Preface

The presented proceedings of scientific papers are focused on the operation, technology and diagnostics of operational states of machines and manufacturing systems. The topic belongs to the fundamental research fields of Department of Manufacturing Processes Operation, Faculty of Manufacturing Technologies of Technical University of Košice with a seat in Prešov which proudly celebrates its 20-th anniversary. Dealing with such topics is connected with high theoretical demands, so authors would like to disseminate the knowledge in research, education as well as entrepreneurial fields.

The proceedings contains selection of scientific papers that present knowledge resulting mainly from work on scientific projects supported by the Structural Funds of the European Union, OPVaV-2009/2.2/01-SORO, ITMS 26220220103 "Research and Development of the Intelligent Non-conventional Actuators Based on Artificial Muscles"; OPVaV-2009/2.2/04-SORO - ITMS 26220220125 "Research and Implementation of Experimental Simulation Methods for Processes Optimisation at Technological Workstations" and OPVaV-2009/2.2/02-SORO - ITMS 26220220064 "Research Centre for Efficient Integration of the Renewable Energy Sources", by the grants of Slovak Ministry of Education VEGA 1/0975/11, 1/0544/08, 1/0562/08, 1/0531/08, by institutional tasks of the Faculty of Manufacturing Technologies, particularly IU 5/2012 and other grants. Part of presented achievements is sourcing from the research with participation of our PhD students.

Experimental work was performed at internal and external laboratories of the Faculty of Manufacturing Technologies as well as in close cooperation with the Prešov firms Technická diagnostika, DRC, WATING, Tomark, MeRa Service and H.M. Transtech, with LPH Vranov etc. Part of the contributions reports also the knowledge based on international scientific cooperation of the Faculty with universities and major partner companies, to mention some of the most important partners: IF VSB-TU of Ostrava, National Instruments, LB-acoustics, Omega, Honeywell, BMC, Bruel and Kjaer etc.

Besides operation and diagnostics of operation states, the contributions are aimed at operation reliability, tribological diagnostics and vibro-diagnostics 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 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.

Stanislav Fabian, Prof., M.Sc., CSc.

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Project 2: „Research and Implementation of Experimental Simulation Methods for Processes Optimisation at Technological Workstations", ITMS code: 26220220125.
Project 3: „Research Centre for Efficient Integration of the Renewable Energy Sources", ITMS code: 26220220064.

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