Air Pollution Control Technology Selection Table

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Technology	Equipment Design & Operation	Typical Applications	Typical Advantages & Disadvantages
Catalytic Oxidizer	**Catalytic Oxidizers destroy air pollutants at temperatures ranging from 500°F to 650°F.** A high-efficiency counter-flow plate type heat exchanger is used to preheat incoming exhaust fumes from the production process. Oxidation is achieved as pollutants pass through a bed of precious metal catalyst. The catalytic oxidizer internals are manufactured of stainless steel. Thermal efficiencies of 50 to 80% are available. 99% VOC/HAP destruction efficiency is typical.	- **2,500 to 60,000+ SCFM** - Ideal for air streams with LFL's of ~4% to ~15% **Common uses include:** - Converting web dryers - Flexographic printing - Heat-set printing - Bakeries - Coffee roasting Chemical processing	**Advantages:** - Low operating costs with low solvent concentrations - Low maintenance costs - Ease of operation - Ease of install **Disadvantages:** - Potential for catalyst poisons - Limited to maximum of ~20% LFL
Thermal Oxidizer (TO)	**Thermal Oxidizers destroy air pollutants at temperatures ranging from 1,400°F to 1,500°F.** TO's utilize a multi-pass shell-and-tube type heat exchanger, which is fabricated of heavy-duty stainless steel. Oxidation is achieved as pollutants pass through the burner flame, are mixed and held at elevated temperatures in the combustion chamber for 0.5 to 1.0 seconds. The TO is internally insulated with ceramic fiber insulation. The external shell is carbon steel. Thermal efficiencies of 40 to 70% are available. 99%+ VOC/HAP destruction efficiency is typical.	- **2,500 to 40,000+ SCFM** - Ideal for air streams with LFL's of ~15% to ~40% **Common uses include:** - Converting web dryers - Adhesive coating - Metal decorating - Heat-set printing - Pharmaceutical - Textile manufacturing	**Advantages:** - Moderate capital cost - Low operating costs with medium to high solvent concentrations - Ease of operation - Ease of install **Disadvantages:** - High operating costs with low solvent concentrations - Shell-and-tube heat exchanger has long life expectancy only with continuous operation
Regenerative Thermal Oxidizer (RTO)	**RTO's destroy air pollutants at temperatures ranging from 1,500°F to 1,800°F.** RTO's utilize ceramic media packed into vertical canisters as a high-efficiency heat exchanger. Oxidation is achieved as pollutants pass through the ceramic media, are mixed, and held at elevated temperatures in the combustion chamber for 0.5 seconds. The RTO is internally insulated with ceramic fiber insulation. The external shell is carbon steel. Thermal efficiencies of 80 to 97% are available. 98%+ VOC/HAP destruction efficiency is typical.	- **2,500 to 100,000+ SCFM** - Ideal for air streams with LFL's of ~3 to ~20% **Common uses include:** - Converting web dryers - Flexographic printing - Heat-set printing - Surface coating - Wood finishing & manufacturing Fiberglass manufacturing	**Advantages:** - Moderate capital cost - Low operating costs with low solvent concentrations - Very high thermal heat recovery - Capable of high inlet temperatures **Disadvantages:** - Two chamber design limited to ~98% air pollutant destruction - More moving parts, more maintenance
Rotary Concentrator System	**A Rotary Concentrator is a hybrid system.** Polluted air passes through a rotating wheel where pollutants are adsorbed onto a hydrophobic Zeolite media. The wheel rotates slowly, passing a sector of the wheel with the adsorbed air pollutant through a desorbtion plenum for removal by a heated air stream; thus continuously returning a regenerated (or clean) sector back into the main housing for adsorbtion. Desorbtion is automated as the slipstream of air that was routed through the cooling plenum is sent through a supplemental desorbtion heater where it is elevated to desorption temperature (typically ~365°F) & returned to the concentrator housing. This heated desorbtion air is directed through the wheel via the desorbtion plenum were concentrated pollutants are removed. The highly concentrated air stream is routed to an oxidizer for destruction.	- **20,000 to 150,000+ SCFM** - Ideal for air streams with LFL's of ~.25 to ~1.5% **Common uses include:** - Automotive coatings - Chemicals and paint manufacturing - Semi-conductor manufacturing - Surface coating - Wood finishing & manufacturing	**Advantages:** - Low operating costs with low solvent concentrations **Disadvantages:** - High capital cost - Design limited to ~96% air pollutant destruction - Limited to low inlet temperatures - Particulate must be filtered - More moving parts, more maintenance

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We hope this air pollution control selection guide has been helpful to you. If you still need assistance selecting the best technology for your specific needs, visit www.thecmmgroup.com or call our office at (920) 336-9800.

We invite you to request a quote and let us know how we can assist you or provide more information on our air pollution control systems.

About the CMM Group

Founded in 2001 as Custom Machine Manufacturing, The CMM Group is committed to providing personalized, expert advice and competitively priced solutions to a variety of equipment needs including Thermal Oxidizers, Energy Recovery Systems, Ovens and Dryers, Air Pollution Control Systems, Production Machinery and Ancillary Systems and Components.

"The hard work and dedication your team made this project a great success. I greatly appreciate that the installation went exactly as planned both time and budget wise, and that we were back in production with minimal disruption as promised. Additionally the efficiencies and energy savings have proven to be accurate and genuine." - Satisfied customer

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