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Experimental study of integral characteristics of ignition of air mixture with typical liquid fuel vapor by a fixed heated metal rod

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Abstract

Experimental study of vapors ignition of typical liquid fuel – gasoline by a local heating source is conducted. Conditions of interaction of combustible substance evaporation products with the fixed metal rod warmed to high temperatures are considered at direct contact of the condensed substance with a power source and at its arrangement in some distance from evaporation border. The value of the main integrated characteristic of the process – ignition time delay is determined. Value of the limiting (minimum) temperature of the local source at which the ignition in the system "metal rod – combustible liquid – steam-gas mix" ignition is happening has been determined. Dependence of ignition time delay for a mix of air with vapors of gasoline on the distance between the steel rod and the surface of evaporating fuel is obtained. Comparison of experimental results with well-known consequences of numerical researches is carried out.