Editorial

Daizhong Su* and Wenjie Peng

Advanced Design and Manufacturing Engineering Centre,
School of Architecture, Design and the Built Environment,
Nottingham Trent University,
Burton Street, Nottingham, NG1 4BU, UK
Email: daizhong.su@ntu.ac.uk
Email: wenjie.peng02@ntu.ac.uk
*Corresponding author

The papers of this special issue were initially selected from those presented at the International Conference on Advanced Design and Manufacture (ADM) held in Valencia, Spain, 2013. After considerable amount of work on expansion, updating and modification of the initial papers, each of the revised papers was reviewed by at least two referees. Based on the referee's comments, the papers were further revised to the journal standard and finally published as current version presented in this special issue. The authors' and referees' efforts for enhancing the quality of the papers are greatly appreciated, without which the high quality of the papers cannot be ensured.

The ADM Conference was co-organised by Nottingham Trent University, UK and Harbin Engineering University, China and supported by European Commission's FP7 myEcoCost (http://www.myecocost.eu) and CIP Ecolights (http://www.ecolightsproject.eu) projects. As a prestigious conference, the calls for abstracts and papers stimulated an excellent response of submissions with more than 300 abstracts submitted, amongst of which the authors of about 250 abstracts were invited for submission of full papers. All the papers submitted were refereed, and based on the referees' comments, 178 papers were finally selected for conference presentation and inclusion in the conference proceedings. The papers in this special issue were selected based on the special issue review panel's comments.

As a collection of the papers expanded from their original conference presentations, this special issue covers the technologies involved in the product development process. The products covered in those papers include mechanisms, mechanical parts, vessels, machine for producing steel balls, sustainable buildings, and outdoor lights. The technologies involved in the development of the products include engineering/product design, manufacture, tribology, automation and control, web/internet-based collaboration, and application of artificial intelligence, which reflect the main schemes of the ADM conference.

Due to its extraordinary and outstanding chemical stability, high and low temperature resistance and self-lubricating performance, polytetrafluoroethylene (PTFE) is widely used in friction materials. The first paper by F. Zhang, T. Sui, B. Song, Q. Shang and Y. Cao presents the outcome of the investigation in wear-resisting property of this type of materials, which made valuable contribution to the tribological performance research of modified PTFE composite material

Application of human factors in vessel design is important for improving the operating efficiency, performance, safety, and habitability of a vessel and its subsystems. The research presented in the second paper by Z. Shang, S. Zhu and Y. Yin focuses on the knowledge representation of human factors in vessel's man-machine-environment system by utilising ontology-based data management, which provides valuable insights for intelligent application of human factors in vessel design.

The third paper by Z. Pater presents the design of rolls for helical wedge rolling. Two types of tools are considered: tools with conventional flanges and tools with wedge-shaped flanges. The experiment was conducted to produce balls with a correct shape using the wedge-shaped flanges tool. Based on the results obtained, advantages and disadvantages of the rolling methods are discussed.

A remote online condition monitoring system for thermo-electric-generations (TEGs) applied in sustainable buildings is reported in the fourth paper by W. Peng and D. Su. The system monitors the electrical power and heat energy generated by TEGs and to regulate the temperature of cold side of thermoelectric (TE) units used in the TEGs. The system has been validated by carrying out a case study of remote monitoring the working conditions of TEGs.

The fifth paper by B. Li, J. Liu, Z. Song and Y. Hu presents the modelling and optimisation of a vibration isolator, which employs a parallel mechanism with five degrees of freedom to isolate the vibration between devices installed on a mobile carrier. The techniques utilised in this study include kinematic analysis, dynamic modelling, magnetostrictive actuator design, transfer function from electric current to displacement, modal analysis of the parallel mechanism carried out by ANSYS, and optimisation analysis.

The last paper by I. Wojnicki, L. Kotulski, A. Sędziwy, S. Ernst and B. Strug focuses on a modern outdoor lighting control solution. The control schemas are decomposed into sub-problems, which are resolved by combining high-level and low-level agents working on high-end and low-end devices respectively, and providing highly scalable control.

At last, the guest editors would like to thank Dr. Mohammed Dorgham, the Editor-in-Chief of *IJMPT* and relevant staff members of the publisher for their kind support, without which this special issue would not have been possible.