

MANUFACTURING LEADERSHIP SEMINARS

Sustainable Manufacturing: A Retrospective & Vision for the Future

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Moderator: Ajay Malshe

R. Eugene and Susie E. Goodson Distinguished Professor of Mechanical Engineering

ABSTRACT: Society is increasingly aware of the environmental challenges we face: solid, liquid, and airborne waste streams; shortages of water, material, and energy resources; and climate change. These concerns make it ever clearer that fundamental changes are needed to put us on a course to being sustainable. Every part of society must assume some responsibility for responding to this sustainability challenge – including those engaged in the manufacturing sector. For three decades, Professor Sutherland (and his students and colleagues) have undertaken a variety of research initiatives focused on reducing the environmental footprint of manufacturing. The genesis of this research and some past work will be described, e.g., reducing cutting fluid use in machining and closing material loops via remanufacturing/recycling. Promising directions for future research will also be discussed including circular economy, green manufacturing planning, and smart/sustainable manufacturing.

Dr. John W. Sutherland is one of the world's leading authorities on the application of sustainability principles to industrial issues. He has made pioneering research and education contributions, and provided leadership in establishing/advancing the field of environmentally responsible design and manufacturing. He has served as an investigator on over 90 externally funded projects valued in excess of \$60M. He has mentored approximately 100 students to the completion of their graduate degrees, including 27 PhD students. He has published nearly 400 papers in various journals and conference proceedings, and is co-author of the textbook: Statistical Quality Design and Control: Contemporary Concepts and Methods. His honors and recognitions include the SME Outstanding Young Manufacturing Engineer Award (1992), Presidential Early Career Award for Scientists and Engineers (1996), SAE Ralph R. Teeter Educational Award (1999), SME Education Award (2009), SAE International John Connor Environmental Award (2010), ASME William T. Ennor Manufacturing Technology Award (2013), and SME Gold Medal (2018). Sutherland is a Fellow of SME, ASME, and CIRP. He received his BS, MS, and PhD degrees from the University of Illinois at Urbana-Champaign.

Lightning Talk:

Smart Manufacturing via Direct Communication with Machines by Listening to their 'Speech'

My recent work on listening to machines internal sounds and recognizing a string of sounds as speech in order to identify the machine/process status, condition, and situation.



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