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External high-frequency control of combustion instability

Larionov V., Mitrofanov G., Kozar A.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The article presents the results of experimental studies of combustion instability in the pulse combustor. Propane-air mixture is burned in the chamber with the flame holder. It was experimentally found that feeding high-frequency sound vibrations into the combustion chamber causes the suppression of pulsating combustion. The oscillation frequency ranges in 870 to 1400 Hz. This corresponds to 9-12 resonance frequencies of oscillations in the combustor. The physical mechanism of the observed phenomenon consists in changing the conditions of formation and destruction of fuel jets in the vortex zone behind the flame holder.

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