the flow switch that is internal to the existing oil flow control valve at each igniter cabinet is replaced with an adjustable flow switch. Therefore, no modifications are necessary to the igniter control scheme.

SIDEWALL IGNITER COMPONENTS

- **Smokeless Atomizer**
- Igniter Gun Assembly - 1 or 2 Based on Igniter Heat Input
- Oil & Air Pressure Regulators
- Oil Flow Switch

SIDEWALL IGNITER CONTROL CABINET

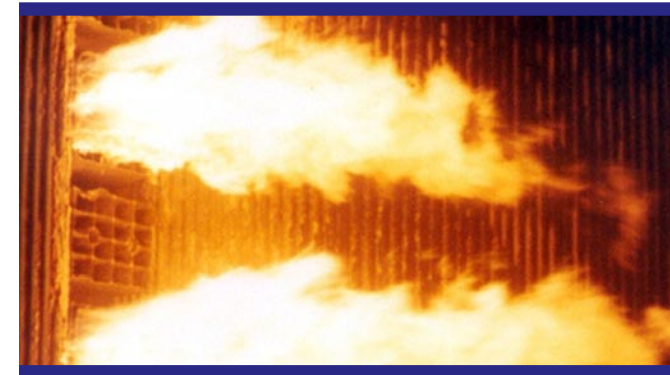
COEN typically recommends that the existing igniter cabinets be retained unless the valves and control cabinet components are difficult to repair or require frequent maintenance. In this instance, COEN has developed a direct replacement sidewall igniter control cabinet (SICC) that is designed to tie directly into the existing control signals without modification, i.e., the operator interface need not be modified to implement the new igniter control cabinet.

The SICC also controls oil and atomizing air flow to the igniter. For the 4 MMBtu/hr igniter, positive shutoff solenoids are mounted below the cabinet for easy access. Larger input igniters utilize an FM approved ball valve for oil shutoff with limit switches per NFPA. The oil flow switch is also provided with the SICC.

The NEMA 4 SICC enclosure can be mounted to directly replace the existing cabinet. Wiring connections are identical to the original equipment and new quick disconnect pigtails can be provided.

SICC COMPONENTS

- NEMA 4 Steel Enclosure
- High Energy Electric Igniter
 - 12 Joule Capacitive Discharge Exciter
 - Spark Cable
 - Spark Rod with Replaceable Tip
- Oil & Air Shutoff Valves, Automatic
- Purge Valve
- Oil Flow Switch
- Sequencing Relays
- Electrical Quick Disconnect Pigtails



HIGH ENERGY ELECTRIC IGNITER SYSTEM

Central to the SICC is our High Energy Electric Igniter (HEEI) that provides a reliable non-fouling spark for fuel light-off. The HEEI has a 12-joule output with a nominal 10 sparks per second. The solid state HEEI capacitive discharge exciter is mounted outside the control cabinet in a NEMA 4 enclosure and is provided with a flexible cable, spark rod, and spark tip. The COEN HEEI spark rod adapts to the existing back plate as a direct replacement for the original spark plug.

FLAME DETECTORS

COEN offers a wide range of flame detection solutions to replace the original ΔP switch. Until recently, the ionization flame monitor (IFM) or flame rod has been the most popular flame detection method. For this arrangement, the flame rod extends into the igniter flame. The clean burning COEN internal-mix atomizer minimizes maintenance associated with cleaning flame rods (carbon buildup). The flame rod assembly, when coupled with the COEN atomizer, provides a reliable flame detection system.

The flame rod amplifier is provided in a NEMA 4 box for convenient mounting and tie-in to the existing SICC, or is included in the new SICC provided by COEN.

COEN also offers our state-of-the-art *iScan*, a flame detector for use on sidewall igniters. The *iScan* is a micro-processor-based programmable digital flame scanner that uses the latest solid state and signal processing technology. The unitized design features an "All In One" configuration with an integrated viewing head and signal processor, which eliminates the traditional flame scanner signal processing unit (amplifier) and amplifier cabinet.

The *iScan* mounts directly to the sidewall igniter back plate (no fiber-optic extensions are required), which provides for excellent igniter flame detection and superior discrimination against the background main flame. The "flame on" relay closure ties directly to the SICC or existing cabinet for positive flame indication.

The *iScan* has proven to be an extremely reliable and cost-effective alternative to flame rods and our customers consider the *iScan* to be the preferred method of flame detection for sidewall igniters.

