

SPECTRA-G 800 EXHAUST MANAGEMENT SYSTEM

The Spectra-G is a cost-effective, high performance exhaust treatment solution for nitride MOCVD manufacturing.



Features and Benefits

- **High Abatement Performance**
 - Capable of treating all exhaust gases from multiple MOCVD production tools
 - Unique combustion technology allows abatement of NH_3 while minimizing NO_x emissions
- **Proven Superior Reliability**
 - Excellent powder handling for high throughput applications
 - High uptime as proven in leading nitride MOCVD production operations
 - Proven on all leading OEM's applications
- **Risk Management**
 - Combustion of all flammable gases
 - Air-cooled design as standard
- **Low Cost of Ownership**
 - Minimum fuel gas consumption for full process gas abatement
 - Up to six process inlets
 - Alternative fuel options
 - No water or oxygen requirement
 - Low power consumption
 - Low nitrogen consumption
 - 800 slm capacity
 - Indoor or outdoor installations

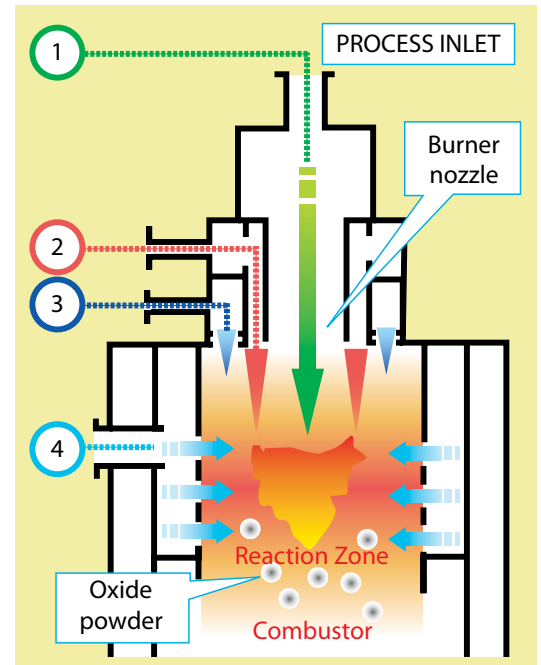
Production-scale Gas Abatement System for Nitride

4-Stage Combustion

The unique 4-stage combustion system of the Spectra-G ensures that oxidation of silane occurs in the middle of the combustion zone, away from the inlets, hence preventing the deposition of oxide powders on the combustor nozzles and maximizing uptime.

4-Stage Combustion System:

- 1st Stage: PROCESS GAS PATH
- 2nd Stage: MAIN FLAME
- 3rd Stage: PILOT FLAME
- 4th Stage: ADDITIONAL COMBUSTION AIR

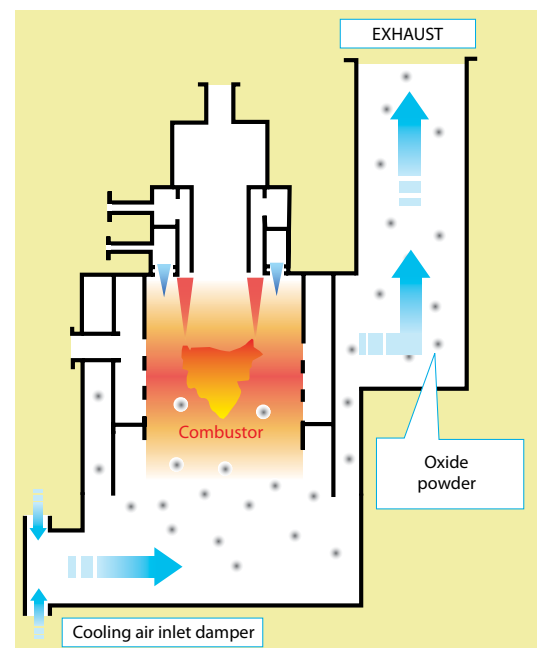


Effective Powder Handling System

The oxide powders generated by the combustion of metalorganics are entrapped in the cooling air stream that is introduced in the Spectra-G at a velocity of 10 m/sec.

Air flow is generated by the house extraction system.

This air-cooled design ensures that combustion by-products are efficiently transported from the Spectra-G to the factory central scrubber or dust filter.



Optimum Combustion

Nitride MOCVD processes involve the use of high H_2 and NH_3 flows. The Spectra-G utilizes the inherent flammability of these gases to minimize the additional fuel required to complete the gas abatement reactions (oxidation). Different fuel types are available to suit customer requirements.

The high gas capacity of the Spectra-G allows up to six production MOCVD tools to be connected. Each individual inlet allows each exhaust to act independently, thereby reducing capital and running costs.

Gas	Input (slm)	Exhaust
H_2	320	< 0.2%
NH_3	160	3 ppm
NO		<25 ppm
NO_2		2 ppm



320 slm H_2 + 160 slm NH_3

User-Friendly System

Ease-of-use

The Spectra-G is configured, monitored and controlled via a large touch-screen display. Four gauges display the fuel gas and extraction pressures.

Component Accessibility

Designed for fast maintenance - all electrical components are accessible from the front of the Spectra-G and all mechanical components are easily accessible from the left side of the system.

Easy communication

The PLC and built-in computer of the Spectra-G allow easy communication with the vacuum pumps, the process tool and the factory monitoring system.

SPECTRA-G - EXHAUST MANAGEMENT SYSTEM

Spectra-G units are suitable for all nitride-based MOCVD applications.

Gases treated by Spectra-G

Process applications using any of the following gases can be treated:

H₂

NH₃

TMGa

TMAI

TMIn

Other gases can also be treated, please contact an Edwards exhaust management specialist for additional information.

Spectra-G can incorporate up to six independent inlet ports. The independent inlet ports ensure that premixing of incompatible gases does not take place upstream of the burner. This means that simultaneous input of incompatible gases can be treated by a single Spectra-G through different

Technical Data

Maximum gas flow rate	800 slm
Number of inlet ports	1 to 6
Electrical supply	200-208 VAC 3-phase
Frequency	50/60 Hz
Power consumption	4 kW
Nitrogen supply pressure	7 bar
Fuel gas supply pressure	137 mbar (2 psi)
Extract flow rate	60 Nm ³ /min
Mass	850 kg

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