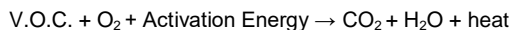


REGENERATIVE THERMAL OXYDIZER “IBT”

PROCESS DESCRIPTION

V.O.C. (Volatile Organic Compounds) removal in a gaseous stream through thermal oxidation, means to increase the airflow temperature (in opportune conditions of turbulence and residence time) in order to permit the following reaction of decomposition:



Thanks to this exothermal reaction we can have a further increase of temperature, proportional to the concentration of inlet pollutants and their calorific power.

PLANT DESCRIPTION

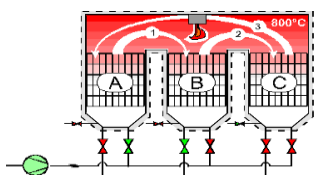
The raw gas is sucked by a fan; if the airflow is not steady, a suction regulation system is usually installed (inverter), optimising also the energetic consumptions.

The unit is composed by 3 towers containing ceramic packing that accumulate and release heat in a cyclic way and by a combustion chamber communicating with their superior sides.

The first tower containing ceramic packing is passed through up-flow by the cold raw gas, to which it releases the heat stored into the previous cycle; the second one is passed through by the hot depurated flow coming from the combustion chamber, from which it absorbs the heat.

A series of special valves, projected and tested to give reliability and safety in this particular application, changes alternatively the inlet and the outlet of the reactors obtaining a cycling process.

The third tower is in purging phase in order to avoid that, during the flow inversions, the part of the raw gas which has not yet been treated, is expelled to the stack, causing peaks in the outlet concentration.



This kind of heat exchange system, through the ceramic mass, permits a heat recovery up to 94-95%, making possible the auto-thermal condition of the unit (any auxiliary fuel consumption) starting from an inlet concentration of 2 g/Nm³.

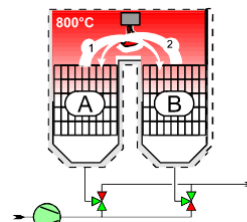
The type of ceramic packing, used as heating material (saddles, rings, balls or structured packing like honeycomb), is intentionally optimised to contain either the auxiliary fuel consumption or those of electric energy.

SPECIAL APPLICATIONS

Low inlet concentration unit

In case of low inlet V.O.C. concentration (0-2 g/Nm³) is possible to install a simplified unit with only 2 towers, eliminating the purge phase.

A special lay out and fitted valves allows to respect the up-to-date rules about emissions.



High inlet concentration unit

In case of presence of high inlet V.O.C: concentration up to 10 g/Nm³, the regenerative oxidiser can always be the best technology to be applied, but it is necessary to install an hot by-pass and to modify the management logic of the plant in order to avoid heat storage that would cause temperature increase: in this case can be interesting to install a further heat recovery system (steam, thermal oil, hot water)



FEATURES AND ADVANTAGES OFFERED BY THE SYSTEM

- High Removal Efficiency (98-99,5%)
- High Thermal Efficiency (92-95%)
- Reduced Production Of Secondary Pollutants (CO, NO_x)
- Further Heat Recovery Possibility
- Easy Management And Maintenance

APPLICATION

- Chemical industry
- Petrochemical industry
- Pharmaceutical industry
- Printing industry
- Adhesive tapes
- Surface coating and finishing (wood, metal, plastic)
- Rubber and plastic materials
- Coating and laminating
- Textile, leather and synthetic-leather
- Semi-conductors and electronic components