

Business Velocity: Part Two

BY LARRY MARTOF

A structured approach to looking for and eliminating waste.

IN PART ONE OF THIS ARTICLE (February 2009 *MSC*, http://www.modernsteel.com/Uploads/Issues/February_2009/022009_qc_web.pdf) we examined what “Business Velocity” means—having a business with speed and direction—and how it uses the methodologies of Lean Six Sigma (LSS). We were introduced to some of the tools and approaches to achieving breakthrough improvements that can lower costs, increase profits, increase customer satisfaction and create a sustainable business environment. We learned that Business Velocity provides an organization with the speed of Lean—focusing on the reduction of waste—and the direction of Six Sigma, which provides a keen focus on the customer. In this installment we will further explore the deployment of Lean Six Sigma tools.

Lean uses the acronym **DOWNTIME** to explain the many forms that waste can take. Each of these can be seen in the steel construction industry.

→ **Defects** that result in rework and scrap. Defects are an interesting animal. Acceptable defects have resulted in tolerances, limits and acceptance criteria. Unacceptable defects result in nonconformances that require dispositioning and often rework, resulting in wasted money and time. They can occur in the field, the fabrication shop, purchasing, accounting, project management, estimating or any other process. They can be caused by equipment/machinery, detailers, suppliers, employees, environmental conditions, process methods, measuring devices and materials. Identifying defects is the first step in controlling and reducing them. A simple log provides for the tracking and categorization of defects. It also enables the creation of trend charts, bar charts and pareto analysis. Pareto charts give a visual portrayal of which defects are occurring most often or which defect category is causing the most rework or highest costs.

→ **Overproduction** results in cost and space burden of excess inventory. Often stacks of clips, tabs and other pieces are made in advance and held in inventory

for later use. Sometimes parts are made in advance to avoid lengthy changeovers, but that is just avoiding the real issue. Instead of avoiding changeovers, fix the changeover process. Dig into SMED (Single Minute Exchange of Die), a methodical attack at eliminating waste in changeovers. Another tool to fix overproduction is PULL. Keeping inventory is a PUSH practice in which we make parts in advance and then try to push them out the door hoping a project will come along that needs them. In a PULL practice we allow the customer order or project to pull the parts from the shop as they are made according to demand. Don't we invest in automation in order to speed our production process? So why do we resort back to the old PUSH thinking? Another tool that comes to mind is One Piece Flow or Single Piece Flow. Many folks think that this doesn't work in the fabrication shop because we can't flow one piece at a time. The key to using this tool with success is how we define “One Piece.” One Piece can be a sequence or a truckload or another grouping that makes sense to our workflow.

→ **Waiting** is observed as one process waits for another process to complete before it can begin. Waiting indicates a constraint or chokepoint in the process or workflow. We often create wait in our processes by how we deploy equipment. A “one machine does it all” can be a blessing or a curse. If we can use this multi-function capability for the majority of our work then it is good, but it also means each piece that has to wait for the use of only one function is wasting time. Think of it this way: The saw and drill are closely connected so that each piece passes through the saw and drill versus having a separation between the saw and drill that allows each piece to pass through the saw and then choose if it needs drilling. Then while it moves to the drill other pieces that only need cutting can move through to other processing. Keep in mind that we have to weigh things such as space and budget when making these decisions. Understanding how work flows and where waiting occurs can help us overcome waste time and keep product moving.

→ **Non-utilized talent** is the waste caused by having the wrong person in the wrong position. This is easy waste to overcome. The key lies in understanding who is qualified in what processes. This can be accomplished by creating a training matrix listing personnel down the rows and equipment and/or processes across the columns. Color coding can be used to show the level of competency each person possesses for each process. The resulting



Larry Martof is president of Process Improvement Solutions and is an ASQ Manager of Quality/Organizational Excellence and ASQ Certified Quality Auditor; a RAB/QSA Lead Auditor—ISO9001, consultant for TS16949, and AS9100; and a Certified Lean Six Sigma Master Black Belt.

Quality Corner is a monthly feature that covers topics ranging from how to specify a certified company to how long it takes to become a certified company. If you are interested in browsing our electronic archive, please visit www.aisc.org/QualityCorner.

tool can be used to determine who can be on vacation at the same time, who needs training, where more resources are needed or even who is qualified to be a trainer in a process. It also can be used to define the development path for new hires and as a method for advancement.

- **T**ransportation waste is probably the biggest form of waste in any shop or jobsite. It occurs when product is moved around without any value-added activities. Every time someone stops an operation to move a piece of steel wastes time and motion. A Spaghetti Diagram provides a simple tool for understanding transportation waste. This is created by observing product flow and handling points and documenting this as an overlay on a facility layout plan. The best way to do this is to find an elevated vantage point that gives you a bird's-eye view. It is called a Spaghetti Diagram because when we first do this exercise it typically looks like a bowl of spaghetti as the material wanders to and fro as it moves from the delivery truck to the shipping trailer. Another good tool is Value Stream Mapping, which shows movement, time and flow in one map. Both of these tools help in targeting activities that are not adding value, including transportation waste.
- **I**nventory waste refers to excess raw materials that are not being processed. Reducing inventory reduces cost burdens. Understanding the supply chain is key to success in eliminating waste here. A common tool for this is the Just In Time (JIT) approach. But as with Single Piece Flow, where we redefine what single piece means, we must determine what Just In Time is and how much burden and inventory risk we want to assume. The key is to maintain the desired level without over burdening and creating transportation or waiting waste.
- **M**otion waste is the extra human movement resulting from not having what is needed where it is needed. This is a great starting point for deploying LSS. It starts with understanding what we do and making it a standard practice. Then we take this baseline and improve it. If you have documented a quality management system that re-

flects what you do and this system has been revised, then you have deployed the standardization tool of LSS. Another invaluable tool is 5S. This tool takes housekeeping, organization and safety to the next level. The 5S's are:

1. Sort—getting the clutter out.
2. Straighten—organizing what is needed; a place for everything and everything in its place.
3. Shine—cleanliness breeds safety and good housekeeping habits.
4. Standardize—instill the first 3S's and use checklists for audits and improvements.
5. Sustain—keep the good habits; train, reward, recognize.

- **E**xtra processing is seen in redundant steps, duplicated work or data and energy waste. This form of waste often is found in the administrative tasks where multiple people are entering or recording the same information or data. Process Mapping overlays the process flow on the functions or people involved in each step of the process. The flow should be continuous but often is hindered by repeated steps or redundant data entry. This waste brings LSS into the front office and reveals elements of the waste-laden “Hidden Factory” lurking outside of the shop floor.

Looking at DOWNTIME helps us to identify opportunities for improvement, but what tools help to drive improvement? This is where we reach into the Six Sigma side of the toolbox. In difficult economic markets we all need to be more efficient and more cost conscience and Lean Six Sigma provides the tools that add value to the organization. The best place to start is with standardized processes, driven by a quality management system. Then identify the Hidden Factory and reveal the Visual Factory through 5S, process mapping and spaghetti diagrams. At that point, you will be able to see the waste as well as the improvement opportunities, and can systematically make breakthrough improvements to gain speed and direction and increase your Business Velocity.

Stay tuned to MSC Quality Corner for Part Three where we will explore a case study of Business Velocity improvements.

MSC