



ABSTRACT

A method and apparatus for burning a fuel in the presence of an oxidant in which intermixing fuel jets are formed from fuel and oxidant flowing in a mixing layer. The fuel and the oxidant are combusted to produce a projected flame. Intermixture of the fuel and the oxidant jets occurs within a turbulent flow regime where the fuel and the oxidant are in close contact with one another within eddies. The fuel and the oxidant are intermixed in average stoichiometric proportions and the mass flow rates of the fuel or the oxidant or both are intermittent and have a regular pulsation. This regular pulsation has a sufficiently high frequency that the eddies contain the fuel and the oxidant in fuel-rich and fuel-lean ratios in an essentially even distribution through the projected flame. As a result a plurality of fuel-rich and fuel-lean regions are created throughout the projected flame and thermal NO_x and carbon monoxide emissions are reduced. Fluidic oscillators are used to induce the pulsations in the mass flow rates since for most burners frequencies above 100 Hz are required.