Application of Barkhausen Noise for Analysis of Surface Integrity after Hard Turning

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Introduction into problems - This paper deals with the application of Barkhausen noise for investigation of residual stresses after hard turning. The results illustrate the differences in the stress distribution after hard turning and grinding. The analysis of the stress and structure state shows that the conventional evaluation of Barkhausen noise fails and monitoring of surface integrity will require a subsequent modified approach. The main reason for it is a more complicated relationship between stresses, surface hardness and structure. And so the modified approach is described for monitoring surface integrity after hard turning operations. This modification is based on the biaxial stress with the high correlation to the tool wear. The main idea is based on the non proportional increase of stress in the different directions.

Keywords: residual stress, hard turning, Barkhausen noise

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