# Barkhausen Noise Emission of Surfaces after Laser Beam Machining

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**This paper deals with analysis of surface integrity of steel after laser beam machining (LBM). The paper discusses surface integrity expressed in term of rms values of Barkhausen noise and reports about variables affecting Barkhausen noise emission such as laser power, gas pressure, thickness of machined surface, focus distance and feed speed. The paper demonstrates variable degree of surface hardening due to elevated temperatures and the following rapid cooling. Except magnetic investigation of surface also stress state and structure observation are reported. This study demonstrates that thickness samples takes major role from the point of surface integrity expressed in structure transformations as well as stress state whereas influence of focus distance and gas pressure are only minor. Medium degree of surface integrity transformation can be driven by variation of laser power and feed speed.**

**Keywords:** laser beam machining, Barkhausen noise, surface hardening

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