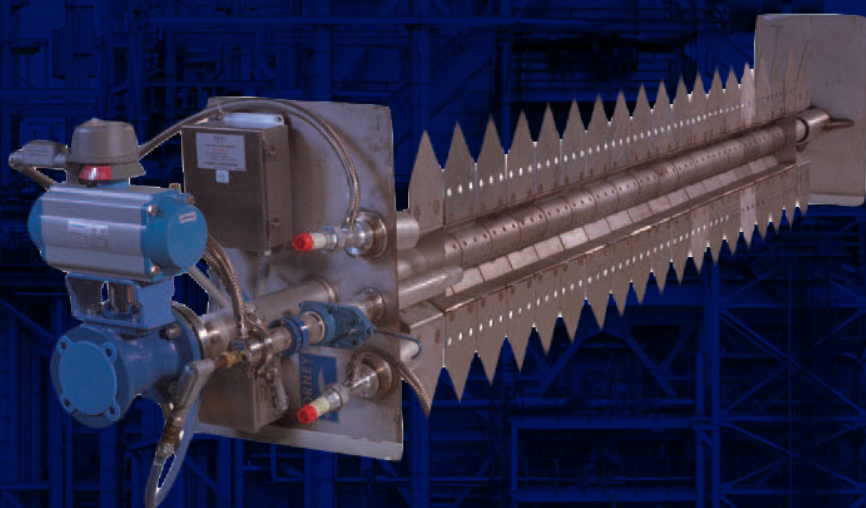




## **adVantage® Duct Burner**

**Forney's adVantage® duct burners are optimized for advanced gas turbines that support the critical low emission requirements for water or steam injection applications.**



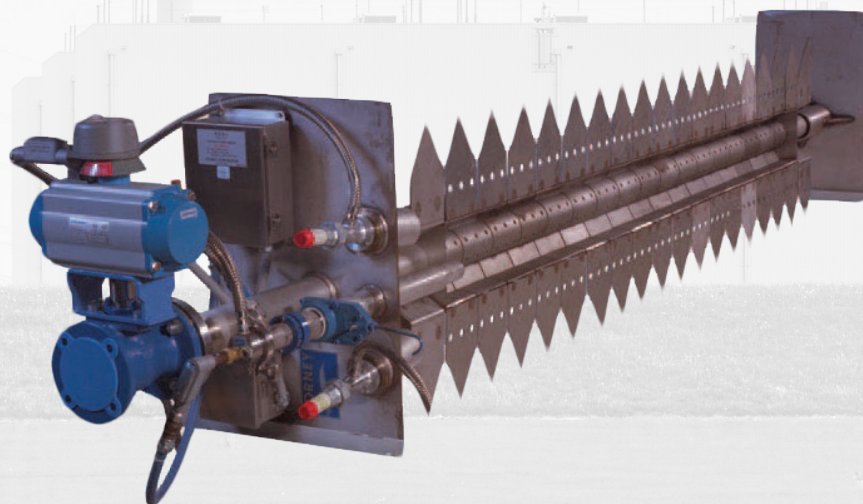
# PRODUCT OVERVIEW

Duct Burners from Forney Corporation meet the complex needs of the combined cycle and cogeneration industry. Forney's adVantage® duct burner is the choice for the most demanding conditions of advanced gas turbine applications, where inlet oxygen of the Turbine Exhaust Gas (TEG) is low or the water vapor is high.

Low inlet oxygen and high water vapor levels have typically required duct burners to be provided with augmenting air. Forney's adVantage® design reduces or even removes the need for augmenting air by using an exclusive mixing process that optimizes the existing oxygen in the turbine exhaust.

The outstanding CO and VOC emissions performance is a product of turbulent mixing from the adVantage® duct burner design. The lower emissions available from the Forney adVantage® duct burner can help to offset other plant costs such as downstream emission reduction equipment.

Less sensitivity to inlet flow distribution is another benefit to the Forney adVantage® duct burner. This means the same low emission performance even with wide TEG flow profiles. Through the exclusive mixing process, Forney adVantage® duct burner produces a shorter flame length for the same pressure drop as recirculation type burners. Shorter flame lengths require less downstream duct distance and allow a greater residence time to mix with the bulk TEG and improve temperature distribution from the burner.





# FEATURES & BENEFITS

- **Low CO and VOC Emissions**

Up to 80% lower than recirculation type burners - even over turndown.

- **Low Pressure Drop**

Maintained through our patented design with mixing vortices.

- **Reliable Light-off**

High Energy Spark Ignition (HESI) for consistent performance in low oxygen and high water vapor environments.

- **No Augmenting Air Required**

With TEG oxygen greater than 10.5% and water vapor as high as 20%.

- **Investment Cast Stabilizers**

Stainless steel stabilizers allow for long life and consistent performance.

- **Vortex Shedding Analysis**

Performed on each burner to ensure long life and trouble free operation.

- **Patented Design**

Provides increased mixing that optimizes the existing oxygen in the turbine exhaust.

- **Short Flame Lengths**

Reduced downstream duct distance and improved temperature distribution from the burner.

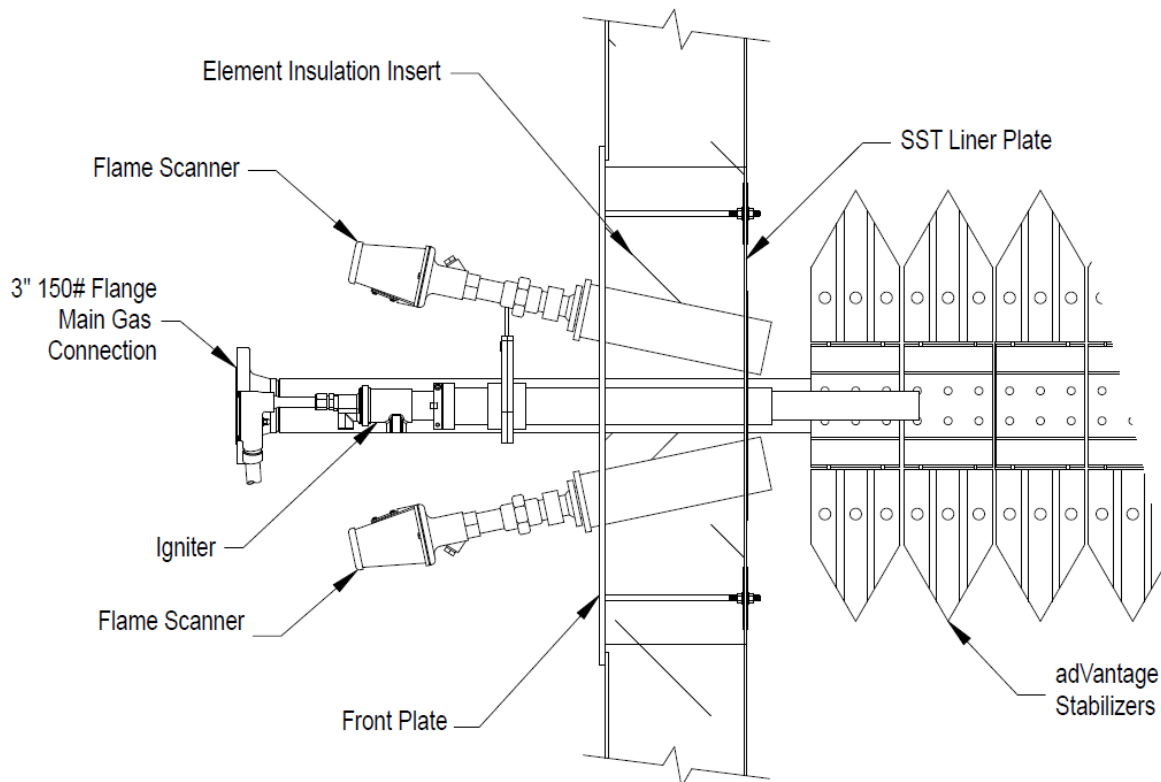
# adVantage® Duct Burner

## Scope of Supply

Forney supplies a complete scope of equipment with each duct burner system.

Typical Scope	Optional Scope
Horizontal (or vertical) Burner Elements	Pressure Reducing Station
Integral Flow Baffles	Fuel Flow Measurement
ANSI B31.1 Fuel Skid	CFD
Burner Management System	Individual Element Isolation
Redundant Scanner Cooling Air Blowers	Interconnecting Piping
MAXFire® Igniter with HESI	ANSI B31.3 Fuel Skid
Flame Scanner	

## Burner Element Detail





## Application Specifications

Duct cross sections:	3 to 50 feet (0.91 to 15.25 meter)
Heat inputs:	10 to 1100 MMBtu/hr (2.93 to 322 MW)
Inlet oxygen levels:	≥ 10.5% volume without augmenting air
Inlet H <sub>2</sub> O:	≤ 20% without augmenting air
TEG distribution to the burner:	± 20% volume of the average velocity over 90% of the duct cross section

## Typical Emissions

For most advanced gas turbine applications firing natural gas - assuming < 12% volume H<sub>2</sub>O; Firing Temperatures >1200°F (649°C), we offer the following emission guarantees in HHV over turndown - without augmenting air:

	Non-Power Augmentation*	Power Augmentation**
NO <sub>x</sub>	0.08 lb/MMBtu (34 mg/MJ)	0.08 lb/MMBtu (34 mg/MJ)
CO	0.04 lb/MMBtu (17 mg/MJ)	0.06 lb/MMBtu (26 mg/MJ)
VOC	0.004 lb/MMBtu (2 mg/MJ)	0.006 lb/MMBtu (3 kg/GJ)
PM-10 (front and back half)	0.01 lb/MMBtu (4 mg/MJ)	0.02 lb/MMBtu (9 mg/MJ)

\* > 11.5% volume O<sub>2</sub> and Burner Inlet TEG Temperature > 850°F (454°C)

\*\* > 10.5% volume O<sub>2</sub> and Burner Inlet TEG Temperature > 750°F (399°C)