



99% VOC Abatement, Minimal Maintenance Makes RTO the Clear Choice for RV Paint Shop



CASE STUDY: Recreational Vehicle Manufacturer

LOCATION: Oregon

SOLUTION DATE: In service since 2001

THE CHALLENGE: To meet growing demand for its custom coated and painted RV product lines, a major RV manufacturer expanded and consolidated its paint shop operations.

THE SOLUTION: The manufacturer selected CECO Environmental's two-module, 110,000 cfm dual-chamber regenerative thermal oxidizer (RTO) system with low-pressure-drop 95% primary heat recovery ceramic heat transfer media. The system included custom-designed controls with Ethernet capability to provide real-time data logging and 24/7 remote telemetry service diagnostic support.

THE RESULTS: The RTO system has provided significant process flexibility to the manufacturer, which has more than 25 exhaust stack point sources that can be directed to the RTO system when needed. The dual-chamber RTO system provides 99% reduction of VOCs and hazardous air pollutants (HAPs), while also giving the paint shop the choice to use either solvent- or water-based coatings. If only a few paint booths are scheduled to apply solvent-based finishes, the RTO system can be turned down and the flow rate balanced automatically by dual AC variable-frequency drives, which sense the inlet duct pressure upstream of the dual-chamber RTO. This feature

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allows the paint shop to cost-effectively handle a minimum 12,000 scfm flow up to the maximum capacity of 110,000 scfm.

The dual-chamber RTO system also provides the manufacturer with an integral “bakeout” feature, which allows the paint shop to periodically elevate the RTO media temperature that burns off any organic paint solids that may accumulate on the cold face of the RTO media. Even though each spray booth has multiple filters, organic paint solids can carry over from the finishing processes. Any overspray buildup in the RTO can be inspected visually and monitored by the programmable logic controller (PLC) through periodic checks of bed pressure drop. In the past, a rotary concentrator abatement technology had been used by this manufacturer. However, organic paint and solids masking on the concentrator media caused numerous shutdowns, making the rotary concentrator significantly more maintenance-intensive and less reliable than the RTO system.

CECO Environmental’s two-module dual-chamber RTO system with a common stack has been tested at 99% VOC abatement and also operates in a flameless no-nitrogen-oxides (NOx) mode. The supplemental natural gas injection (NGI) capability of the RTO does not require the burner and combustion air blower to operate after the initial one-hour burner cold startup for the paint shop, and therefore does not generate any NOx byproducts of burner combustion.

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