Influence of Abrasive - Free Ultrasonic Finishing Process of Steel on Wear

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The intensity of wear and particles formation are important factors at practical application of rotating machine components, because of negative effects on operability of the machines. The presence of undesired wear particles, for example in lubricating systems, poses a risk in terms of subsequent accelerated wear of lubricated points. In the extreme case, the negative impact of the wear particles leads to seizure of lubricated points. The aim of the research was to compare the classical machining and abrasive – free ultrasonic finishing (bufo) of steel. Ultrasonic set I-4 consisting of the ultrasonic generator (output power 630 W) with working frequency 22 kHz ± 10% was used for preparation of test surface. There were compared three different process fluids containing nanoparticles during abrasive - free ultrasonic finishing. In order to describe machined surface there was used measurement of surface roughness, hardness HBW 2.5/187.5 and results of microscopy. Research was focused on determining resistance of machined surfaces, using a standardized test Reichert M2 tester. Number of wear particles and their morphology are important for practical application. Wear particles were analyzed by automatic particle counter LaserNet Fines-C.

Keywords: Friction Wear, Abrasive - Free Ultrasonic Finishing, Wear Particles

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