

#### **MmeFsu09-002**

##### **Evaluation of the effect of laser sob coating wc by HVOF**

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The laser remelting technique on the tungsten carbide (WC) coating deposited by HVOF provides improvements in surface properties, such as increased hardness and wear resistance. This process uses a laser beam to selectively fuse the coating, promoting a uniform and adherent layer. Benefits include improved durability and performance in industrial applications. In the present work, tungsten carbide alloy (WC–12Co–4Cr) coatings were deposited on suitably prepared SAE 1016 substrates using the high-velocity oxy-fuel (HVOF) technique. After deposition, the coating was remelted with a laser beam, varying with the scanning speed and laser beam power to obtain a coating free of pores and cracks and better metallurgical anchoring to the substrate. The samples were characterized by scanning electron microscopy (SEM), x-rays, wear and microhardness. The results show that it was possible to obtain coatings of greater hardness after the laser remelting process, free of pores or imperfections and metallurgically bonded to the substrate. We also found a processing range for the ytterbium laser remelting of the WC–12Co–4Cr coating aiming at high productivity and microstructural optimization of the coating for different thicknesses.