

INFRARED BURNERS WITH A WIRE MATRIX AND RECUPERATIVE ELEMENTS

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Abstract: Studies of surface combustion in an infrared (IR) burner device with a flat permeable matrix of wire material during combustion of propane–butane mixtures with air were carried out. A two-layer matrix of fehral and stainless steel was used with a combustion power of up to 22 kW. Two types of structures of IR burners have been studied: without recuperative elements and with the recuperative elements in the form of plates of fehral Cr25Al6. The composition of combustion products was determined, the temperatures of the working surface and the reverse side of the matrices were measured when the air-to-fuel ratio of the gas–air mixture was varied from 1.1 to 1.6. It is shown that the burner device with recuperative elements has a higher conversion rate of combustion energy into radiation energy and lower emissions of carbon and nitrogen oxides compared to the device with a matrix without recuperative elements.

Keywords: surface combustion; infrared burner; permeable wire material

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