
Editorial

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Biographical notes: Duc Truong Pham, OBE, FEng, FSME, BE, PhD, DEng (Canterbury, NZ), FIET, FIMechE, is a Professor of Computer-Controlled Manufacture and Founder Director of the award-winning Manufacturing Engineering Centre at Cardiff University. He obtained his BEng (Mechanical) with First-Class Honours, PhD and DEng from the University of Canterbury in Christchurch, New Zealand. His research encompasses the wider areas of intelligent systems and advanced manufacturing engineering. He is a member of the editorial boards and panels of seven international journals. He has written more than 350 technical papers, co-authored five books and edited seven other books in his research areas.

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The EU-funded Innovative Production Machines and Systems (I*PROMS) Network of Excellence was inaugurated in October 2004. I*PROMS integrates the production research activities of 30 research centres from 14 countries in Europe. It deals holistically with the entire field of production machines and systems and has the flexibility to choose and modify its priority research topics according to changing industrial needs. This helps shape the research area and overcome its current fragmentation.

I*PROMS adopts the knowledge-based 'autonomous factory' vision for delivering increased competitiveness for manufacturing in 2020. The network focuses on intelligent and adaptive production machines and systems that meet dynamic business and value drivers through advanced information and communication technology. It promotes the

development of common concepts, tools and techniques enabling the creation and operation of flexible, re-configurable, sustainable, fault-tolerant and eco- and user-friendly production systems. Such systems should react rapidly to changing customer needs, environmental requirements, design inputs, and material/process/labour availability to manufacture high quality, cost-effective products.

I*PROMS addresses six manufacturing challenges, namely, concurrent manufacturing, integration of human and technical resources, conversion of information to knowledge, environmental compatibility, reconfigurable enterprises, and innovative manufacturing processes and products. Work on those themes is conducted by four interconnected clusters: advanced production machines (APM), production automation and control (PAC), innovative design technology (IDT) and production organisation and management (POM). The research undertaken by these four I*PROMS clusters covers a broad range of topics including new processes for new materials, miniaturisation, mechatronic modules, nanotechnology, modelling and simulation, product life cycle planning, flexible manufacturing systems, process integration, new process control and sensors concepts, intelligent manufacturing process/near-net shape processes, and substitution of harmful substances. Further information can be found in I*PROMS website at <http://www.iproms.org>.

The papers presented in this issue were selected from the *2008 Virtual Conference on Innovative Production Machines and Systems (IPROMS)* (<http://conference.iproms.org>) organised by the I*PROMS Network of Excellence. Attracting 245 authors from 27 countries across five continents, *IPROMS 2008* built on the outstanding success of its predecessors, namely, *IPROMS 2005*, *IPROMS 2006* and *IPROMS 2007*. During *IPROMS 2008* a variety of topics were considered including APM; digital and e-manufacturing; fit and sustainable manufacturing; human-machine interfaces; innovative and intelligent design technologies; intelligent automation; intelligent optimisation techniques; micro- and nanomanufacturing; PAC; reconfigurable manufacturing systems and robotics.

The papers address topics covered by the four I*PROMS clusters, namely, APM, IDT, PAC and POM.

The APM area is addressed by the papers on:

- An investigation of influence of machining conditions on machining error (Ogedengbe and Mekid)
- Improvement of the sprue system design of an injection mould for optical disc substrates using computer aided design and simulation (Trifonov and Toshev).

The IDT area is represented by:

- Automated design of fixtures based on FEM simulations (Denkena et al.)
- Application of design functionality and design for manufacture rules in CAD/CAM (Hoque and Szecsi).

The PAC area is addressed by the papers on:

- Behaviour and integration of service-oriented automation and production devices at the shop-floor (Mendes et al.)
- Towards an auto-ID enabled framework for manufacturing information sharing systems (Hu and Zhou)

- An improved scheme for online recognition of control chart patterns (Hassan)
- Smart connected and interactive production control in a distributed environment (Schlegel et al.)
- An IEC 61499 distributed control concept for reconfigurable robots (Strasser et al.).

The POM area is represented by:

- Discovery of association rules from manufacturing data (Afify)
- An integrated modelling approach in support of next generation reconfigurable manufacturing systems (Masood and Weston)
- Queuing network modelling techniques for response time enhancement in electronics assembly (D'Addona and Teti)
- A framework for fit manufacturing (Pham et al.).