Surface Modification for Corrosion Resistance of Electric Conductive Metal Surfaces with Plasma Electrolytic Polishing

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Abstract. Plasma electrolytic polishing (PEP) is a non-mechanical surface treatment by the means of cold plasma and electrolyte for polishing of electric conductive materials and surfaces. The paper examines how smoothed surface structures change their corrosion resistance after PEP treatment. For selected materials, the untreated and the treated surfaces are compared, in particular by means of the salt water spray experiment. The results are primarily used to optimize the PEP process parameters. Secondarily, it was examined which minimum requirements must be fulfilled by the PEP treatment with regard to the surface structure. The manipulation of the surface structure through the innovative PEP process varies the thermo-electrical characteristics beside the corrosion resistance of the electric conductive material.