

INFLUENCE OF ELECTRIC DISCHARGES ON TURBULIZATION WAVES OF BURNING AND TRANSITION OF SLOW BURNING IN DETONATION

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The opportunity of an intensification of processes of burning with the help of various methods of influence is intensively investigated for the last years. Nonequilibrium processes essentially influence processes of burning. So, for example, excitation of oscillatory levels of molecules of a gas mixture allow one to change over a wide range the period of an induction of ignition, speed of burning. Other ways of an intensification of burning, for example, with the help of electric fields and discharges are also known.. These researches are interesting as with the fundamental and the applied point of view. In work [1] of us it was shown that with the help of electric discharges it is possible to operate instability of burning. So, for example, the electric discharges stabilized on a current interferes with development of the unstable burning, the electric discharges stabilized on a voltage on the contrary shakes unstable burning. Besides, by us it is also experimentally shown that with the help of such electric discharges it is possible to operate rate of increase of pressure in models of engines of internal combustion [2]. Results on the influence of electric discharges on characteristic times predetonation processes [3] are obtained. So, for example, at imposing the stabilized high-frequency electric discharges the turbulent speed of burning at initiation of a detonation is increased one and a half - two times [4]. Though all these results specify that, apparently, such an influence of electric discharges on burning is connected to their influence on laws turbulization the wave of burning, but, nevertheless, to the present time this question is not investigated enough, is not presented as full clearness in the understanding of influence of electromagnetic fields and electric discharges on burning kinetics. In the given work these questions are considered.

Within the framework of the linear theory of diffusion-thermal instability the influence of electric discharges categories on stability of a wave of burning is examined. It is shown that the electric discharges stabilized on a current reduces increment increase, and the electric discharges stabilized on a voltage on the contrary increases this increment. It resulted from the experimental data confirming the given calculations.

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