Influence of Cutting Conditions and Grinding Wheel Wear on Barkhausen noise of ground surfaces

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This paper is a part of the more detail research focused on the specific problems during grinding of bearing rings of diameters in the range of 600 up to 1000 mm. The paper discusses the specific aspects of surface burn after grinding associated with insufficient coolant feeding as well as the variable grinding conditions. Measurements are based on micromagnetic evaluation of ground surfaces due to large diameter of inspected rings and very fast response of the proposed technique. Magnetic inspection of parts is based of physical phenomenon originating from irreversible Bloch Wall motion well known as Barkhausen noise. Some experiments were conducted in the laboratory of our department (grinding of ring of small diameters) and specific measurements were carried out in the practice (rings of large diameters). This paper also discusses alteration of surface microhardness of ground surface as well as structure transformations.

Keywords: Barkhausen noise, surface integrity, grinding, bearing steel

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