

**Department of Manufacturing Processes Operation**

*Faculty of Manufacturing Technologies of the  
Technical University of Košice with a seat in Prešov*

***Scientific Papers***

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# OPERATION AND DIAGNOSTICS OF MACHINES AND PRODUCTION SYSTEMS OPERATIONAL STATES

## VOLUME 4

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## PREFACE

The presented collection of scientific papers is markedly oriented on the topic of operation, technology and diagnostics of working states of machines and manufacturing systems. The topic belongs to the essential study and research directions of Department of Manufacturing Processes Operation. These are timely topics with high theoretical demands, so the authors would like to contribute to the research, education as well as business fields.

The collection contains a set of scientific papers, most of which arose on the basis of experiments realized in the internal and external laboratories of the Department as well as in close cooperation with the following firms: Technická diagnostika Prešov, IJK Prešov, DRC Prešov, WATING Prešov, Fragokov Prešov, LPH Vranov, Tomark Prešov, MeRa Service Prešov and H. M. Transtech Prešov.

The achievements from PhD. theses and in smaller scale also from habilitation these are being presented.

The contributions present knowledge and results from scientific projects of the Structural Funds of the EU, ITMS: 26220220064 and 26220220103, the grants tasks VEGA No. 1/0975/11, 1/0544/08, 1/0562/08, 1/0531/08 and institutional tasks of the Faculty of Manufacturing Technologies, especially IU 5/2011.

Some of the contributions arose also on the knowledge base from international scientific cooperation of the Department of Manufacturing Processes Operation with universities and important companies. To mention the most important: Fluid ray department of the IF VSB-TU of Ostrava, Czech Republic; the US firms National Instruments, Omega, Honeywell, German firm BMC and the Danish firm Bruel and Kjaer.

Besides operation and diagnostics of operation states, the contributions are aimed at operation reliability, tribological diagnostics and vibrodiagnostics of machines, inspection, measurements, evaluation and diagnostics of production quality in technologies of machining, casting, pressure die casting, laser cutting, water jet cutting as well as at regulation and control of technological parameters of manufacturing and thermal systems.

I am pleased to say that the collection includes numerous groups of scientific papers, authors of which are young holders of PhD degree.

Knowledge presented in the collection as well as methods, technical systems and their applications in progressive technologies have preventive character with strong contribution to manufacturing systems operation reliability increase, production quality increase, cost reduction, increase of economical effectiveness and competitiveness.

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