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THE METHODOLOGY ASPECTS FOR MONITORING THE MACHINE ELEMENTS, COMPONENTS AND SYSTEMS

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Abstract: *The aspects of present methodology for monitoring the machine elements, components and systems in relation to modern demands in mechanical engineering are presented in this paper. Monitoring of elements, components and systems is complex task that include set of procedures with define order with usage of specific testing and measuring equipment. For detection and analysis of cracks and leaks due to porosity and cracks, hydraulic and pneumatic methods are presented in the paper. Vibro-acoustic method is presented as methodology for testing of mashing, assembling and functioning of rotating elements, so as eccentricity and rigidity of joints. The surface conditions analysis such as impact damages, pits, flexions, deflections, damages of the surface properties are done visually, while the testing of the internal surfaces are done by endoscopic methods. The surface damages, cracks and flaws at ferromagnetic materials are tested by magnetic methods. Penetrant and luminescent methods are used for detection and analysis of the deep surface cracks. For detection and analysis of internal cracks and cavities the radiography, ultrasound testing and acoustic emission testing are used.*
Stress and strain state in present mechanical constructions becomes far more complex with simultaneous reduction in its weight, dimensions altogether with using of new lightweight materials, higher energy efficiency demands and environmental concerns. The risks of failures at mechanical constructions rise with simultaneous improving its safety and reliability. In those conditions, the importance of methodology for monitoring the machine elements, components and systems come in the focus of the present machine diagnostics.
Keywords: *monitoring, machine elements, safety, reliability, machine diagnostics*

1. INTRODUCTION

The object of mechanical construction testing in exploitative conditions is to provide relevant information about quality of constructions, technical conditions of

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