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air protection technology

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Recuperative Thermal Oxidizer

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Application field

Average/small air flow, average/high concentration.

Plant description

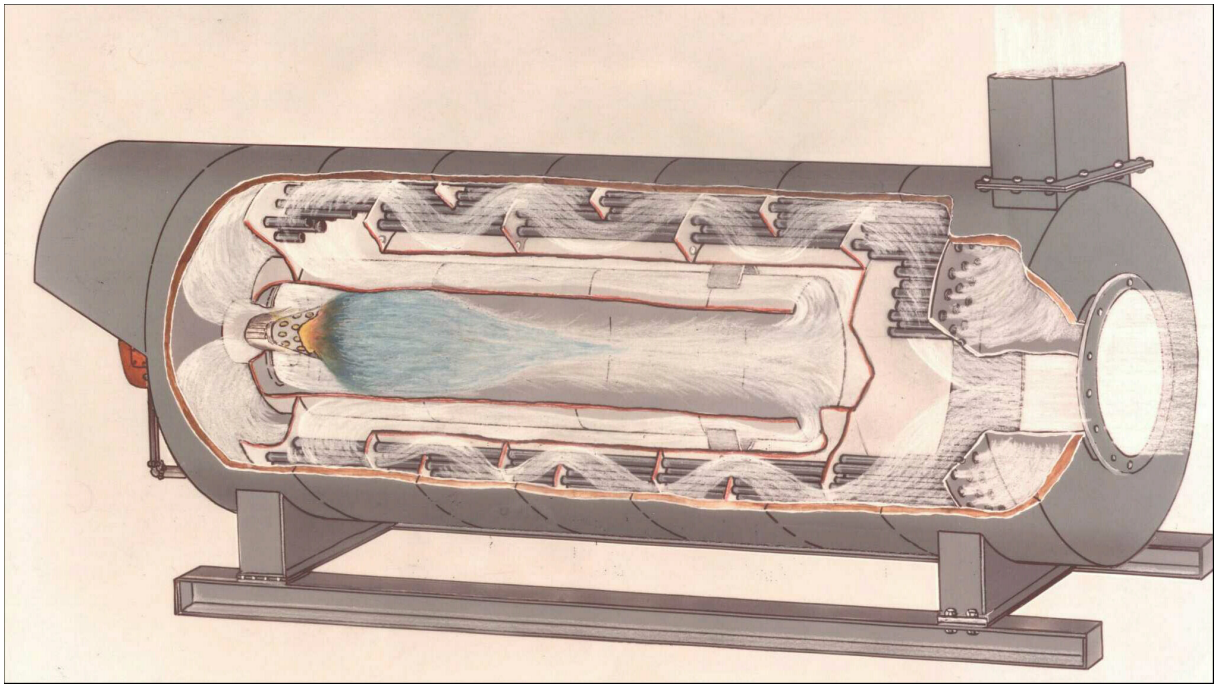
The unit is essentially made of a centrifugal fan and a sole apparatus containing the combustion chamber, a heat exchanger and a burner.

The case is externally covered with an insulating material with a thickness suitable for:

- limiting the heat dissipation towards the environment,
- minimizing the consumption of auxiliary fuel,
- keeping the surface temperature of the external sides at a value lower than 60°C.

The size of the combustion chamber, made of materials supporting high temperatures, guarantees a minimum gas permanence time of 0.6 s at the minimum combustion temperature of ~ 750°C.
The combustion temperature is maintained by means of a modulating air-vein burner, complete with a fuel feeding ramp compliant with the EN 746-2 regulation. This type of burner uses the process air as comburent air.

The combustion chamber is contained into a second chamber with a higher diameter which constitutes the external unit body.
The concentric ranks of the pipes constituting the highly efficient heat exchanger are installed in the space between the two chambers.
It is possible to further recover the heat going out of the system (see the P&I).



Operating principle

The polluted air coming from the divisions is sucked by the centrifugal fan placed upstream the unit and, through a suitable tuyere plate, is conveyed to the pipes of the recovering device along which the pre-heating operation is performed.

At the exchanger outlet, the polluted air is introduced into the air-vein burner, in which its temperature is increased up to reaching the minimum combustion temperature.

In the combustion chamber, the temperature is kept constant by means of an adjustment loop acting on a modulating valve placed on the ramp feeding the fuel to the burner.

The smokes produced leave the combustion chamber going through the space between the two chambers (jacket). Externally lapping the exchanger's pipes, they cede heat to the incoming flow, thus cooling themselves before they are discharged into the atmosphere.

The sensitive heat of the outgoing smokes can be further recovered through the installation of a heat recovery battery of the air/air or air/water type.