INDUSTRIAL COMBUSTION

D SERIES BURNERS

4.2 TO 42.0 MMBTU/HR

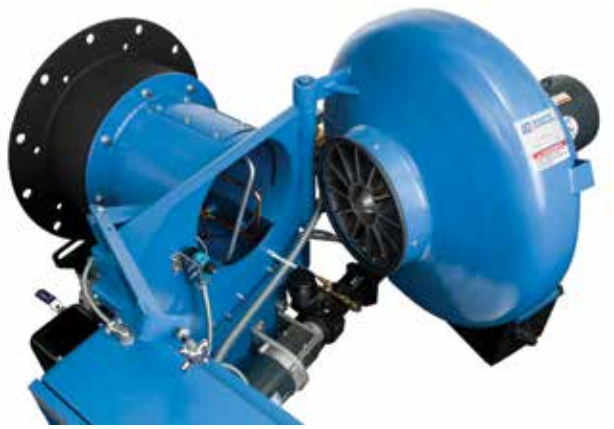
High-efficiency burner technology for the most stringent emissions requirements.

Integration starts with the burner.

Only Industrial Combustion offers complete boiler systems, from fuel inlet to stack outlet, that are completely designed, engineered, manufactured, integrated, and serviced by one company. And our experience extends to integrating our burners with virtually any boiler, regardless of manufacturer, maintaining peak efficiency and low emissions.

Quality, heavy construction packed with innovation and flexibility.

Industrial Combustion is the global leader in commercial burners, with a full line of high quality, low- and ultra-low-emissions burners specifically engineered to increase your boiler's efficiency and decrease fuel costs and emissions. With innovative features like swing-away housings for easy access and proprietary oil nozzles, compressors, and metering pumps, the Industrial Combustion line can improve the performance of any boiler.



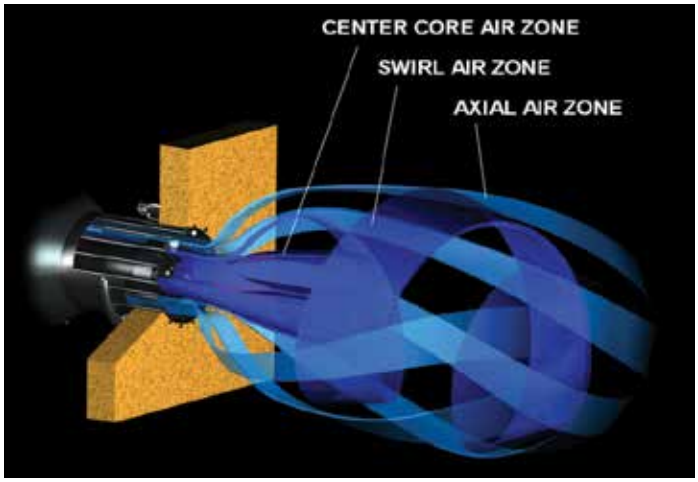
Suitable Boiler Applications

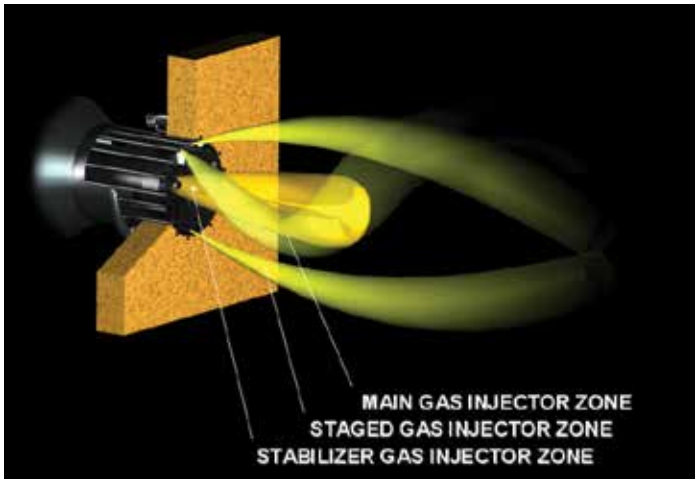
	Cast Iron	Hot Air Furnace	Commercial Watertube	Firebox	Thermal Fluid Heater	Firetube	Industrial Watertube
D Series				■		■	
LND Series				■		■	
NTD Series				■	■	■	

Note: All applications based on "Best Selection." Other applications may be considered, based on specific details.

Suitable Industry Segments

	Light Commercial	Commercial	Light Industrial		Industrial		Heavy Industrial	
MMBTU (input)	1.3	8.4	16.8	25.2	33.6	42	63	92.4
BHP (BHP = 33,475 BTU/hr)	30	200	400	600	800	1,000	1,500	2,200
D Series		■	■	■	■	■		
LND Series		■	■	■	■			
NTD Series			■	■	■			





Advanced CFD modeling on every burner

Proper burner design minimizes emissions and maximizes efficiency.

Computational Fluid Dynamics (CFD) modeling helps design the heat delivery and transfer components into a seamlessly matched package for optimum heat transfer, highest efficiency, and burner longevity. Absolute compatibility of the burner and furnace is critical to achieving our super-high standard of efficiency.

Featuring ultra-low-NOx emissions, from less than 15 PPM and less than 9 PPM NOx on natural gas at 3% O_2, each Industrial Combustion burner has a special intake box, with a rotary air damper and FGR modulating valve, that allows a precise amount of induced FGR and fuel-to-air ratio control throughout the firing range.

High oil prices and stricter emissions requirements make upgrading your existing boiler smart.

With the average lifespan of a boiler being 20 years or more, most boilers will need to upgrade their burners two or three times to maintain optimum efficiency. If your existing burner is more than 10 years old, even if it's a low-NOx burner, recent advancements in technology make your burner a candidate for replacement. Turnkey conversions and retrofits make it easy to bring virtually any system back up to its original specs or even better.

Uncontrolled Emissions Configuration

The Industrial Combustion D series burner forced draft design allows for trouble-free operation and superior efficiency on boiler, heater, furnace, kiln, and dryer applications. The uncontrolled configuration offers multi-fuel versatility. The Industrial Combustion D is an excellent choice when firing alternative fuels such as digester, waste oil, and biodiesel.

D Series

Low-pressure air atomizing system on oil with rotary vane compressor purges air through the large nozzle orifice after each burner cycle to prevent after-drip and fouling.

Piston-type positive displacement oil metering system.

Cam trim 14-point adjustment range on FGR feature adjusts the burner for consistent and precise fuel-to-air ratios throughout the firing range. Excess air is controlled to a minimum through the full adjustment range.

Parallel positioning available for optimal control throughout the firing range.

Nozzle line electric heater standard on medium- to heavy-oil burners.

Rotary air damper provides precise fuel-to-air ratios.

Hinged air housing provides easy access to the nozzle, scanner, pilot, and diffuser for inspection or removal. No disconnection of fuel or power lines required.

Gas manifold on oil burners standard for easy upgrade to combination units.

Backward-curved impeller provides adequate combustion air for various furnace pressure and high-altitude applications and avoids the dust collection that is common with forward-curved blowers.

UL & ULc listed.

Frame	Model range	Boiler HP	Capacities		Mode of operation	Fuel	Parallel positioning
			MBH	GPH			
Size 1–8	42–420	100–1,000	4,200–42,000	30–300	Full modulation	Gas, oil, comb.	Optional

Low-NOx Configuration

The Industrial Combustion LND series burner offers natural gas, propane gas, air atomized #2 and #6 oil, and combination gas and oil fuel options from 3.4 to 42.0 MMBTU per hour, with full modulation operation and standard cam trim for greater efficiency and cost savings. The Industrial Combustion LND is a low-NOx burner capable of less than 30 PPM NOx emissions.

LND Series

In addition to all the features listed under the Industrial Combustion D, the Industrial Combustion LND has these features:

Available to <30 PPM NOx.

Induced FGR modulating valve and shutoff valve.

Cam trim 14-point adjustment range on FGR feature adjusts the burner for consistent and precise fuel-to-air ratios throughout the firing range. Excess air is controlled to a minimum through the full adjustment range.

Parallel positioning available for optimal control throughout the firing range.

#2 oil capability for backup fuel.

Rotary air damper provides precise fuel-to-air ratios.

Hinged air housing for easy access to internal components for maintenance and upgrades.

Backward-curved impeller provides adequate combustion air for various furnace pressure and high-altitude applications.

UL & ULc listed.

Frame	Model range	Boiler HP	Capacities		Mode of operation	Fuel	Parallel positioning
			MBH	GPH			
Size 1–8	34–420	80–1,000	3,360–42,000	24–300	Full modulation	Gas/comb.	Optional

Ultra-Low-NOx Configuration

The Industrial Combustion NTD was designed and developed with a Flue Gas Recirculation system which has been proven to be the benchmark in the industry. Emissions reduction, fuel savings, performance, and reliability make the Industrial Combustion NTD an excellent choice. The Industrial Combustion NTD series burner offers natural gas, propane air mix, air atomized #2 oil, and combination gas and oil fuel options from 12.6 to 33.5 MMBTU per hour, with full modulation operation and parallel positioning for greater efficiency and cost savings. The Industrial Combustion NTD is an ultra-low-NOx burner capable of less than 9 PPM NOx emissions.

NTD Series

In addition to all the features listed under the Industrial Combustion D, the Industrial Combustion NTD has these features:

Available to <9 PPM NOx.

Induced FGR modulating valve and shutoff valve.

Parallel positioning available for optimal control throughout the firing range.

#2 oil capability for backup fuel.

Rotary air damper provides precise fuel-to-air ratios.

Hinged air housing for easy access to internal components.

Gas injectors are a low-NOx, lance-style, hammerhead design, with all gas injectors mounted to an internal gas manifold assembly.

Backward-curved impeller provides adequate combustion air for various furnace pressure and high-altitude applications.

Frame	Model range	Boiler HP	Capacities		Mode of operation	Fuel	Parallel positioning
			MBH	GPH			
Size 5–8	126–336	300–800	12,600–33,500	90–239	Full modulation	Gas, oil, comb.	Standard

Capacities and Ratings

Uncontrolled Emissions Configuration (DL, DG, DLG)

Burner sizes	42	54	63	84	105	145	175	210	252	300	315	336	378	420
Gas input (MBTU/hr)	4200	5400	6550	8400	10500	15000	17500	21000	25200	30000	31500	33600	37800	42000
Oil input (US gal/hr)	30	39	47	60	75	107	125	150	180	215	225	240	270	300
Boiler HP @ 80% efficiency	100	129	156	200	250	357	417	500	600	714	750	800	900	1000
Blower motor HP (S)	3	3	5	5	7 1/2	15	20	20	25	40	-	-	-	-
Blower motor HP (P)	3	5[1]	5	7 1/2	10	15	20	25	30	40	60	60	75	75
DL DLG integral oil/air unit motor HP	1	1	1	1	2	2	-	-	-	-	-	-	-	-
DL DLG compressor motor HP	-	-	-	-	-	-	5	5	7 1/2	7 1/2	7 1/2	7 1/2	15	15
DL DLG oil metering unit motor HP	-	-	-	-	-	-	1/2	3/4	3/4	3/4	3/4	3/4	1	1
DM DMG integral oil/air unit motor HP	1	1	2	2	2	2	-	-	-	-	-	-	-	-
DM DMG compressor motor HP	-	-	-	-	-	-	5	5	7 1/2	7 1/2	7 1/2	7 1/2	15	15
DM DMG oil metering unit motor HP	-	-	-	-	-	-	1/2	3/4	3/4	3/4	3/4	3/4	1	1
DE DEG compressor motor HP	3	3	3	3	3	5	5	5	7 1/2	7 1/2	7 1/2	7 1/2	15	15
DE DEG oil metering unit motor HP	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1
Shipping weight	1000	1100	1200	1300	1400	1850	2250	2750	3100	3500	3600	3800	4000	4200

Input is based on fuel BTU content and altitude of 2,000 feet or less. If altitude > 2,000 feet and < 8,000 feet, derate capacity 4% per 1,000 feet over 2,000. Consult factory for higher altitudes. Gas input is based on natural gas with 1,000 BTU/cu. ft. and 0.60 gravity. Oil input based on 140,000 BTU/gal. Use model "S" for up to 1.5" w.c. furnace pressure and model "P" for up to 4.0" w.c. furnace pressure. Consult factory for 50 Hz applications.

Less than 30 PPM Low-NOx Configuration (LNDG, LNDLG)

Burner model no. & frame size	34-1	42-1	54-1	63-2	74-2	84-2	105-3	125-3	145-4	175-5	210-6	252-6	300-6.5	315-7	336-8	378-8	420-8
Gas input (MBTU/hr)	3360	4200	5400	6550	7350	8400	10500	12600	15000	17500	21000	25200	30000	31500	33600	37800	42000
Oil input (US gal/hr)	24	30	38	45	53	60	75	90	105	120	150	180	215	225	240	270	300
Boiler HP @ 80% efficiency	80	100	125	150	175	200	250	300	350	400	500	600	714	750	800	900	1000
Blower motor HP	3	5	5	5	7.5	10	15	15	20	25	30	40	60	60	75	75	75
Integral oil/air unit motor HP	1	1	1	1	1	1	2	2	-	-	-	-	-	-	-	-	-
Compressor motor HP	-	-	-	-	-	-	-	-	5	5	5	7.5	7.5	7.5	15	15	15
Oil metering unit motor HP	-	-	-	-	-	-	-	-	1/2	1/2	3/4	3/4	3/4	3/4	1	1	1
Furnace pressure (" w.c.)	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Shipping weight	1000	1275	1275	1500	1500	1500	1850	1850	2250	2850	3500	3750	3800	4000	4750	5000	5550

Input is based on fuel BTU content and altitude of 2,000 feet or less. If altitude > 2,000 feet and < 8,000 feet, derate capacity 4% per 1,000 feet over 2,000. Consult factory for higher altitudes. Gas input is based on natural gas with 1,000 BTU/cu. ft. and 0.60 gravity. Oil input based on 140,000 BTU/gal.

Less than 15 PPM and less than 9 PPM Ultra-Low-NOx Configuration (NTDG, NTDLG)

Burner sizes		126	147	168	210	252	294	315	336
Gas input (MBTU/hr)		12600	14600	16700	20900	25100	29300	31400	33500
Oil input (US gal/hr)		90	105	120	149	179	209	224	239
Boiler HP @ 80% efficiency		300	350	400	500	600	700	750	800
Remote oil pump motor HP		1/2	1/2	3/4	3/4	3/4	3/4	3/4	3/4
Compressor motor HP: C-B shower head oil nozzle		5	5	5	5	7 1/2	7 1/2	7 1/2	7 1/2
Compressor motor HP: Natcom oil nozzle		15	15	20	20	20	25	25	30
Minimum gas pressure required (psi)		6	6	6	6	8	8	8	8
<15 PPM	Frame size	5	5	6	6	7	7	8	8
	Blower motor HP	20	25	25	40	50	60	75	75
	FGR line piping (in)	6	8	8	8	8	10	10	10
	Furnace pressure (" w.c.)	3.3	4.6	5.2	3	4.6	6.2	7.1	8
<9 PPM	Frame size	5	6	6	6	8	8	-	-
	Blower motor HP	25	40	50	50	75	75	-	-
	FGR line piping (in)	8	10	10	10	12	12	-	-
	Furnace pressure (" w.c.)	4.1	5.7	6.4	3.7	5.7	7.7	-	-

Input is based on fuel BTU content and altitude of 2,000 feet or less. If altitude > 2,000 feet and < 8,000 feet, derate capacity 4% per 1,000 feet over 2,000. Consult factory for higher altitudes. Gas input is based on natural gas with 1,000 BTU/cu. ft. and 0.60 gravity. Oil input based on 140,000 BTU/gal. Consult factory for 50 Hz applications.

Burner and Control Upgrades Are Easier Than Ever.

Industrial Combustion has the engineering team to design a turnkey solution for any boiler and any application. Contact an Industrial Combustion authorized distributor to determine what upgrade is right for you.

Evaluate your burner and controls for an upgrade if:

- Existing burners do not offer high turndown for maximum efficiency
- Your burner or boiler controls are more than 10 years old
- Burner controls are not fully integrated with boiler loads
- You must reduce emissions while maintaining efficiency
- Alternate fuels could provide energy savings and/or reduced emissions

Lower Fuel Costs

Following initial installation, fuel costs will become your biggest operating expense. Industrial Combustion works with you to custom-tailor burner and control solutions that help you increase efficiency and decrease fuel costs in virtually any boiler room environment. By installing the right burners, controls and heat recovery equipment, you can realize substantial savings immediately.

Lower Emissions

Lowering boiler room emissions can be challenging, regardless of the fuel type you are using. Whether for a sustainability effort or the result of a government-mandated emissions program, you can look to Industrial Combustion to help you reach your goals. We have long been a leader in offering low-emission solutions that are right for any application. Our team will work with you to design a retrofit solution utilizing our burners to achieve the low emissions you need.

INDUSTRIAL COMBUSTION

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