



Valveless RTO

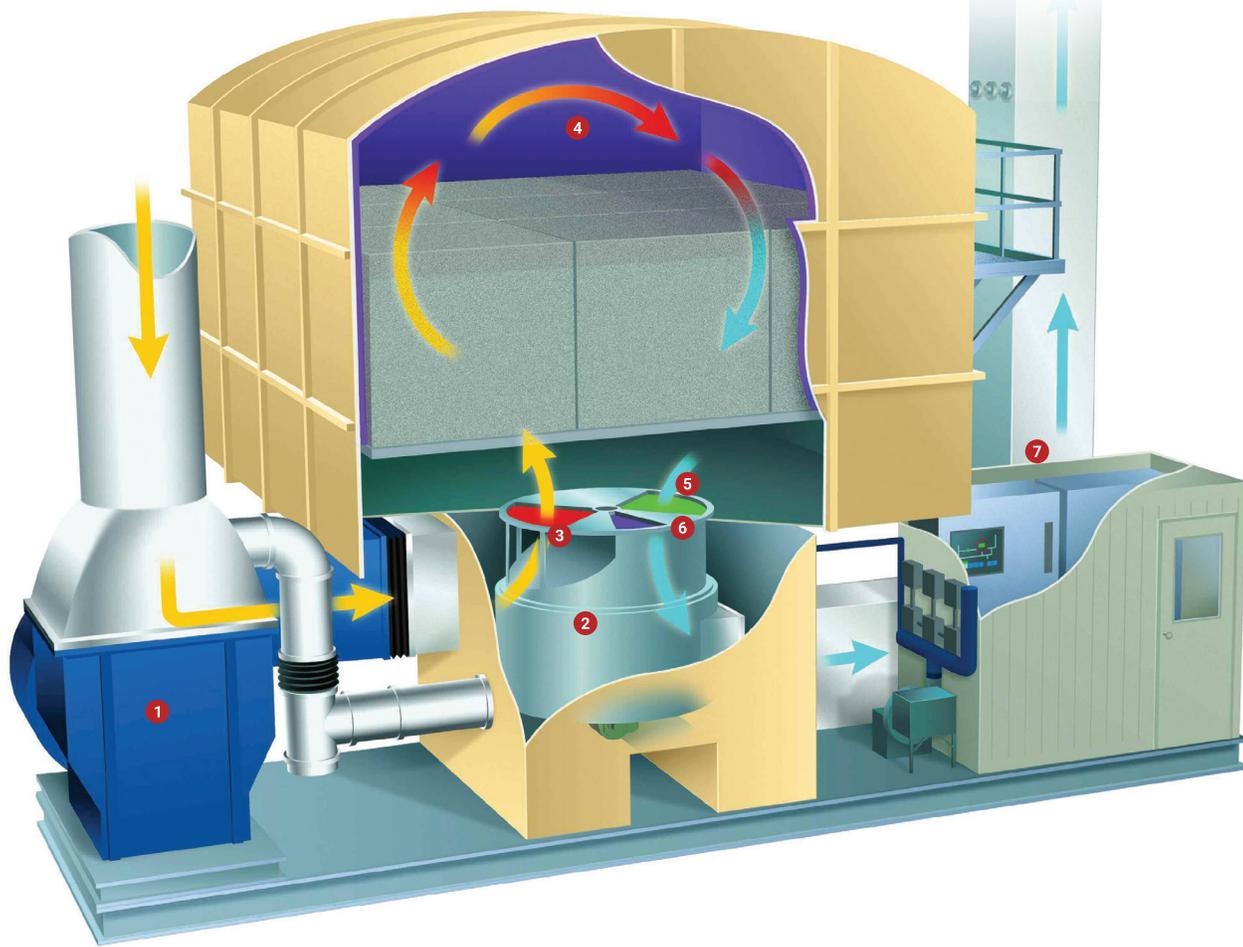
VOC and HAP Control for Ethanol & Protein Processing

Zenviro Tech's air pollution abatement systems are specifically designed to deliver constant reliable uptime with every system, so that plant operations can concentrate on production and throughput. With more than 450 RTOs worldwide and more than 100 VRTOs in the US ethanol industry, Zenviro Tech continues to be the trusted provider for environmental technologies.

Our Valveless Regenerative Thermal Oxidizer (VRTO) raised the bar for the entire industry. This innovative design eliminates the need for multiple valves and chambers and replaces many moving parts with a single, simple rotary distributor – the key to higher system reliability, less maintenance and lower cost of ownership.

Over 15 years of experience with ethanol customers has allowed us to continuously refine the VRTO-C for a wide range of applications and challenges in this market, making it a truly proven system.

- **Trusted and Proven**
15-year experience with Ethanol application innovations such as online bakeouts, NGC, fan design, ceramic design, O₂ control and more.
- **Industry leading high destruction efficiency of 99%**
- **Smallest Footprint Available per CFM of Gas Treated**
All of the heat exchange beds are under a single combustion chamber.
- **Consistent Performance**
Air distributor seals are not directly in airstream extending seal life and reducing maintenance.
- **Minimal Utility Requirements**
Operates without hydraulic or compressed air, water, or steam, leading to low operating costs.
- **24/7/365 Technical Response Service**



Process Overview:

Valveless Regenerative Thermal Oxidizer (VRTO)

1. The process exhaust stream is collected from the dryers, centrate, and/or CO₂ scrubbers and directed through the VRTO vessel by a variable speed process fan.
2. The patented rotary distributor is the single moving device that controls airflow through the inlet, purge, and outlet sections of the heat exchanger.
3. The exhaust stream is directed up through the inlet wedge of the rotary distributor and the corresponding heat exchanger sections. The airflow is preheated to near combustion chamber temperature as it travels upward.
4. The process exhaust is oxidized in the combustion chamber. A modulating burner provides additional heat, if required, to maintain oxidation temperature.
5. The exhaust or outlet wedge of the rotary distributor allows clean oxidized air to flow downward through the exchanger, where the exchanger media is preheated for the next cycle of incoming process exhaust.
6. The purge wedge of the rotary distributor follows in rotation behind the inlet wedge, continually flushing the exchanger media with clean oxidized air.
7. Clean air exits the VRTO vessel and is released to the atmosphere through the stack



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