

# **FINITE VOLUME INVESTIGATION OF 8Y-PSZ/NiCrAlY AS THERMAL BARRIER COATING OVER AISi ALLOY**

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## **ABSTRACT**

Zirconia ( $ZrO_2$ ) has attracted the worldwide researchers working in the field of development of thermal barrier coatings due to its excellent properties. In the present investigation, finite volume methodology based technique was employed to observe the effectiveness of yttria (8% by wt.) partially stabilized zirconia (8Y-PSZ) as thermal barrier coating applied over a substrate material of AISi (12% by wt.) using an intermediate bond coat of NiCrAlY. The results showed that the coating was highly effective in reducing the heat penetration into the substrate which could be analyzed as an enhancement in thermal efficiencies of the high temperature operating engineering systems or as a decrease in the cooling load of the system for the same efficiency level.

**KEYWORDS:** Finite Volume Modeling (FVM), Thermal Barrier Coating (TBC), Thermal Behavior, Yttria Partially Stabilized Zirconia