NDE and SHM of Critical Parts Using Magnetic and Electromagnetic Methods

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The paper has been intended to introduce a complex research problem, that is present in aviation, power engineering, mining and transport, with regard to assurance of operational safety for ageing technology, which is exposed to different form of material degradation. Theoretical reasons of non-destructive evaluation (NDE), structural health monitoring (SHM) and active control of material fatigue have been outlined. The magnetic and electromagnetic methods of NDE and SHM such as metal magnetic memory, low frequency eddy current spectroscopy, Barkhausen noise and 3MA have also been presented [1-3]. The topic has been illustrated by means of practical examples.

References:

[1] Open Acces Database of NDT and SHM, http://www.ndt.net/search/docs.php3.
[2] *Electromagnetic Nondestructive Evaluation (XVII)*, ed. K. Capova, L. Udpa, L. Janosek, (IOP Press 2014).
[3] G. Dobmann, Non-destructive Testing for Ageing Management of Nuclear Components, *Nuclear Power-Control, Reliability and Human Factors*, ed. P. Tsvetkov, (INTECH, 2011).