# TECHNOLOGICAL METHODS OF PARTS SURFACES FRETTING CORROSION PROTECTION

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Damages due to fretting corrosion depend upon many following factors: amplitude of relative slippage, contact pressure, number of cycles, frequency of oscillations, material and environment. Analysis of the literature sources shows that there is no universal mechanism of protection to prevent fretting corrosion. It is found that fretting corrosion of parts can be reduced or even utterly eliminated by changing qualitative parameters of their surface layers, for example, by applying corrosion-resistant protective coatings of required hardness, thickness and friction coefficient, at that the coatings should be properly combined with the substrate and should not reduce fatigue resistance of the surface layers.

The electroerosive alloying (EEA) method is one of the most promising technologies for forming surface layers with required properties for machine parts. he EEA method has a number of characteristic features, and one of them allows alloying process without transferring anode material onto the cathode thus forming no material increment of material, for example, using the EEA method with a graphite electrode. The EEA method with graphite electrode is based on diffusion process (saturation of surface layer of the part with carbon) and is quite similar to such kind of chemical heat treatment of surface as cementation.

For the purpose of minimization of surface roughness after EEAC, as a rule methods of surface plastic deformation (SPD) are used. Among the SPD methods the following ones are worth mentioning: plastic deformation with a ball and ultrasonic hardening, i.e. nonabrasive ultrasonic finishing method (NUFM). Despite the fact that the subsequent NUFM processing significantly reduces the surface roughness, the obtained roughness is insufficient for many machine parts.

When assembling the hub and the shaft, soft antifrictional material, which lies between the hard hub surface and the hard EEAC-generated shaft sublayer, undergoes deforming and penetrates into all holes eliminating asperities and imperfections of the surfaces of the mating parts. As a result the area of the mating surfaces of the hub and the shaft increases considerably (up to 100%), thus causing increase of the joint tightness as well as increase of the friction force at moving and torsional loads, which finally increases reliability and durability of the joint.

Present the new methods for improving wear resistance of steel parts that are exposed to fretting corrosion. The results of the investigations carried out to study qualitative parameters of surface layers of steel parts cemented using EEAC, as well as the result of the investigations of the parts processed with EEAC and further coated with soft antifrictional metals after nonabrasive ultrasonic finishing are represented.