

论文

高速电弧喷涂FeCrAl涂层和3Cr13涂层的冲刷腐蚀性能

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摘要:

采用液/固两相流冲刷腐蚀磨损试验机,研究了高速电弧喷涂FeCrAl涂层和3Cr13涂层在酸性浆料中不同试验条件下的冲蚀行为,并用扫描电镜分析了涂层冲蚀磨损后的表面形貌。结果表明:同一冲刷角度下,冲刷速度的提高加剧了涂层的损伤,FeCrAl涂层的冲蚀失重率远小于3Cr13涂层,耐蚀性好的FeCrAl涂层以磨损为主,而耐蚀性差的3Cr13涂层以腐蚀为主;同一冲刷速度下,两涂层均在冲蚀角为30°时失重率最高。低冲刷角度时,冲刷磨损机理以切削为主;高冲刷角度时,既有切削作用也有冲击作用。

关键词: 高速电弧喷涂 FeCrAl涂层 3Cr13涂层 冲刷腐

Erosion-Corrosion Characteristic of High Velocity Arc Sprayed FeCrAl Coating and 3Cr13 Coating

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Abstract:

The erosion-corrosion behavior and mechanism of high velocity arc sprayed FeCrAl coating and 3Cr13 coating in acid slurry were studied by liquid-solid two-phase flow erosion-corrosion tester. The morphology of the surfaces after erosion-corrosion was observed using a scanning electron microscope (SEM). It was found that the damage of coatings reinforced as erosion speed increased. The erosion-corrosion mass loss rate of FeCrAl coating was much lower than that of 3Cr13 coating. The FeCrAl coating had better corrosion resistance than the 3Cr13 coating. In the weight loss process of FeCrAl coating erosion was dominating, and corrosion played the same role for 3Cr13 coating. It was observed that the maximum value of erosion-corrosion mass loss rate of both coatings appeared when the erosion angle was at 30 degree. The reason was that the value of the erosion loss rate reached maximum at this angle. Cutting was dominating in erosion-wear mechanism at low angles, while both cutting and impact took effect at high angles.

Keywords: high velocity arc spraying FeCrAl coating 3Cr13 coating erosion-corrosion

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扩展功能

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