Preface

Dear and distinguished authors and readers of this publication:

In an era where we are all watching the birth and first steps of the 4th Industrial Revolution (Industry 4.0), and where competition and globalization have come to know no limits and stopped being friendly in the marketplace, the multi-perspective analysis and improvement of production devices and systems have become essential for each business level and dimension. Usually, either if it is in Robotics, Logistics, Mechanical and Machines Design or in any other of the sub-areas the term Production Devices and Systems is usually divided in, the main problems found can be defined as design, planning, optimization and control ones. In dealing with these problems, improvement and/or innovation are not only to encompass all those conventional techniques based on the expert knowledge and best practices, but instead, also modern approaches that help together evolving the field like the Artificial Intelligence, the Evolutionary Computation, the Fuzzy Logics and among others, the use of specialized software for design and/or simulation of materials, parts and systems.

Taking these challenges and needs into account and consisting of a solid experience in the manufacturing field, the Institute of Production Systems and Applied Mechanics (IPSAM), belonging to the Faculty of Materials Science and Technology (MTF) of the Slovak University of Technology (STU), having already successfully organized the 2012 Central European Conference on Logistics (CECOL 2012) and published the Special Volume Issue on the Novel Trends in Production Devices and Systems (NTPDS 2013), in this occasion presents another Special Volume Issue titled: **Novel Trends in Production Devices and Systems II (NTPDS II).**

Like in the previous occasions the **NTPDS II** special volume issue is aimed at publishing scientific achievements in the field of Production Devices and Systems, as well as at enhancing the worldwide cooperation among young and senior academicians and/or practitioners, and specially those from the central European region. The volume has been enriched taking into account years of research and teaching activities in the field, experiences resulting from the scientific collaboration among higher education centers, e.g.: CECOL 2012, while at the same time by also counting on a prestigious and supportive group of editors who made a strong analysis of each one of the submitted papers. Some of the main topics included in the book are those related but not limited to Mechanical and Machines Designs, Machining Tools, Trends in Production Devices and Systems, Production Logistics, Flexible/Intelligent Manufacturing Systems and Cells, Robotics and Automation, Rapid Prototyping, Trends in Applied Mechanics and Materials, Maintenance, New Teaching and Research Approaches, Quality Engineering and Ergonomics in Production Systems, among others. Based on the diversity of such topics and for the sake of a better reading and comprehension, the book has been divided in four chapters containing similar topic-related contributions. This way, the book may well also become a valuable reference and study material for any person working and/or studying in the field.

During the process of revision, analysis and edition of the contents of this publication, we have had the chance of acquiring a rich and better overview on the trends and research lines in Production Devices and Systems and adjacent areas. We have also felt fulfilled while putting all of our effort, modest knowledge and experience in the improvement and adequacy of the contents; at the same time, we have been enriched both as human beings and professionals throughout this process and thus, we strongly but modestly believe, this could be a material from which you will certainly acquire knowledge in a similar way.

Finally, we would like to deeply thank the editors for its valuable and persistent labor even out of working time and days, we would also like to thank the editorial board for its valuable expertise and advises during the preparation of this publication, and last but not least, the TRANS TECH PUBLICATIONS INC. production team for their support and sustained professionalism in the publishing of the book.

With our warmest and most sincere regards,

Daynier Rolando Delgado Sobrino, Karol Velíšek and Peter Košťál

Organized by:

Institute of Production Systems and Applied Mechanics,
Faculty of Materials Science and Technology in Trnava,
Slovak University of Technology in Bratislava.