CASE HISTORY 57 — SEGMENTED HONEYCOMB (SHC®)

45,000-scfm RTO Uses Segmented Honeycomb Media

Measurements at 33,000 scfm confirm 93.1% thermal energy recovery — consistent with Lantec's design predictions.

APPLICATION
Industrial adhesive manufacturing, RTO

SYSTEM INTEGRATOR
Process Combustion Corporation (PCC)

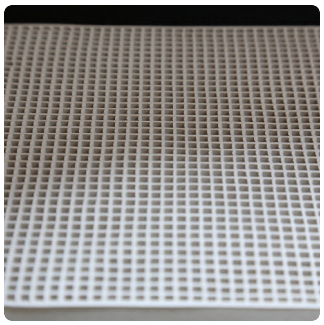
DESIGN CAPACITY
30,000–45,000 scfm

◆ THE APPLICATION

An industrial adhesive manufacturing facility required a new regenerative thermal oxidizer capable of handling a range of inlet conditions, including a maximum of 45,000 scfm. Process Combustion Corporation (PCC) was engaged to design and install the system.

◆ SEGMENTED HONEYCOMB HEAT RECOVERY MEDIA

Lantec's Segmented Honeycomb (SHC®) provides the ideal combination of surface area, pressure drop, and gas distribution for challenging applications. SHC® blocks measure 150 × 150 × 150 mm (~6 × 6 × 6 in) and consist of four segments with permanently bonded internal spacers, creating an organized structure of high-surface-area cells and narrow gaps.



Process gas has the freedom to move laterally as it moves vertically through the bed, improving air distribution and allowing particulates to bypass potential obstructions. The gaps and circulating gas also reduce thermal stress through the ceramic.

Lantec engineers worked with PCC to design the RTO heat recovery bed. In July 2024, PCC installed a QS45 RTO at the facility based on Lantec's calculations.

PRODUCT

Segmented Honeycomb

View Segmented Honeycomb page →

THERMAL ENERGY RECOVERY

93.1%

Measured July 2025 at 33,000 scfm — consistent with 93.7% predicted at the 30,000-scfm design point

APPLICATION CONTEXT

RTO | VOC control | Industrial adhesive | New installation

NOTE

US Patent No. 9,676,672 B2. Worldwide patent pending. Performance backed by Lantec 100% warranty.

◆ DESIGN BASIS AND PREDICTED PERFORMANCE

Heat Recovery in Two-Canister RTO

Design Basis		Predicted Performance	
30,000 scfm			
Inlet Air Flow	30,000 scfm	Preheating Thermal Efficiency	93.7%
Average Burner Air Flow	0 scfm	Thermal Energy Recovery	93.7%
Average Hot Gas Extraction	0 scfm	Inlet Gas Velocity	168 scfm/ft^2
Elevation above Sea Level	900 ft	Maximum Stack Gas Temperature	332 °F
RTO Outlet Static Pressure	1 in-WC	Average Stack Gas Temperature	200 °F
Inlet Air CO_2 Content	0.04%	Average Energy Input (VOCs+Fuel)	3.30 MMBtu/hr
Inlet Air H_2O Content	5.0%	Average Fuel Consumption (no VOCs)	60.1 scfm
Inlet Air Relative Humidity	56.5%	Minimum Preheated Air Temperature	1,331 °F
Inlet Air Temperature	110 °F	Media Pressure Drop (2 beds)	4.1 in-WC
Combustion Temperature	1,550 °F	Total Pressure Drop	4.1 in-WC
Valve Switch Time	3.0 min	Fan Motor Efficiency	80%
Fuel Gas Lower Heating Value	915 Btu/scf$_{60}$	Fan Horsepower	26.4 hp
45,000 scfm			
Inlet Air Flow	45,000 scfm	Preheating Thermal Efficiency	91.9%
Average Burner Air Flow	0 scfm	Thermal Energy Recovery	91.9%
Average Hot Gas Extraction	0 scfm	Inlet Gas Velocity	252 scfm/ft^2
Elevation above Sea Level	900 ft	Maximum Stack Gas Temperature	441 °F
RTO Outlet Static Pressure	1 in-WC	Average Stack Gas Temperature	226 °F
Inlet Air CO_2 Content	0.04%	Average Energy Input (VOCs+Fuel)	6.36 MMBtu/hr

Design Basis		Predicted Performance	
Inlet Air H_2O Content	5.0%	Average Fuel Consumption (no VOCs)	115.9 scfm
Inlet Air Relative Humidity	56.9%	Minimum Preheated Air Temperature	1,227 °F
Inlet Air Temperature	110 °F	Media Pressure Drop (2 beds)	7.0 in-WC
Combustion Temperature	1,550 °F	Total Pressure Drop	7.0 in-WC
Valve Switch Time	3.0 min	Fan Motor Efficiency	80%
Fuel Gas Lower Heating Value	915 Btu/scf_{60}	Fan Horsepower	66.7 hp

◆ PERFORMANCE CONFIRMED

Measurements taken in July 2025 with the system processing **33,000 scfm** showed **93.1% thermal energy recovery** and **4.5" WC** total pressure drop — well in line with design predictions. The installation will allow the facility to expand in the future and process up to 45,000 scfm.

For more information about how SHC® can help your new or existing system, please reach out to Lantec (sales@lantecp.com) or PCC (pcc@pcc-group.com).