

## REGENERATIVE THERMAL OXIDIZER

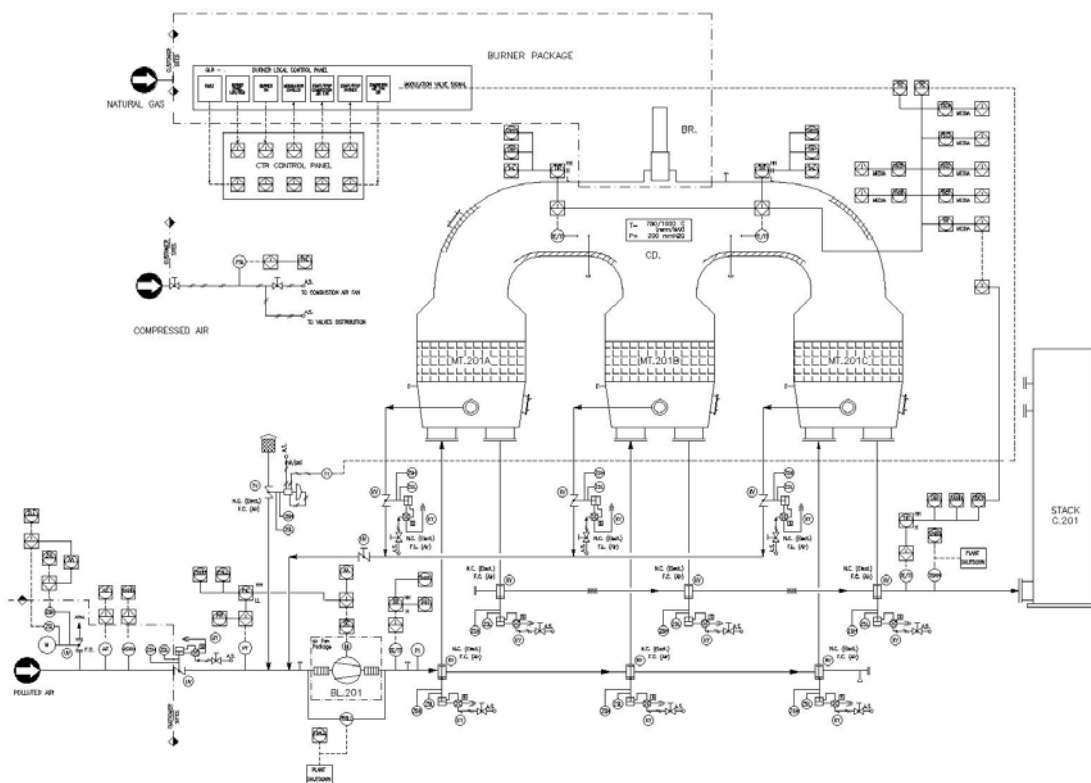
# PREMISE

Volatile organic compounds (VOCs) are, due to their widespread presence in the manufacturing process and emissions to their recognized toxicity, a significant source of health risk.

European legislation (2004/42/EC) and Italian (Legislative Decree No 161 of 27/03/2006) have set limits regarding the emission of these compounds in the atmosphere and the tendency for the coming years seems to suggest even more restrictive limits.

VOC abatement systems serve the dual function of collecting the vapours resulting from a production process and to reduce the amount of pollutants in the effluent before it is released into the atmosphere.

Among the methods laid down by law and technology capable of reducing atmospheric pollutants, the most widespread is the combustion plant thermal combustion plant, which produces the oxidation of the gaseous pollutants in the effluent in a combustion chamber at high temperature



# REGENERATIVE THERMAL OXIDIZER

The regenerative thermal oxidizer allows the oxidation of VOCs by increasing the temperature of polluted air beyond the 750° C; with the setting system heat from the exothermic oxidation reaction is enough to maintain the temperature of the combustion chamber to the desired value without adding auxiliary fuel (i.e. natural gas), thus reducing to a minimum the costs of management and operation of the plant.

The plant has a recovery efficiency up to 96%.



# DESCRIPTION

The combustion unit consists of a combustion chamber equipped with preheating burner and two and three and heat recovery (regenerative Tower).

Each tower contains regenerative ceramic material which, depending on the direction of the gas flow, absorbs or releases heat.

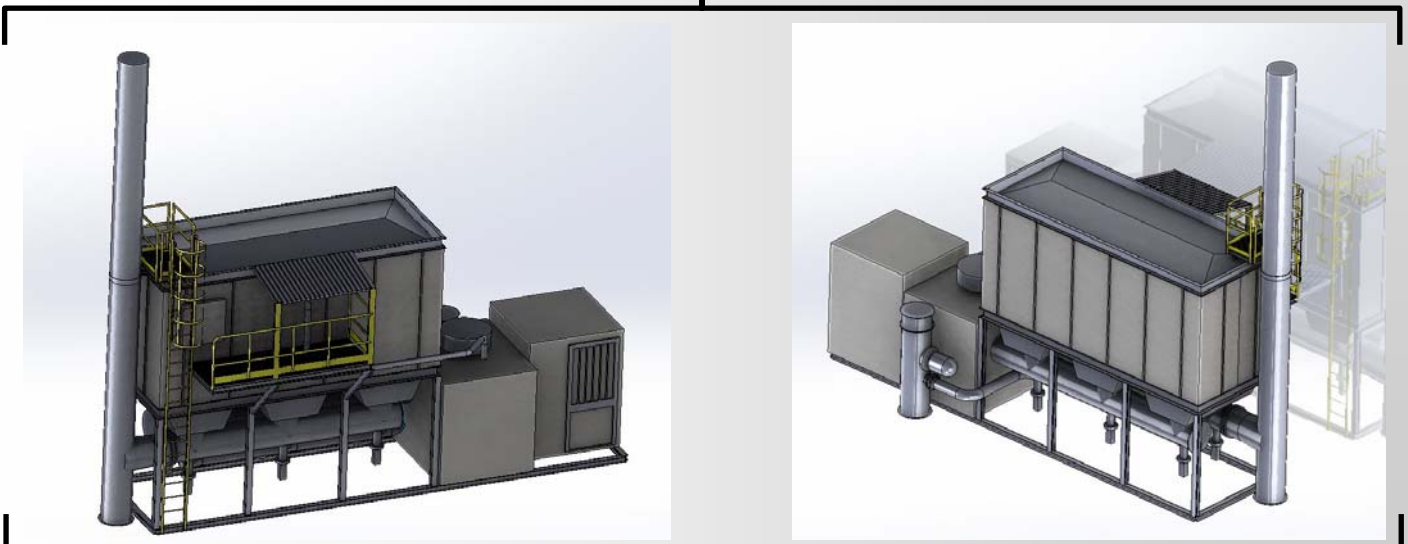
Expected operating temperature in the combustion chamber is min 750° C, this temperature is reached with auxiliary burner and maintained thereafter by the heat produced from the oxidation of pollutants, the gas has a residence time in room approximately 60 seconds.

The rooms have heating and heat recovery function to preheat the incoming gas and recover heat from flue gas output, this flow is reversed with the help of pad valves.

The version with three rooms allows a smoother working cycle by breaking down the peak you normally have with a double chamber system.

The combustor includes:

- ⇒ Centrifugal fan with continuous operation with automatic control system
- ⇒ Heat storage towers with ceramic filling (two or three)
- ⇒ Automatic valves for process air distribution through the towers
- ⇒ Combustion chamber equipped with auxiliary burner connected to regenerative towers
- ⇒ Control panel with PLC technology and operator panel interface for command and System Diagnostics



# ADVANTAGES

The regenerative combustion plant represents the most recent evolution in the ecological sector of treatment of gaseous effluents by combustion process, designed to meet the market demand that is increasingly oriented towards reliable plants, simple operation and maintenance, and with costs management as much as possible contents.

The regenerative combustion plant is also configured as an extremely flexible and independent unit, which is inserted downstream of the production process without causing problems as:

- ⇒ Reduction of VOCs in the atmosphere within the limits established by current legislation;
- ⇒ Reduced fuel consumption (only for system start-up and set-up);
- ⇒ Simplicity of management by means of a "Touch Screen" videographic interface;
- ⇒ Reduced maintenance;
- ⇒ Contained size of the plant;
- ⇒ Installation in a short time without production stops for the customer;
- ⇒ Low load losses;
- ⇒ Contents management costs with presence of high concentration;
- ⇒ It is not subject to poisoning phenomena due to particular substances or to the presence of traces of powders for which it interfaces perfectly even with heterogeneous and variable production processes over time;
- ⇒ It does not generate further discharges that require treatment or disposal;
- ⇒ The thermal powers of the burners installed are limited, so that in general there are no particular increases in methane flow rates that require a restructuring of the factory distribution network;
- ⇒ It is not subject to corrosion phenomena as the operating temperatures prevent condensation on the walls.

### CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

**SITES S.r.l.**  
**Via Trento, 82**  
**22070 Fenegrò (Como) – Italia**

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

**ISO 9001:2008**

The Quality Management System is applicable to:

**Engineering, manufacturing, assembly and assistance of gas, air, oil and gas treatment plants for petrochemical and energy companies.**

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate  
No: LRC 6009580/QMS/UE/N

Original Approval: 2<sup>nd</sup> June 2010

Current Certificate: 14<sup>th</sup> June 2016

Certificate Expiry: 14<sup>th</sup> September 2018

  
Issued by: Lloyd's Register Quality Assurance Italy Srl  
for and on behalf of Lloyd's Register Quality Assurance Limited



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This document is subject to the provision below  
Via Cadorna, 69 20090 Vimodrone (MI)  
For and on behalf of 1 Trinity Park, Bickenhill Lane, Birmingham, B37 7ES, - United Kingdom.  
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### CERTIFICATE SCHEDULE

**SITES S.r.l.**  
**Via Trento, 82**  
**22070 Fenegrò (Como) – Italia**

#### Locations

Via Trento, 82  
22070 Fenegrò (Como) – Italia

Via Milano, 74 b  
22070 Bregnano (Como) - Italia

#### Activities

Engineering, project management, manufacturing and assembly and assistance of electrical panels, control and power panels for petrochemical and energy companies. Prefabrication of steel structures.

Engineering, project management, manufacturing and assembly of gas, air, oil and gas equipment for petrochemical and energy companies. Technical assistance activities.

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