

Development of non-premixed porous inserted regenerative thermal oxidizer

非预混多孔介质蓄热燃烧炉开发

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A porous inserted regenerative thermal oxidizer (PRTTO) system was developed for a 125 kW industrial copper-melting furnace, due to its advantages of low NO_x emissions and high radiant efficiency. Zirconium dioxide (ZrO_2) ceramic foams were placed into the combustion zone of a regenerative thermal oxidizer (RTO).

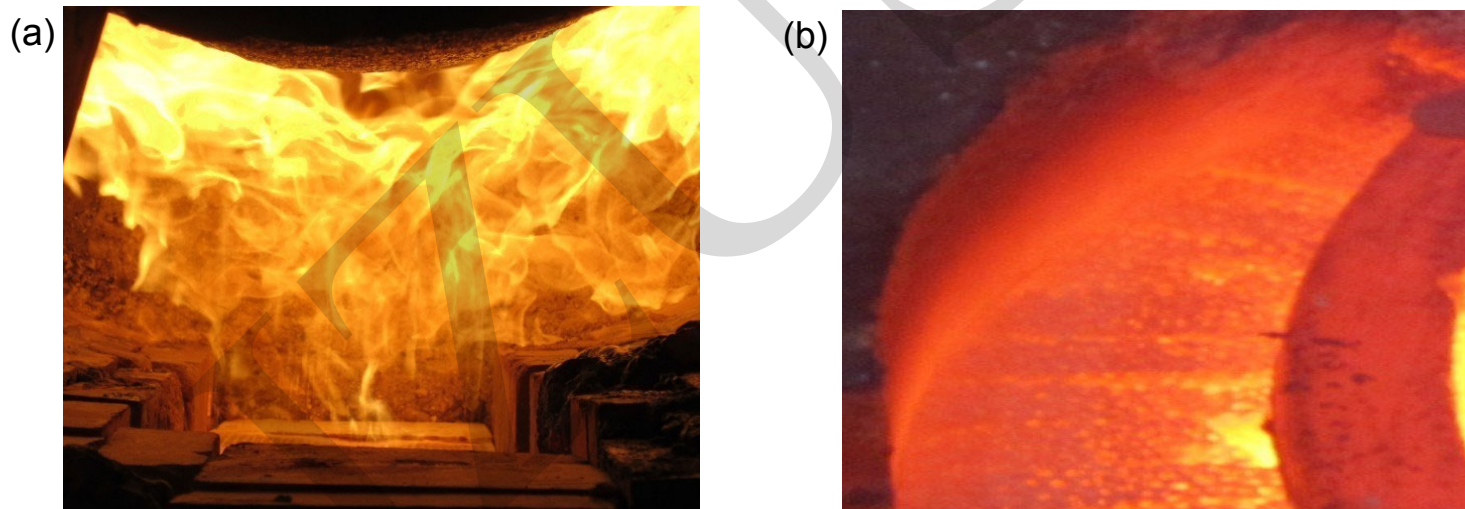


Fig. 1 Flame images of free flame of Regenerative Thermal Oxidizer (a) and filtration combustion flame of Porous inserted Regenerative Thermal Oxidizer (b)

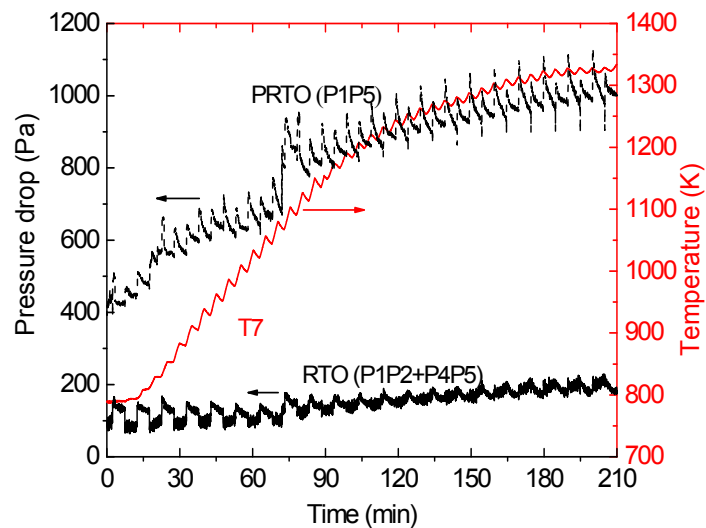


Fig. 2 Pressure drops during the start-up procedures

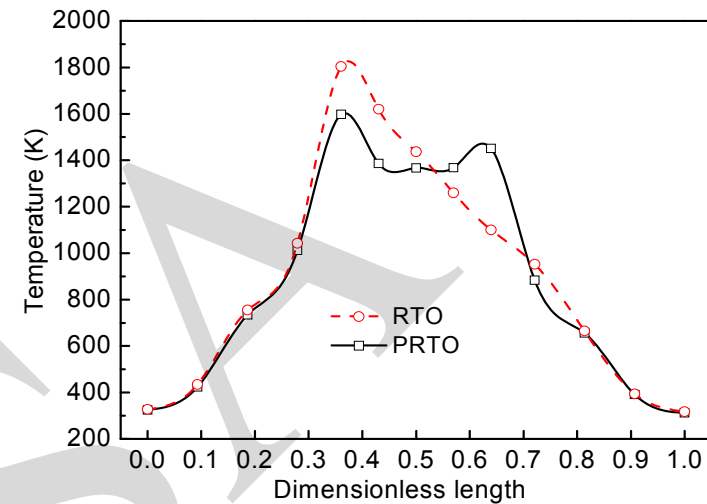


Fig. 3 Comparison of temperature distribution between the RTO and PRTO

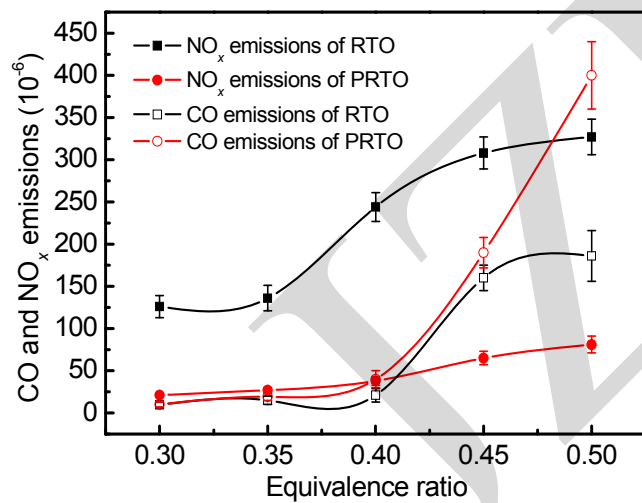


Fig. 4 Comparison of CO and NO_x emissions between the RTO and PRTO systems

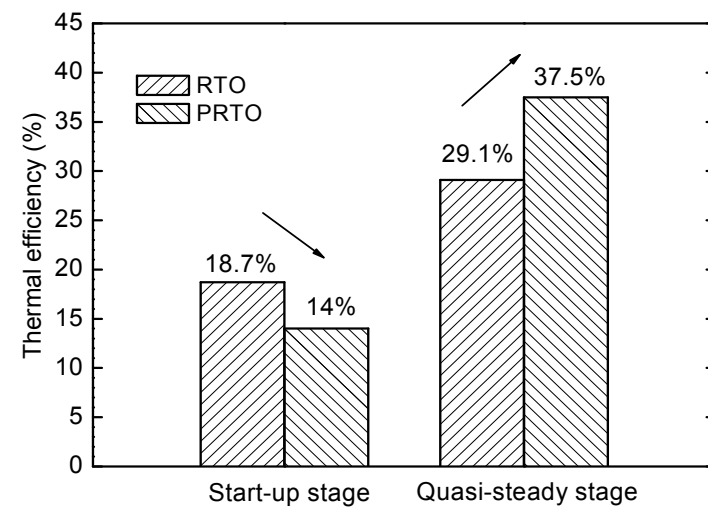


Fig. 5 Comparison of thermal efficiencies between the RTO and PRTO systems