STUDY AND COMPARISON OF SURFACE ROUGHNESS PARAMETERS IN TURNING

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ABSTRACT

Surface roughness is a key parameter in many industrial devices and significantly affects the quality and equipment composed of several machined components. There are standards related to the calculation of the several surface roughness parameters. The aim of this research is to compare the parameters and the calculation of ISO 4287:1997 with ISO 21920-2:2021 standard. During the research three different turned surface were chosen and were measured with a stylus-type surface roughness measuring instrument. The calculation of the "old" and "new" surface roughness parameters were calculated in Python.

Despite the fact that how important calculating surface roughness parameters is, one can hardly find an in-depth description of the proper evaluation process for the measured skin model. The aim of our research is to show a detailed mathematical calculation according to the new standard, supported by the numerical execution of the calculations, and to highlight the differences between the old and new standard definitions and numerical values of quantities related to surface roughness, such as Ra or Rz.

However, comparing the two standards it can be observed that the aforementioned differences are not significant from our point of view, except that previously the parameters were determined per sampling length, then averaged over the 5 lengths, now the surface roughness is calculated over the entire length.