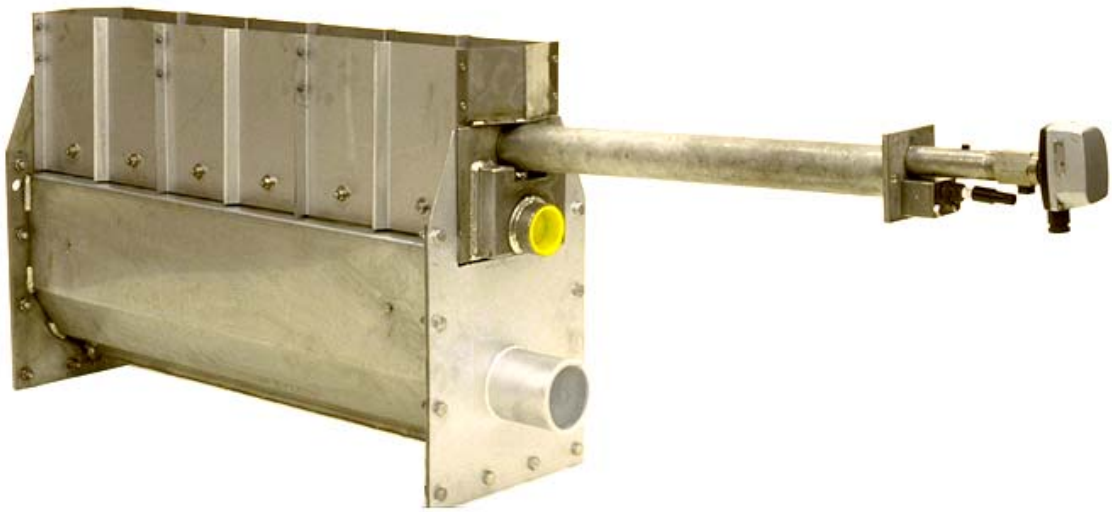
DELTA-TE™ III

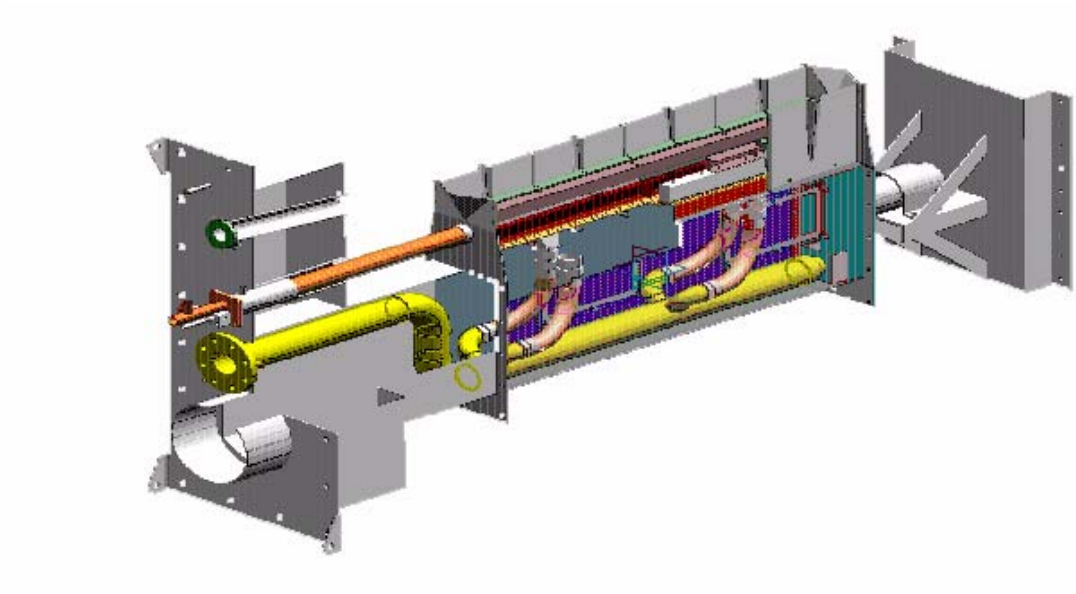
Nozzle-mix line burner



- Combines excellent flexibility with extreme low emissions for direct firing
- Especially designed for firing in low oxygen, high humidity and/or inert process air
- “Plug & Play”-design for easy installation into your duct
- High turndown
- Operates independently from the process-air stream over the burner
- Stainless steel construction in contact with the process-stream
- Max. capacity per linear burner unit of 1 foot [1] : 600 kW HHV
- Fires on natural gas, propane and many other fuel gases
- Accepts preheated air

[1] 1 foot = 305 mm

Product description



MAXON DELTA-TE™ III burner with mounting plug

The DELTA-TE™ III is assembled from modular burner units and can be built to any practical length depending on required capacity and duct dimensions.

Gas and combustion air are fed separately to the burner and mixed at the burner nozzle. The optimum mixing of gas and combustion air guarantees complete combustion, even under inert conditions.

A major attribute of this burner is its excellent flame stability under all firing conditions.

The pilot burner ignites the main burner at one of the burner ends.

The flame spreads over the total burner length almost instantly due to the thorough mixing of the fuel gas and combustion air. Cross-ignition is guaranteed by the special way the individual gas and air ports are positioned in relation to each other.

Available DELTA-TE™ III sizes

DELTA-TE™ III burners are always supplied as “slide-in-units”, with a mounting plug or plate which can be easily flanged onto the duct. They are custom-built to fit into your duct, with a flame-spread starting from 1 foot (300 mm), going up to 20 feet (6 m).

Typical burner data Fuel : natural gas at 15° C with 10.9 kWh/Nm³ HHV - sg = 0.6 [1] Combustion air : 15° C - 21 % O_2 - 50 % Humidity - sg = 1.0 [1] Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality			
Max. capacity per linear burner unit of 1 foot	[2]	kW HHV	600
Max. flame length (fresh process air - 21Vol.% O_2 - 15° C)	[3]	m	3
Max. flame length (Recirculating process air - O_2 < 10 Vol.% - T < 350° C)	[3]	m	3-4
(Optimal) combustion air flow	[4]	$m^3_{(st)}$ /h/ft	696
Optimal air factor "n"	[5]		1.2
Natural gas pressure differential	[6]	mbar(g)	53
Combustion air pressure differential	[7]	mbar(g)	35

[1] sg (specific gravity) = relative density to air (density air = 1.293 kg/m³(n)).
[2] 20 kW HHV is the absolute minimum capacity.The minimum capacity is influenced by burner length, orientation and control valve authority. Contact MAXON for detailed information.
[3] Typical flame length for shown combustion air amount and capacity. Flame length is influenced by air factor and process oxygen level. Higher air factor results in shorter flames - lower process oxygen level gives longer flames. Contact MAXON for detailed information.
[4] Corresponds with above capacity and below air factor "n".
[5] Advised air factor for best burner performance and emissions.
[6] Pressure at burner test connection for burner commissioning.
[7] Combustion air pressure required at burner test connection for commissioning (combustion air 15° C).

Applications

DELTA-TE™ III nozzle-mix-line burners have been especially designed for heating of moving process streams with low oxygen and/ or high humidity content. Its complete stainless steel design makes the burner extremely suitable for high industrial process applications, moist, corrosive atmospheres, high process air temperatures.

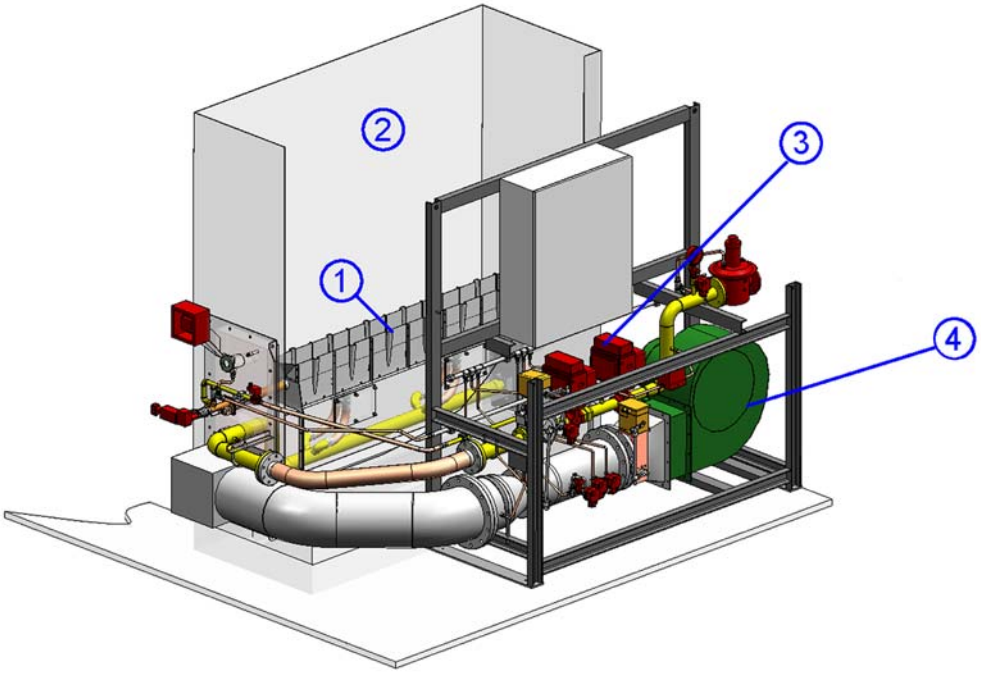
The burner can operate independently from the velocity of the process air stream to be heated and hence does not require a process flow pressure differential to function properly.

Typical applications

- Paper, wood, gypsum and other dryers where air with high humidity content is used as an energy-transporting medium
- DeNOx-installations where practically inert combustion products have to be uniformly heated prior to catalytic reaction
- Preheating of flue gases in SCR
- Reheating of flue gases from gas and diesel engines

Application example MAXON DELTA-TE™ III gas burner in duct

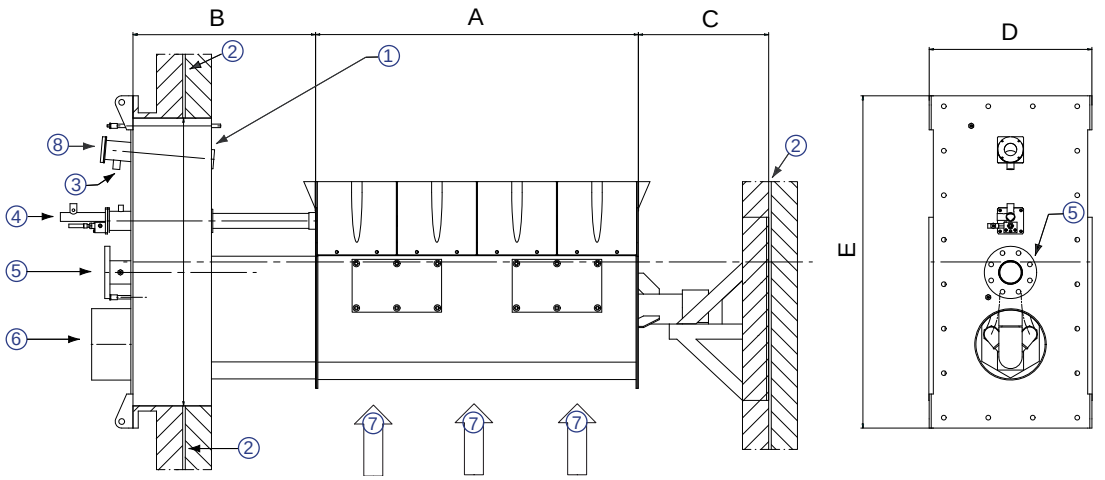
1) DELTA-TE™ III burner
2) Duct
3) Gas pipe-train in frame with MAXON shut-off valves and terminal box
4) Combustion air blower



Direct process air heating in a DeNOx installation from 215° C to 290° C- Burner rating : 2.5 MW.

Dimensions and weights

1) Plug to be mounted in opening duct wall
2) Duct wall
3) Cooling air
4) Pilot burner UV-scanner
5) Gas inlet
6) Combustion air inlet
7) Process air
8) Sight port



Dimensions in mm, unless stated otherwise								
A burner size	gas inlet		air inlet	min. opening duct wall	B (without plug or insulation)	C	D	E
	ISO	ANSI						
1.0 ft - 1.5 ft (305 - 457)	Rp 1.1/2”	1.1/2” NPT	6”	940 x 430	> 200	> 200	622	1100
2.0 ft - 3.0 ft (622 - 928)	Rp 2”	2” NPT	8”	940 x 430	> 300	> 300	622	1100
3.5 ft - 6.0 ft (1081 - 1846)	DN 80	3” ANSI - 150 lbs	10”	1110 x 430	> 300	> 300	622	1270
6.5 ft - 9.0 ft (1999 - 2764)	DN 100	4” ANSI - 150 lbs	220 x 405	1280 x 430	> 400	> 400	622	1440
9.5 ft - 12.0 ft (2917 - 3682)	DN 100	4” ANSI - 150 lbs	220 x 595	1620 x 430	> 400	> 400	622	1780
> 12.0 ft	Contact MAXON							

Typical emissions (burners only)

DELTA-TE™ III is able to accurately mix air and gas together by the use of MAXON SMARTLINK® MRV or MICRO-RATIO® control valves. Together with its unique combustion principle, DELTA-TE™ III combines excellent flexibility and turndown with extreme low emissions on both CO and NO_x for direct firing of high demanding process flows.

Read "Specifications of DELTA-TE™ III burners" for correct and complete information on DELTA-TE™ III burners