

Abstract

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NUMERICAL MODELLING OF SLOT FILM COOLING USING A WALL FUNCTION

CFD modeling of gas turbine film cooling remains a challenge for the computational arena due to the lack of robust accurate turbulence model numerical technique to solve this highly complex problem. Modeling the exact behavior of the coolant jet is computationally expensive due to the complexity of the jet mainstream interaction, such as vortex generation, and separation. This paper, validation progress is presented using experimental data executed by the second author [GT2011- 46491] and Thurman et-al [GT2011-46498] for blowing ratios of 1.0 and 2.0, and density ratio of 1.0. A wall function approach is chosen for a robust computation, and aiming for CPU time reduction. The in-house CFD code EOS is used to solve the RANS equations. A simple flow over flat plate validation problem was executed using experimental data of Klebanoff and El-Tahry as a code validation evidence.