



Regenerative Thermal Oxidizer

Efficient oxidation at low energy consumption

It has become increasingly important for companies in the rendering industry to minimize both the environmental impact of their factories as well as their energy costs. Haarslev Industries proposes its range of Regenerative Thermal Oxidizers, RTO.

The RTO permits the thermal oxidation of gases and process vapors with minimal energy consumption.

Environmental regulations related to elimination of odors and process water/vapor purification require the application of integral technologies to ensure the use of the best available technologies to protect the environment. Thermal oxidation is widely accepted by legislative bodies and is proven to be the most efficient method of dealing

with odor at rendering plants whilst reducing treatment and eventual water emissions to sewer.

Applications

The regenerative thermal oxidizer system is capable of purifying the gaseous effluents produced from the following emission points:

- Cooking vapors from cookers and dryers.
- Process air with VOC contaminants from the rendering process.
- Optionally, evaporated waste water from washing floors and vehicles.

The basic characteristics of these emissions can be summarized as process air containing volatile organic compounds (VOC).

The main objectives to be achieved are:

- Elimination of odours.
- Reduction of the contaminant load in the discharged water by eliminating the main source: the condensed cooking vapours and optionally the waste water.

Basically, the RTO purification system consists of a thermal oxidation process at a maximum temperature of 1742 °F and retention time of at least 1 second, conditions enabling the total oxidation of VOCs which are responsible for most of the odor load.

The VOCs are oxidized thermally with the effect of eliminating these organic smells.

Design

The RTO system consists of three canisters filled with a ceramic material which recovers heat energy from the oxidation process. A combustion chamber interconnects the three vertical canisters. It is here the oxidation process takes place.

The complete unit is insulated internally by ceramic fibre resistant to high temperatures. In each canister there are flow control valves to direct contaminated and treated air from one canister to another.

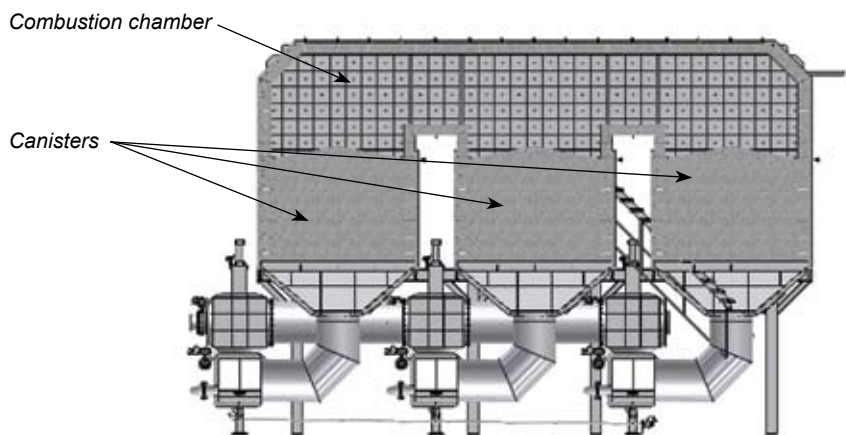
A specially designed low energy burner maintains the combustion chamber's temperature at minimum 1562 °F. Cooking vapors and/or process air are fed into the combustion chamber via one of the canisters to permit their oxidization into less harmful, odor-free components.

By managing the flows of untreated/treated air at high temperature through the canisters on their way to the chimney, energy is transferred to the ceramic media to heat it up. The valves change the flows of gases so that incoming untreated air passes through a hot canister and is preheated on its way to the combustion chamber. This continual energy transfer is what makes the RTO unit efficient as a large proportion of heat energy in the system is transferred to, or recovered from the air in each canister by the special ceramic media.

An integrated part of the plant

The key to specifying a successful oxidation solution lies in accurate determinations of flows in the system. In the case of the RTO, Haarslev Industries establishes the exact requirements for vapors and extraction air capacity and handling required at the customer's plant using our unrivalled knowledge of the rendering process. Furthermore, we have many years expertise in the design of applied systems to ensure all flows are perfectly controlled within precise limits to ensure perfect modulation and response of the RTO to these controlled inlet conditions.

Haarslev Industries has international experience in design, manufacture and installation of thermal oxidisers. Today more than 40 thermal oxidizer systems from Haarslev Industries are working successfully in rendering plants around the world.



We reserve the right to alter the specifications at any time without prior notice.



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