Manufacturing system design and product quality have been studied extensively during the last 50 years. Most of the studies address the problems independently. On one side, extensive research and practice have been devoted to designing manufacturing systems to increase system throughput, reduce lead time, and improve customer demand satisfaction. On the other side, a substantial effort has been directed to improve product quality through statistical process control, design of experiments, and total quality management. Limited attention has been paid to investigating the interaction between manufacturing system design and product quality. Empirical evidence and recent studies have shown that manufacturing system design and product quality are tightly coupled. The study in this area, which is important but largely unexplored, will open a new direction of research in manufacturing systems engineering. The central theme of this Special Issue is emerging opportunities and future directions in the integration of manufacturing system design and quality management. The purpose is to show the state-of-the-art research and applications in this area, by bringing together researchers and practitioners from both academia and industry, to address the significant advancement, expose the unsolved challenges, present the needs for integration with new technologies, and provide visions for future research and development.

We are particularly interested in the research results in the following two categories: (i) methodologies of production system and process design for quality improvement; and (ii) applications of quality control methodologies to production system-level metrics for system performance improvement. Topics to be covered include, but are not limited to the following:

- Product mix and allocation for quality
- Batch size and sequence for quality
- Interaction between flexibility, agility, scalability and quality
- Inspection allocation and policy
- Real-time system-level monitoring, scheduling and control for quality
- Sensor placement for quality improvement
- Active process adjustment for variation reduction
- Statistical monitoring for system level metrics such as lead time, work-in-process, blockage and starvation, etc.
- Design of experiments for system simulation
- Surrogate modeling of production systems
- Workforce management with quality considerations
- Interaction between quality and reliability
- Quality control techniques for system-level performance improvement

All papers are to be submitted through http://mc.manuscriptcentral.com/iietransactions. Please select “Special Issue” under Manuscript Category of your submission. All manuscripts must be prepared according to the IIE Transactions publication guidelines.

**Important Dates**

- June 1, 2011: Intent to submit (optional)
- **November 30, 2011:** Paper submission deadline.
- March 1, 2012: Completion of the first round review.
- July 1, 2012: Completion of the second round review.
- October 1, 2012: Final manuscripts due.
- December 2012: Tentative publication date.

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