AFTERBURNER OPERATING ON DETONATIVE COMBUSTION OF LIQUID JET PROPULSION FUEL

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Abstract: The results of a new series of test fires of a detonation afterburner as part of a small-size turbojet are presented. In contrast to previous tests with a sequential arrangement of turbojet and afterburner, the new series provides for gasdynamic separation of airflows: air was supplied to the afterburner separately using an auxiliary power unit. The separation of airflows made it possible to ensure the stable operation of the combined power plant in different modes of operation of the turbojet when the afterburner was turned on. In the test fires, a stable mode of spinning detonation of aviation kerosene with single detonation wave was registered and the detonative combustion of kerosene in the afterburner did not affect turbojet operation.

Keywords: turbojet; afterburner; detonative combustion; aviation kerosene; spinning detonation

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Figure Captions

Figure 1 Photograph of the turbojet–detonation afterburner assembly in one of the test fires

Figure 2 Records of pressure pulsation sensor in a test fire

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