

**ATMOSPHERIC PLASMA SPRAY OF NiCrAlY BOND COAT WITH DIFFERENT FEED RATES**

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**ABSTRACT**

Thermal barrier coating (TBC) is used to reduce the temperature imposed on hot section of the component, which are subjected to high temperature such as gas turbine and diesel engine. TBC consist of a metal bond coat (MNiCrAlY, M=Ni Co) and a ceramic top layer ( $ZrO_2/Y_2O_3$ ). The bond coat is used to mediate the contact between the top coat and the metal alloy substrates, while the top coat of zirconia coating offer an excellent thermal shock resistance as a thermal barrier coating. In this study, the bond coat of  $Ni_{22}Cr_{10}Al_{11}OY$  powders were deposited on  $M_2$  steel substrates by atmospheric plasma spray technique repeated at three different feed rate i.e., 0.5, 1.0, 1.5 rpm while other parameters were kept constant. The surface morphology demonstrates overlapping splat and other appears to be poorly consolidated by fine particles, with no definite splat structure. Results show that an increase in feed rate resulted in increase of thickness of bond coat and surface roughness but decrease in hardness of the coatings. The studies also show that deposition of  $ZrO_{2-8}Y_2O_3$  has higher resistance towards hot corrosion when compared to the application of bond coat only.

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