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Dr. Hu’s teaching and research interests include manufacturing systems design and operations, assembly, forming, and quality. He has graduated 37 Ph.D. students and a number of master students. He has published more than 200 papers in professional journals and conferences. He has also taught short courses in Lean Manufacturing and Statistical Process Design and Control to a number of companies around the world. He was elected a fellow of ASME in 2003 and currently serves as the Editor in Chief for Journal of Manufacturing Systems.

Product Assembly: Quality, Productivity and Customization

Assembly is the capstone process for product realization where component parts and subassemblies are integrated together to form the final products. As product variety increases due to the shift from mass production to mass customization, assembly systems must be designed and operated to handle such high variety while maintaining performance in quality and productivity. In this presentation we will first review the state of the art research in the areas of assembly system design, planning and operations in the presence of product variety. Methods for assembly sequence generation, system configuration design and assembly line balancing are presented and summarized. Operational complexity in assembly systems are then discussed in the context of product variety. Finally we conjecture a future manufacturing paradigm of personalized products and production and discuss the assembly challenge for such a paradigm.