

Editorial

Editorial for the Special Issue of RCIM for ICMR2005: 3rd International Conference on Manufacturing Research, Cranfield University, September 6th-9th 2005, Cranfield, UK

Competitive pressures in manufacturing are increasing. Rarely does a manufacturing research paper begin without mentioning increasing competition, reduction of cycle times, the importance of globalisation, and an increased need for collaboration across geographical boundaries. It is these same factors that led the committee of the National Conference on Manufacturing Research (NCRM) to extend beyond national boundaries. Research in manufacturing is also subject to competitive pressures and effects of globalisation, resulting in an increasing need to collaborate and share knowledge across international boundaries. The papers presented in this special issue are from an international group, mainly from Europe and Asia. They address a range of current research issues in the global competitive manufacturing environment. The main issues addressed by the papers of this special issue are information and knowledge management, a prominent and crucial research topic, and methodologies and modelling tools for product development, manufacturing, supply chain, and business processes. This demonstrates that international researchers are devoting their effort to the emerging requirements and problems of the new manufacturing paradigm, i.e., globalised and collaborative, real and virtual enterprises, with business partners and suppliers of different cultures and management styles, highly relying on advanced information and communication technologies.

This special issue of Robotics and Computer Integrated Manufacturing (RCIM) consists of selected papers presented at the 3rd International Conference on Manufacturing Research (ICMR2005), incorporating the 21st National Conference on Manufacturing Research, held on 6-8 September 2005, at

Cranfield University, Bedfordshire, UK. The conference was chaired by Dr James Gao (now a Professor of Manufacturing Engineering at Greenwich University) and Professor Peter Sackett, with David Baxter as the conference co-ordinator.

The committee of the manufacturing research conferences is the Consortium of UK University Manufacturing Engineering Department Heads (COMEHD), an independent body established at a meeting held at Loughborough University of Technology on 17 February 1978. Its aim is to promote manufacturing engineering education, training, and research. COMEHD is represented on the Engineering Professors' Council (EPC). The Consortium consists of Heads of those University departments or sections whose first priority is manufacturing engineering who have a direct responsibility for running honours degree courses in the field of manufacturing engineering and management.

In 1984, the Consortium of UK University Manufacturing Engineering Department Heads (COMEHD) decided that a national forum was needed in which the latest research work in the field of manufacturing engineering and management could be disseminated and discussed. The result of this initiative was that an annual series of National Conferences on Manufacturing Research (NCRM) was started, the 1st NCRM being held at the University of Nottingham in 1985. Subsequent conferences had been held at different UK universities. In 2002, COMEHD took the decision that NCRM should become an International Conference on Manufacturing Research (ICMR) with a view to addressing current trends in manufacturing engineering and management and to promote the

exchange of research and engineering application experiences internationally. The ICMR series builds upon the NCMR series of conferences, thus the 1st International Conference on Manufacturing Research (ICMR2003) incorporates the 19th NCMR, and ICMR2004 incorporates the 20th NCMR, and so on.

Over 110 papers have been presented at ICMR2005 and included in the proceedings, of which a large proportion were authored by non-UK researchers. The conference covered a wide range of aspects of manufacturing engineering and management including a special Industrial Day and special sessions. The Industrial Day was all keynote speakers from leading manufacturing and consultant companies such as BOC Edwards (Manufacturing challenges), BAE Systems (Aerospace manufacturing), Vaillant GmbH (Artificial intelligence), LSC Group (Product lifecycle management), SBAC (Performance measurement) and Rolls-Royce (Knowledge sharing). The special sessions include the Development of UK Innovative Manufacturing Research Centres, Cost Engineering, ERP in the 21st Century, and Small to Medium Enterprises (SME).

The rest of the conference consisted of keynote speeches by world-class academics on digital enterprise technology, quality information systems, manufacturing knowledge sharing and knowledge management for new product development, and parallel sessions on Manufacturing Technology, Design Methods, Theory and Evaluation, New Product Introduction, Business Process and Project Management, Information and Knowledge Management, Digital Manufacturing and the GRID Technology, Design Knowledge Management, Process Planning and CIM, Manufacturing Strategy, Simulation and Process Control, Manufacturing System Design, Production Control, and Supply Chain Management and Logistics.

After the successful ICMR2005 conference, the Chairman and the Co-ordinator, with the agreement of the Editor of RCIM journal, decided to select the best papers of the conference and publish them as a special issue. Initially 14 out of over 110 papers were selected based on the review results of the conference papers, and authors were invited to enhance their papers to the required standard of RCIM journal. The enhanced manuscripts were then reviewed by international experts, and 11 out of the 14 enhanced manuscripts were requested for further improvement and finally reviewed by the guest editors of the this special issue and recommended to the editor of the RCIM journal for publication. All selected papers have gone through improvements for 3-5 iterations.

The 11 papers in this special issue cover a variety of current manufacturing research topics, including:

- Knowledge reuse in manufacturability analysis, by Cochrane et al from Loughborough, Cranfield and Greenwich Universities, UK.
- Simulation of advanced materials, by Wang et al from the University of Hong Kong.
- Transfer of lean manufacturing techniques, by Herron and Hicks from Newcastle upon Tyne, UK.
- Integration of process planning and production planning, by Ciurana et al from the University of Girona, Spain.
- XML for shop floor data management, by Kojima et al from AIST, Japan.
- Technology selection decision support, by Almannai et al from Cranfield University, UK.
- Application of distribution methods in production planning, by Van den broecke et al from Agfa Gevaert NV and Ghent University, Belgium.
- Ontology based knowledge integration, by Huang and Diao from Beijing University of Aeronautics and Astronautics, China.

- Production logistics, by Windt et al from the University of Bremen, Germany.
- Supply network modelling for SME's, by Smith et al from the University of Manchester, Manchester Metropolitan University, Strix Innovative Technologies Ltd (Isle of Man), and Portsmouth Business School, UK
- Integrated design knowledge reuse, by Baxter et al from Cranfield, Greenwich and Loughborough Universities.

The guest editors wish to take this opportunity to express their sincere thanks to all the authors contributing to this special issue, all the international referees who have spent a lot of their time to assess the manuscripts and give valuable advice, and the associate editor of the RCIM journal for his advice in the process of compiling this special issue.

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