Dear Reviewer,
We would like to thank the Reviewer for valuable comments, which in our opinion contributed to increasing the quality of the paper. All suggestions and comments have been carefully thought out, and the corresponding revisions have been made to the paper. In addition, we have supplemented the incorporated changes with specific answers given below.

Yours sincerely,

Comments and Suggestions for Authors

In the manuscript titled "The Influence of the Geometry of Movement During the Friction Process on the Change in the Tribological Properties of 30CrNiMo8 Steel in Contact with a G40 Steel Ball", the authors investigate how the geometry of the movement affects the tribological properties of the 30CrNiMo8 steel during dry sliding friction with a steel ball. They compare the results of two tribological methods: Ball on disc and Linear test.

This topic is important and relevant for the field of tribological characterization of 30CrNiMo8 steel; however, the manuscript also has some limitations and weaknesses that need to be addressed and improved. Here are some specific recommendations and suggestions for each section of the manuscript:

Introduction

1. The authors of this article need to give a clear research gap in their introduction section to justify the significance and purpose of their study.

Answer:

Thank you for your valuable comment, most of the publications that investigated the geometry of the tribological process in some way focused more on the investigation of the asperity of the surface, i.e., on the geometry of the pressure indenter. As for the geometry of movement, there is a research gap in this area. Therefore, we focused on using the same measurement parameters and investigating rather only the change in the geometry of the movement of the tribological process. The aim of the study was to find out what difference in wear occurs when the geometry of the friction pair's movement is changed.

2. The authors need to specify what are the main objectives and contributions of their article at the end of the Introduction section, by stating clearly what they aim to accomplish and what they expect prove in their research.

Answer:

Thank you very much for your valuable comment. Experiments with changes in motion geometry are extremely valuable for engineering and development purposes because they provide important data on the effect of tribological factors on the performance and service life of joints. This knowledge makes it possible to more accurately design tribological

systems, optimize materials and develop innovative solutions with the aim of achieving longer life and more efficient operation of mechanical components in various industries. From the point of view of applications and specific areas of research, it is not possible to clearly define in which industries these results will be used. Their significance lies in their universal contribution to tribological research and engineering applications. This knowledge can be relevant and applicable in a wide range of industries where wear control, friction optimization and defect prevention are critical to the performance and reliability of mechanical systems. For this reason, these results can be applied in several contexts, from the automotive industry to engineering to energy.

Materials and Methods

3. The authors need to present the criteria for selecting the test parameters by citing relevant sources.

Answer:

Thank you for your valuable comment. We have added an explanation of the choice of methods, the setting of measurement parameters, as well as the choice of other measuring devices, with the help of which we evaluated the results, to the text of the publication. This tribological device offers the possibility of modular exchange of different parts of the device, which allows to use different kinds of tribological process methods. Due to the prescribed dimensions of the sample, tribological measurements were performed on the same sample that is used on the given device, and therefore a larger measurement angle could not be used in the Ball on Disc method. Also, the load was chosen in such a way as to obtain a sufficient amount of wear and to be able to compare the results of wear in both types of measurement.

4. Since the surface roughness is an important factor that affects the tribological properties of the materials, as the authors mentioned in their introduction section it is necessary to include in this section the surface roughness of the two bodies before conducting the wear experiments.

Answer:

Thank you for your valuable comment. The listed input results of material roughness are shown in chapter 3.1. The topography of the experimental steel 30CrNiMo8 after the finishing turning process is shown in Figure 4a. The value of the resulting roughness, which was achieved by averaging all measured values from five samples, was Sa = 3.34 μm. Contact pressure balls made of G40 material showed very low roughness values, namely Sa = 0.22 μm (Fig. 4b). This low value is closely related to the production process of these balls (Shaping + Grinding + Polishing).

The manuscript needs major revision before it can be considered for publication. The authors must address all the recommendations and suggestions mentioned above to improve their manuscript.

Thank you once again for your valuable questions, advice and comments, which will certainly raise our publication to a higher level, and with your help we will be able to present our contribution to a wide professional public.