

NSF Workshop on Fluid Power Advanced Manufacturing

Join Us May 24-25, 2016
The Commons Hotel
Minneapolis, Minnesota

The rapid advance of new manufacturing technologies, such as additive and hybrid manufacturing, provides exciting opportunities to improve the performance, reliability and cost of many products. The fluid power industry is actively working to adopt many of these advanced manufacturing technologies into their products. The University of Minnesota and the Center for Compact and Efficient Fluid Power headquartered there were awarded a NIST AMTech planning grant to establish the Fluid Power Advanced Manufacturing Consortium (FPAMC). The initial activity of the FPAMC is the creation of an advanced manufacturing roadmap for the fluid power industry. This workshop will build upon the industry led manufacturing roadmap to enable new fluid power applications and systems.

Objective: The objective of the workshop is to bring together experts from industry, academia and national labs to identify the pre-competitive research objectives and approaches of integrating manufacturing innovations with model-based design and analysis for fluid power components and systems.

Fluid power is a unique method for power transfer and motion control. The two major domains of fluid power are hydraulics and pneumatics. Fluid power is widely used in industrial and mobile applications. The workshop will help to connect the manufacturing innovations with model-based design and analysis to enable new fluid power systems and applications. Currently there are significant gaps in the knowledge and methodologies for bring new system concepts to design, modeling and analysis, and finally to manufacturing in fluid power. This fact will limit the innovations of new systems or applications and the impact and wide spread of advanced manufacturing technologies. A critical, and yet overlooked process is how to integrate the model-based design and analysis with the advanced manufacturing technologies so that system efficiency and performance can be evaluated and optimized at an early stage. The streamlining of the design, analysis and manufacturing processes will not only reduce cost but also provide an attractive platform for researchers from industry, academia and national labs to collaborate in fluid power innovation. The workshop will include experts in manufacturing, fluid power components and systems, system modeling, analysis and control to identify the research needs and recommend the research directions for integrating the model-based design and analysis with advanced manufacturing technologies for fluid power.

CENTER FOR COMPACT AND EFFICIENT FLUID POWER



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Organizing Committee
Kim Stelson, University of Minnesota
Zongxuan Sun, University of Minnesota
Eric J. Barth, Vanderbilt University
Tom Kurfess, Georgia Institute of Technology

Participants at the workshop will include 10-12 invited speakers from academia, national laboratories and industry and we anticipate 40-50 attendees. The speaker's topics include, but are not limited to, automation, systems engineering, additive manufacturing, sintered metals, composite materials, thermal processing, computational fluid dynamics, hydraulic systems and coatings. A portion of each speaker's presentation will be to identify research needs for integrating model-based design and analysis with advanced manufacturing technologies for fluid power.



Venue: The workshop will be held at The Commons Hotel adjacent to the University of Minnesota Twin Cities East Bank Campus on May 24 & 25, 2016.

Sponsors: National Science Foundation, Division of Civil, Mechanical and Manufacturing Innovation, Manufacturing Machines and Equipment (MME) program

Hosts: The University of Minnesota and the Center for Compact and Efficient Fluid Power (CCEFP)

Program and Workshop Questions: bohlmann@umn.edu

For more information, including workshop registration and hotel reservations, please go to <http://tinyurl.com/hucra2r>

