

Model-Based Manufacturing: Research and Applications

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The talk begins with a brief overview of research in advanced design and manufacturing at GE Global Research. This includes a short summary of the GE businesses and products for which we conduct design and manufacturing research. The talk then focuses on challenges and opportunities in model-based manufacturing, defined as the integration of digital product or component design information with manufacturing process models. The goals of model-based manufacturing include design and manufacturing cycle time reduction, manufacturing process yield and quality improvement, and product/component cost reduction. Key challenges include the introduction of new materials, material systems and manufacturing processes, and the need to set and meet commercially viable cost targets as new product technologies are introduced. Examples are presented across a variety of components, products and manufacturing processes. The talk concludes with a view of some key trends and technology needs.