

TURBULENCE MEASUREMENTS IN A TURBINE CASCADE FLOW

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ABSTRACT. In this paper, we discuss the results of a measurement program initiated to describe the turbulence in a gas turbine first-stage vane passage. The flow entering the passage comes from a simulation of a low-NO_x combustor within which the mainstream flow interacts with a series of cross-jets to create a high-turbulence, large-turbulence-length-scale flow that passes downstream through a combustor-to-turbine transition duct and to the linear cascade that simulates a first-stage turbine. Measured mean flow, RMS velocity fluctuations, and dissipation of turbulence in the passage are compared with values computed using RANS simulation.