

An Approach to Articulate and Sustain System Design  
Intentions or what "Lean Manufacturing System Design"  
should mean

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Abstract

"Lean production" is not less "mass production." If its advocates accurately followed the model of thinking embedded in the Toyota Production System, "lean" would represent the name of a sustainable production/enterprise system design. Unfortunately, the common interpretation of "lean" in the business community mixes metaphors, business structures, and Functional Requirements (FRs) of a viable system design. As a result of this and other misunderstandings, lean manufacturing tools and techniques are often applied in traditional manufacturing environments with only limited lasting success.

This talk will present a robust model of production system design as a basis for creating enterprises that, through growth at four levels of the business system, create a sustainable and lean operating environment. The layers of this system design "Flame Model" are: Tone, Thinking, Business Structure, and Standardized Work/Actions.

The Flame Model of system design is a modification of an original model proposed by Ed Schein and Daniel Kim at MIT. System design at the thinking layer is based on the use of Axiomatic Design principles developed by Nam P. Suh at MIT. The Business Structure layer is akin to process mapping in traditional industrial engineering work. The Action layer is based on principles derived from the Toyota Production System. Cochran's view is that system re-design requires going "into the flame" and "out of the flame" through what he calls a "Diagnosis to Design" process. Dialogue, as originally described by David Bohm, facilitates this process.

Biography

Dr. David S. Cochran is the founder of System Design, LLC, an education and consulting company. He is a former Associate Professor of Mechanical Engineering at MIT. He established the Production System Design (PSD) Laboratory at MIT. He is a two-time recipient of the prestigious Shingo Prize (2002 and 1989) for manufacturing excellence for his work in the design of "lean" systems. He received the Dudley Prize for best paper from the International Journal of Production Research in 2000 for his work to integrate system design theory. A special issue of the Journal of Manufacturing Systems (v. 20, No. 6 2001/2002) highlights his work in developing the MSDD (Manufacturing System Design Decomposition). Dr. Cochran is currently a visiting Professor at Meijo University in Nagoya, Japan.

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