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EXPERIMENTAL STUDY OF LOW DENSITY THERMAL INSULATION MATERIALS ON RADIATION HEATING FACILITY WITH VARIABLE PRESSURE

Abstract

In order to evaluate the thermal insulation performance of low density thermal insulation materials, China academy of aerospace aerodynamics (CAAA) has developed the radiation heating facility with variable pressure. The facility includes 0 150kW quartz lamps heater, test chamber, vacuum system and control system. The maximum running time of the facility is 4000s. The surface temperature of low density thermal insulation materials is up to 1000K. The minimum pressure in the test chamber is 10Pa. The performances of low density thermal insulation materials in deferent low pressures have been researched on the facility. The model cross size is 100mm in long and 100mm in width. The results show that, at the same test condition, the density and pressure will affect the thermal insulation performance of materials. Decreasing the pressure or decreasing density will improve the thermal insulation performance.