Using Value Stream Mapping as a Continuous Improvement Tool

Value stream mapping is a visual means to depict and improve the flow of manufacturing and production process, as well as the information that controls the flow of materials through the process.

It is the preferred methodology for identifying the inherent waste and losses within an operation.

As a management tool, value stream mapping (VSM) is used to:

- Graphically illustrate, analyze and understand the flow of materials and the information needed to process them. Unlike process maps that are limited to mapping the sequence of tasks that are performed to complete a procedure or process, value-stream mapping provides the means to:
- Display the interaction between multiple functions within the manufacturing process as well as ancillary functions such as production planning, scheduling, and materials management, etc.
- The flow of information (communications) and materials throughout the complete manufacturing or production process. Coordination and in-process materials are common sources of significant loss in far too many plants. Value-stream mapping provides the means to visualize and recognize these limiting factors.
- Highlight problems, inefficiencies and losses within complex systems. Since the value stream map integrates information and materials flow, as well as the sequence of tasks -- including cycle time and lag between tasks -- the ability to identify restrictions, bottlenecks and all other factors that limit effectiveness and efficiency is greatly enhanced.
- Develop and implement countermeasures in a highly visual way that facilitates culture change within the organization. The entire value-stream mapping process utilizes graphical depictions of limiting factors that all stakeholders can easily visualize. The process is also designed to actively involve all stakeholders in each stage.
- Focus direction for the lean transformation teams, front-line supervision and upper management towards continuous improvement.
- Serve as a dashboard to monitor and continuously improve the process

First Pass: Understand the Current State

- Train your value stream mapping (VSM) team: Select a cross-functional team that includes all stakeholders of the process or area to be mapped. These teams must include the operators and maintenance personnel with first-hand knowledge of the process or area as well as those who must support them.
- Physically walk the path of the material flow, beginning from each source of primary and secondary materials required to support the operation as well as the actual manufacturing or production process that is being mapped.
- Document each step observed or discovered as part of the walk-down. Identify the communication points and how communication occurs.
- Create your “current state” VSM and include all pertinent data and information. Now is not the time to skimp on detail or short-cut the process. Dig until you are sure that the VSM accurately and completely describes the current process.

"Unless you try to do something beyond what you have already mastered, you will never grow."

Ronald, E. Osborn
Using Value Stream Mapping

Second Pass: Analyze and Reflect

- Analyze and gain consensus for your value stream analysis. Socialize the current state VSM with all stakeholders. Gain their consensus that the map truly reflects how the process is currently performed.
- Identify limiting factors, deficiencies and losses associated with the current process. Think outside the box and do not be constrained by perceptions or artificial boundaries. Quantify the impact on performance and cost for each of the limitations identified. Care must be taken to assure the true root causes, not the symptoms, of each limiting factor are identified.
- Develop cost-effective solutions for each of the factors, deficiencies and losses that are limiting the effectiveness and efficiency of the current process. Solutions must directly address the root cause of the identified issues and be affordable.
- Change the VSM to reflect the proposed changes that will eliminate or mitigate the limiting factors associated with the initial process map. Make sure that all recommended changes are clearly identified and included in the “Future State” VSM.

Third Pass: Improve

- Socialize the future-state value stream map with all stakeholders. It is imperative that you gain their consensus and buy-in before proceeding to the implementation stage. Assure that all stakeholders are given the opportunity to review and comment on the new process.
- Modify all affected procedures, bills of material and training materials to reflect the changes to be implemented. This step cannot be omitted or minimized without incurring serious restrictions in any real benefits derived from the proposed changes.
- Train all affected personnel on the new procedures. Assure that all are trained and can apply them before attempting to implement.
- Implement the changes identified through the VSM process. These changes should be implemented based on descending priority—greatest benefit first and thoroughly documented. The preferred approach is to implement the changes in discrete increments with sufficient time between changes to determine the resultant benefit derived from each discrete change.

Fourth Pass: Sustain

- Establish effective key performance indicators (KPIs) that will accurately measure performance and cost change within and for the applicable process. These KPIs, in conjunction with a verified baseline of the current-state process, will be used to verify and validate change.
- Monitor and reinforce compliance with the new standard procedures and practices established as part of the improvement process. One cannot assume that all stakeholders will immediately and voluntarily adhere to the changes that are being implemented.
- Verified and validated improvements should be institutionalized across the manufacturing site.

VSM is a highly effective continuous improvement tool, but it must be used effectively. Any and all short-cuts will limit the value of the tool, and too many will assure that little gain will be achieved. Use it properly and completely and it will provide a direct path to process optimization and an operation that is assured long-term survival.