

# Six Sigma and Lean Manufacturing

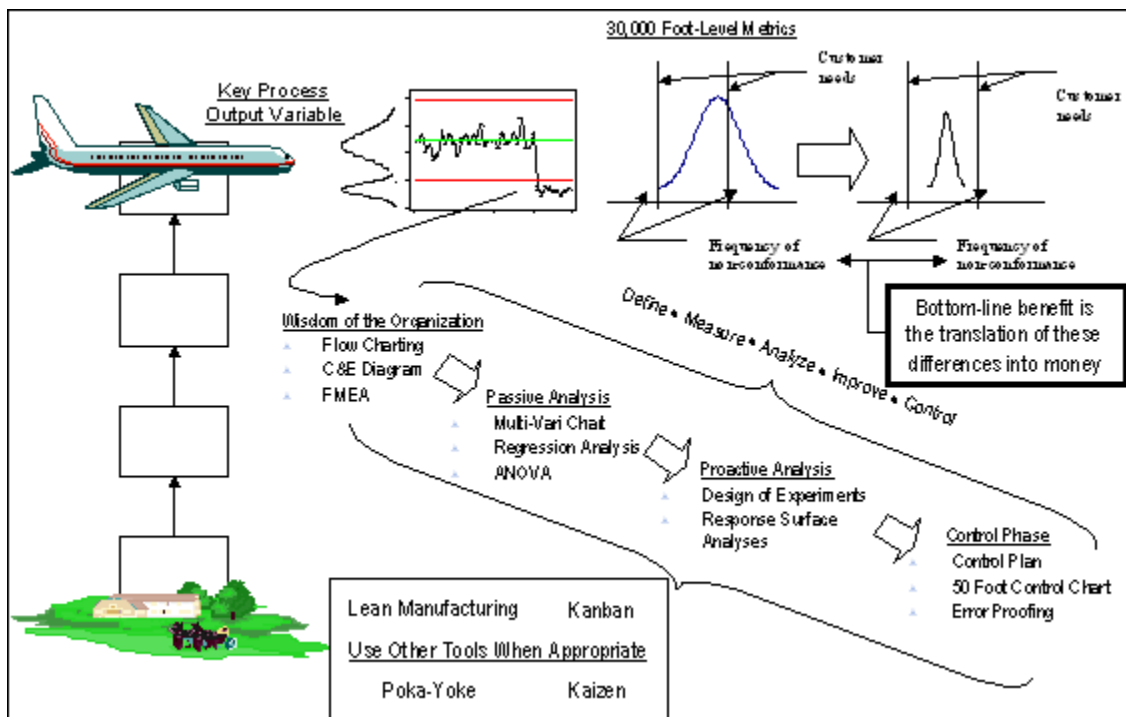
By Forrest W. Breyfogle, III

**Purpose** - Described in this paper are the benefits of wisely integrating Six Sigma with Lean Manufacturing.

## Description

Lean evaluates the operation of the factory and restructures the manufacturing method to reduce waste in activities such as waiting, transportation, material hand-offs, inventory, and production. It co-locates the process in sequential order and, in so doing, reduces variation associated with manufacturing routings, material handling, storage, lack of communication, and batch production. However, the implementation of Lean Manufacturing without Six Sigma could lead to an activity focus that is misdirected.

The S4 (Smarter Six Sigma Solutions) view of Six Sigma emphasizes an intelligent blending of the wisdom within the organization with proven statistical tools to improve both the efficiency and effectiveness of the organization in meeting both business and customer needs. The ultimate goal is not improvement for improvement's sake, but rather the creation of economic wealth for the customer and provider alike. Our S4 approach utilizes Six Sigma as a strategic business strategy rather than as a quality program. This does not imply that Six Sigma is to replace existing and ongoing initiatives within an organization. However, this does imply that senior management focus on those processes that are identified as key to the business. These critical systems are then to be the subject of intense Six Sigma Black Belt scrutiny and improvement efforts, using the most powerful soft and hard skills the organization can bring to bear.



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We suggest creating a 30,000-foot-level view metric of Key Process Output variables, as shown in the figure above. The organization should then utilize the skills of trained Six Sigma Black Belts to pick the right tool for the right situation when working a project. If a particular 30,000-foot-level metric involves the cycle time of a process, lean

manufacturing tools would be a very likely candidate to use within this improvement process, along with other Six Sigma tools that may be appropriate.

Companies that choose to embrace only Lean Manufacturing without Six Sigma concepts are missing out and can have the following problems:

- Poor choice of the best projects to work on, which could result in either sub-optimizing the system or making the system worse
- Typically Six Sigma tools such as Design of Experiments (DOE) are not formally considered

### **Bibliography**

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Smarter Six Sigma Solutions (S4) Workshop Material, [www.smartersolutions.com](http://www.smartersolutions.com)

### **About the Author**

Forrest W. Breyfogle III is the president of Smarter Solutions Inc., a Six Sigma business solutions company that provides on-site training, public sessions, consulting, and licensing. He authored the leading Six Sigma texts *Implementing Six Sigma* and *Managing Six Sigma* and is also the subject matter expert for AQPC's current Six Sigma benchmarking study.