

**EXPERIMENTAL RESEARCH ON RTO PILOT PLANT****G. Nardini<sup>1</sup>**, L. Petarca<sup>2</sup>, D. Simoni<sup>1</sup><sup>1</sup>*Consorzio Polo Tecnologico Magona, Cecina, Italy*<sup>2</sup>*Dipartimento Ingegneria Chimica, Università Di Pisa, Pisa, Italy*

Regenerative Thermal Oxidizers (RTO) are extensively used when waste gases containing low solvent mixture concentration, generally between 0.25 and 5.00 gr/Nmc, have to be treated in order to reach limits established. A lot plants are working around the world, but still many things are poorly known, among these:

temperature of ceramic packing bed

temperature difference between gas and ceramic packing along the beds

heat transfer coefficient

temperature axial profile in different beds within the same plant

how a bad distribution of flow affects temperature profiles and consequently the efficiency of plant.

To give answers to those and other questions, a pilot plant is actually working at CPTM research center.

Main characteristics of this RTO Plant

- Design gas flow rate 1000Nmc/h

- Working temperature up to 950°C

- Burner equipped for diesel oil with pneumatic spraying of fuel.

- Two bed packed with ceramic saddle 2", 4000 mm height, 928 mm diameter, 160 mm of inner insulation

- Main fan and burner fan.

The whole plant is assembled on skid for easy transportation. Diesel fuel was chosen to allow a quick installation to those factories which require to perform experimental runs. Preliminary tests of maximum fuel consumption were made with no solvent into the gas stream fed to the plant. Temperature profiles along plant were investigated in function of flow inversion time, 20sec, 60sec, 120 s. Experimental runs or determining heat transfer coefficients in different operative conditions were carried out.