Regenerative Thermal Oxidizers (RTO) are an industrial system for the treatment of exhaust air. The system uses a bed of ceramic material to absorb heat from the exhaust gas and utilizes the captured heat to preheat the incoming process gas stream.

RTOs are suited to applications with low VOC concentrations but high waste stream flow rates, due to their high thermal energy recovery. The basic operation of an RTO consists of passing a hot gas stream over a heat sink material in one direction and recovering that heat by passing a cold gas stream through that same heat sink material in an alternate cycle. RTOs are used to destroy toxic particles and VOCs that are discharged from industrial process waste streams.

**How the RTO process works**

**STEP 1.** The RTO unit is brought up to combustion temperature using supplemental fuel such as natural gas, propane, diesel, or bio-fuel. During this start up period, the RTO unit initially purges itself with fresh air and continues to process fresh air until it reaches combustion temperature equilibrium. The RTO unit is now ready to switch over to process air and begin the thermal oxidation of VOCs with a destruction efficiency up to 99%.

**STEP 2.** The RTO switches to operating on process air from the source. To maximize heat recovery, the RTO will automatically cycle or alternate the inlet and outlet (see diagrams below) via a series of pneumatic or hydraulic valves.

Because the RTO is so efficient at reclaiming effluent heat, the units often times are capable of sustaining combustion temperatures without any supplemental fuel, utilizing the VOCs as the only source of fuel.

**RTO Advantages**

- Custom designed and built
- 2 or 3 chamber systems
- 99%+ destruction efficiency
- Up to 97% heat recovery efficiency
- Low cost of operation
- High air flow
- Ideal for low VOC concentration
- Perfect solution for continuous operation
- Typical sizing from 300 to 60,000 SCFM

www.gcesystems.com
Regenerative Thermal Oxidizers (RTO)

- Over 350 systems worldwide
- International installations
  - United States
  - Australia
  - Canada
  - Mexico
  - China
  - United Arab Emirates
  - Singapore
  - Indonesia

Standard configuration

- A Stack
- B Combustion chamber
- C Burner
- D Heat recovery chambers
- E Fresh air damper
- F System fan
- G Recirculation valve assembly