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## Editorial

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**Biographical notes:** V.K Jain received his MTech and PhD from University of Roorkee. He has about 40 years of teaching and research experience. He has served as a Visiting Professor at the University of California at Berkeley (USA) and University of Nebraska at Lincoln (USA). Currently, he is a Professor at Indian Institute of Technology Kanpur. He has around 300 publications to his credit. He has written/edited seven books. He has various research areas of interest, viz. advanced machining processes (ECM, EDM, AFM, MAF, MRAF, and others), machining of advanced engineering materials, shear strain acceleration phenomenon in metal cutting, and CAPP.

Puneet Tandon is currently a Professor in the Discipline of Mechanical Engineering. He is Professor and Head of Design Discipline at PDPM Indian Institute of Information Technology, Design and Manufacturing Jabalpur, India. He has received his MTech and PhD from IIT Kanpur. He has about 25 years of teaching and research experience. He has authored one book and has around 125 publications in international journals and conferences of repute to his credit. He is a Principal Investigator to many sponsored projects and has organised many conferences and workshops. His research interests are in the area of advanced manufacturing processes, precision manufacturing, knowledge-based engineering and intelligent product design.

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In the present era, the domains of design and manufacturing can not be treated as isolated islands. The research and industrial fraternity has realised the importance of design in manufacturing as well as manufacturing in design. Design and manufacturing innovations are the need of the hour as they can have catalytic effect on improvisations in manufacturing technology and processes in the domains of additive, subtractive and formative manufacturing. Design and manufacturing innovations also strongly influence the new product development processes. This underlines the importance of ‘innovations in design and manufacturing’ not only in the present era but also in the time to come. In view of this, a conference on ‘Innovations in Design and Manufacturing (InnDeM 2012)’

was held at PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur during December 5–7, 2012. It had a concentrated focus on holistic philosophy of design innovations and design led manufacturing. The conference explored the recent developments and innovations on various aspects of theories, analyses and experiments related to design and manufacturing, where a number of research papers were presented on ‘manufacturing innovations’. The papers submitted were screened rigorously in the form of peer review. The revised and extended conference papers underwent another round of review by the internationally renowned experts in the respective fields. The accepted five papers are included in this special issue of *International Journal of Manufacturing Technology and Management*.

The first paper by Chinchankar and Choudhury presents empirical model for evaluation of flank wear in terms of cutting parameters and machining time for coated carbide tools in turning hardened steels. This is important as machining with a severely worn tool affects the dimensional accuracy, surface finish and tool life. The second paper by Badadhe, Bhave and Navale experimentally establishes correlation between tool tip displacement and surface roughness generated during machining due to vibratory displacement in a boring process. The paper proposes that the increase in spindle speed and feed increases both displacement and surface roughness. The influence of feed variation is more significant than the spindle speed. The empirical relation established between vibratory displacements of the tool and corresponding surface roughness can be used to control the machining parameters so as to maximise material removal rate and increase the productivity for any desired value of surface finish. The role of vibration signals in the prediction of surface roughness in turning of Ti-6Al-4V alloy is investigated in the third paper by Upadhyay, Jain and Mehta. Three models are proposed in this paper to predict the surface roughness using cutting parameters and vibration signals in minimum quantity coolant assisted turning. First model is developed with surface roughness as a function of cutting parameters. Second model represents the variation of surface roughness with the vibration, while the third model represents the variation of surface roughness as a function of cutting parameters and vibration signal considered in tandem. On comparison, the third model based on simultaneous consideration of cutting parameters and vibration is found to be most accurate.

The fourth paper by Taufik and Jain presents the role of build orientation in layered manufacturing. In layered manufacturing, a number of factors, dependent on the orientation of the part, affect the quality of build parts such as slicing, volumetric errors, layering errors, laser scan/nozzle path, support generation, etc. Therefore, build orientation plays a critical role in improvement of part quality in terms of accuracy and surface finish, reduces the support volume required, support contact area and build time in layered manufacturing. Part orientation also affects the part strength and cost of manufacturing. The paper presents review of various strategies developed to decide the optimum part build orientation based on different criteria and related issues.

The last paper by Shukla and Kumar discusses the thermal spray coating technology used to produce protective coatings for wear, oxidation, and corrosion environments. As the quality of the coating depends on the droplet impact process on the substrate, the paper focuses on computational analysis of the impact behaviour of a hollow droplet onto a substrate with low and high impact velocity. The phenomenon of counter liquid jetting during the hollow droplet impact and spreading is validated experimentally. The paper shows that counter liquid jetting is responsible for formation of uniform and thick splat layers in the coating for the hollow droplet.

We hope that these papers will be useful for the readers of the *IJMTM*. We thank the authors and reviewers for their help and cooperation in bringing out this special issue. We are also grateful to the organisers of InnDeM 2012 Conference. Finally, we are grateful to the Editor-in-Chief, Dr. M. Dorgham of *International Journal of Manufacturing Technology and Management* for inviting us as the Guest Editors of this issue. We also appreciate the help and cooperation of Jeng Nepomuceno-Silo and Dana Mitchell.