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Experimental Study Of The Effect Of Shot Peening Parameters On The Surface Texture - Influence On The Adhesion Of A Paint Coating

M.Bourebia, S.Meddah, Z.Mentouri, A.Oulabbas, S.Achouri, L.Laouar

Abstract: The investigation presented in this paper focuses on the effect of surface texture on the adhesion of a paint coating as well as the influence of shot peening regime parameters on the surface isotropy indicator "Str" and on the fractal dimension "Df". The tests have been organized according to full factorial designs 23, where three parameters have been examined, at their two levels (min, max), namely the pressure (P), the angle of attack (?) and the time (t). 3D roughness measurements have been carried out to characterize the different surfaces after a shot peening operation. A mathematical model linking the input parameters (P, ?, t) and the output parameter "Str", in the study area has been established, and the fractal dimension (Df) has been used for the surface characterization. Paint deposit has been applied to surfaces and adhesion tests have been carried out. The results show the significant effect of the impact angle on "Str", and the interaction between the different parameters in the studied area. Furthermore, the greatest bond strength has been obtained with the sample 3 (F = 4.25 N / mm2), whose the isotropy indicator "Str" is equal to 0.6438 and the fractal dimension Df = is about 1.768.

Keywords : surface texture, fractal dimension, shot peening, Adhesion