

SPECTRA-Z EXHAUST MANAGEMENT SYSTEM

The Spectra-Z system is a cost-effective, reliable, high performance exhaust treatment solution for the latest generation of Flat Panel Display (FPD) and Solar Cell manufacturing processes.



Features and Benefits

- **High Abatement Performance**
 - Capable of treating gases from FPD generation 8+ process tools
 - Efficient abatement of high flows of hydride gases
- **Proven Superior Reliability**
 - Corrosion resistant system
 - Excellent powder handling for high-flow silane applications
 - High uptime as proven in major FPD and solar cell operations worldwide
- **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 gas inlets
 - No water or oxygen required
 - Low power consumption
 - Low nitrogen consumption
 - 800 and 3000 slm capacity versions

Exhaust Management System for Flat Panel and Solar Cell CVD

4-Stage Combustion

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

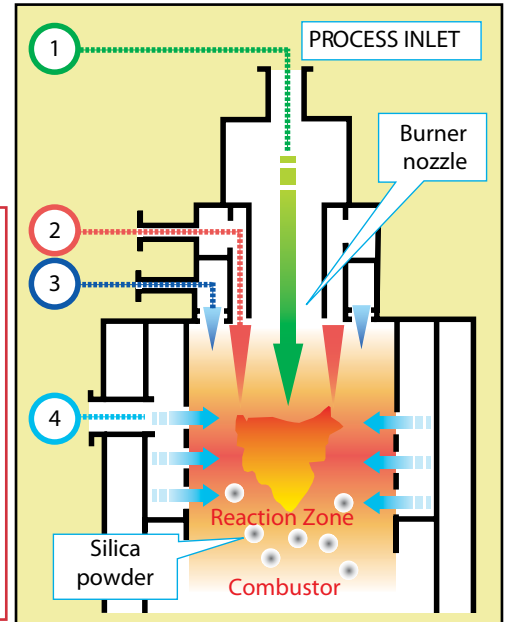
4-Stage Combustion System:

1st Stage:
PROCESS GAS
PATH

2nd Stage:
MAIN FLAME

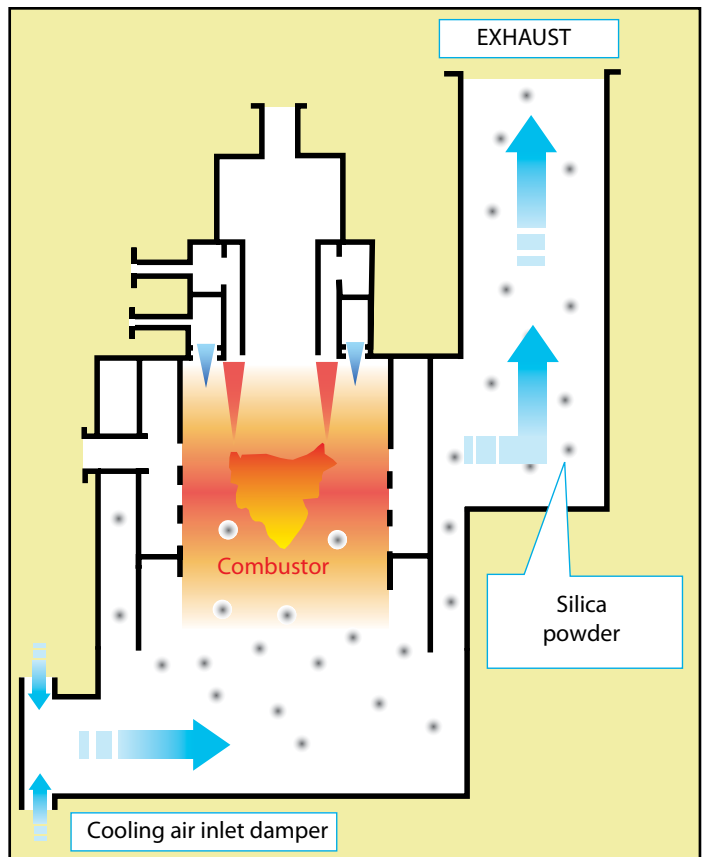
3rd Stage:
PILOT FLAME

4th Stage:
ADDITIONAL
COMBUSTION AIR



Effective Powder Handling System

- The powders generated by the combustion of SiH_4 and PH_3 are entrapped in the cooling air stream that is introduced in the Spectra-Z 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-Z to the factory central scrubber or dust filter.



By-Product Destruction

- In the Flat Panel CVD 8 solar cell process hydride gases (SiH_4 , PH_3 , NH_3) flow through the process chamber. The Spectra-Z abates these gases and related by-products in a cost efficient manner by operating at an optimized fuel rate.
- For “clean” gas abatement please contact your Edwards Exhaust Management Specialist.

User-Friendly System

- Ease-of-use
 - *The Spectra-Z 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 face of the Spectra-Z and all mechanical components are easily accessible from the left side of the system.*
- Easy communication
 - *The PLC and built-in computer allow easy communication with the vacuum pumps, the process tool and the factory monitoring system.*



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Technical Data

Spectra-Z units are suitable for flat panel CVD, solar cell PECVD and other semiconductor applications using large flows of silane and other hydride gases.

| <i>Performance details</i> | <i>Spectra-Z 800</i> | <i>Spectra-Z 3000</i> |
|----------------------------|-------------------------|--------------------------|
| Maximum gas flow rate | 800 slm | 3000 slm |
| Number of inlet ports | 1 to 6 | 1 to 6 |
| Electrical supply | 200-208 VAC 3-phase | 200-208 VAC 3-phase |
| Frequency | 50/60 Hz | 50/60 Hz |
| Power consumption | 4 kW | 6 kW |
| Nitrogen supply pressure | 6-8 bar | 6-8 bar |
| Fuel gas supply pressure | 137 mbar (2 psi) | 137 mbar (2 psi) |
| Extract flow rate | 60 Nm ³ /min | 180 Nm ³ /min |
| Mass | 850 Kg | 1450 Kg |

Gases Treated By Spectra-Z

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

| | | | |
|------------------|-------------------------------|----------------------------------|-----------------|
| SiH ₄ | B ₂ H ₆ | SiH ₂ Cl ₂ | PH ₃ |
| H ₂ | NH ₃ | CO | NF ₃ |
| F ₂ | TEOS | | |

Other gases can also be treated - please contact an Edwards Exhaust Management Specialist for additional information.

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