

‘LSS Is More’: Building a Lean, Mean Laundry Machine!

Want more out of your operation? Get Lean Six Sigma



A soil staging area before the implementation of Lean Six Sigma (LSS).



A soil-staging area after the implementation of LSS.

By Ed Kwasnick

In June’s *Textile Rental*, I wrote an article titled “Lean Six Sigma—Declare All-Out War on Waste.” It introduced readers to Lean Six Sigma (LSS) and provided important background on fundamentals, methodology and benefits. The goal was to present a broad overview of LSS and provide answers to the following question, “What is it and how does it work?”

The response has been terrific! Companies are embracing the concepts of LSS and implementing improvements, in some cases radical improvements, in their existing operations. However, I’m still receiving e-mails and calls from operators asking the following questions:

- Does LSS really apply to my operation?
- How much will LSS impact me?
- Do you have any examples of LSS projects in textile services?

Therefore, it’s time to roll up our sleeves and talk about the real impact of LSS. Turn-Key is now working with a number of different clients implementing initiatives at the plant level. Two of these customers, Staunton Steam Laundry, Staunton, VA; and a healthcare laundry (name withheld), have given us permission to share results from their ongoing projects. No more theoretical discussion. We’re going to talk about documented results from actual projects. In so doing, we’ll answer the question “What can LSS do for you?”

Refresher: What is Lean Six Sigma?

For those of you who are unfamiliar with LSS, here’s a quick review. Most of this information is detailed fully in my June article, so feel free to skip to the next section if you’re already familiar with LSS and its methodology.

LSS is a combination of Lean Manufacturing and Six Sigma. It focuses on reducing waste, increasing speed and improving quality. Simultaneously. The fundamentals of LSS are:

- Value** – Value is defined by the customer.
- Map** – Map your process for understanding.
- Flow** – Make your process flow.

Pull – Pull value from the enterprise.

Perfection – Continuously seek perfection.

Here's how LSS works. Think of your business as a stream that delivers value from you to your customer. Over time, that stream begins to collect debris and develop various inefficiencies that slow down, or even stop the flow of value. LSS helps you identify and remove those inefficiencies so value can flow from you to your customer more smoothly and at a much faster rate.

LSS uses a problem-solving methodology called DMAIC, which includes the following steps:

Define the current process and high-level project goals.

Measure key aspects of the current process and collect relevant data.

Analyze the data to determine root causes and improvement opportunities.

Improve the process based on data analysis.

Control the improvements to prevent the erosion of results.

This methodology is critical because it not only provides the foundation for identifying and implementing improvements, it also helps you sustain results.

The most important point to remember is that LSS is an all-out war on waste. It identifies and eliminates waste in your processes. However, we define waste differently in LSS. Waste is anything that doesn't provide value from the customer's perspective. Based on that definition, here's is a list of the eight LSS wastes:

Transportation – No value is created when you move a product from point A to point B.

Inventory – Products sitting in a sling, on a shelf, in a cart, or on the truck aren't providing value from the customer's perspective.

Motion – Extra motion adds time. More time slows down the process. And a slower process is less efficient and more costly.

Waiting – Wait time slows down the process and increases costs.

Over Processing – Doing the same thing (e.g., quality inspection, rewash, etc.) over and over slows down the process and creates no value.

Over Production – Producing more goods than your customers need increases inventory and operating costs.

Defects – Defects lead to scrap. Scrap leads to rework. And rework provides no value from the customer's perspective.

Underutilized Human Resources – If you aren't fully utilizing your employees' abilities, then you are wasting a precious resource.

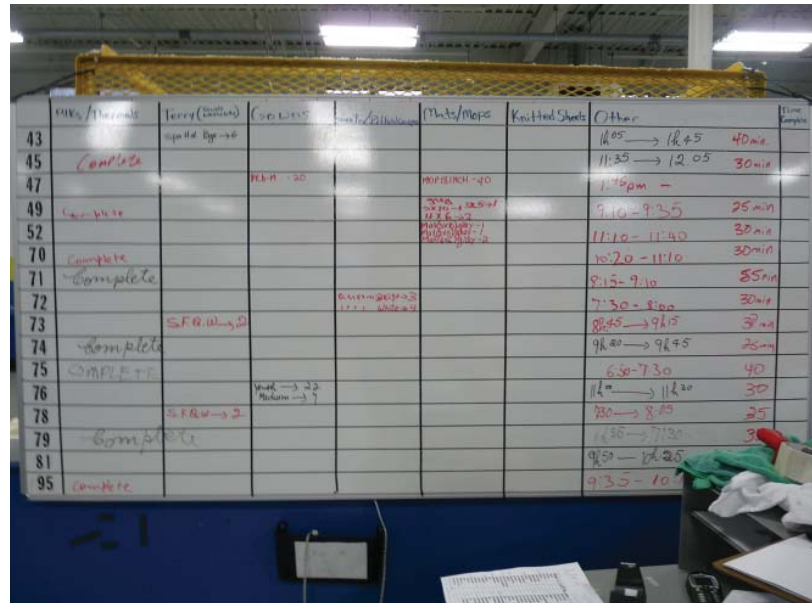
These are the inefficiencies that must be removed from your value stream. When you eliminate waste, productivity goes up, costs go down, process speed increases and quality improves—all at the same time.

Does Lean Six Sigma apply to my operation?

Let's start by asking a question: Do you have waste in your opera-

tion? OK, I'll admit that's a rhetorical question. All processes have waste. Even "world class" facilities with state-of-the-art automation, productivity-tracking systems and highly experienced employees have various forms of waste buried beneath the surface. As I stated earlier, LSS identifies and eliminates waste. So, LSS applies to every operation regardless of size, product mix, or level of automation.

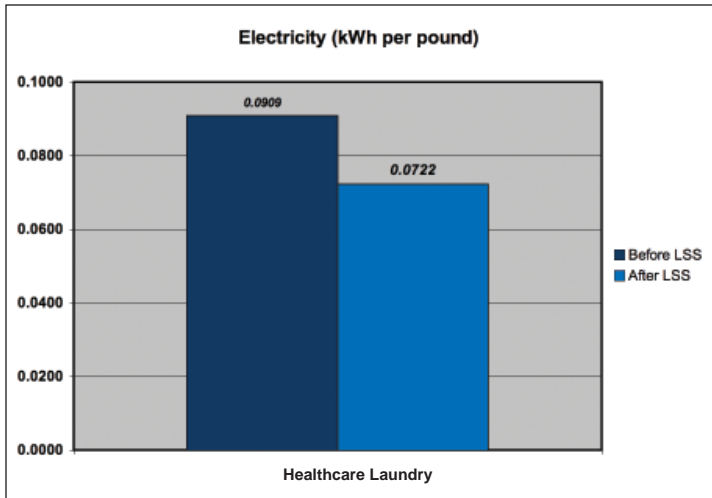
The real question is how much will LSS impact your operation? That depends on two factors:



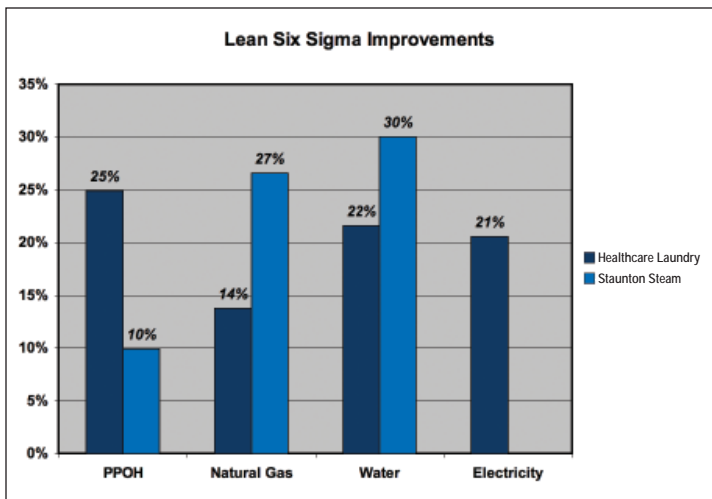
A production board is used to improve scheduling.



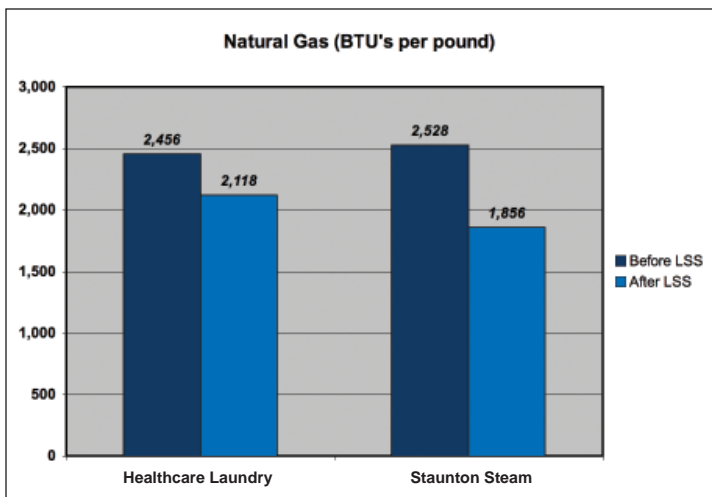
Employees receive training in just-in-time production methods.



The chart above tracks significant reductions in electricity following the implementation of LSS.



This chart tracks improvements in four key areas by both Staunton Steam and the healthcare laundry after LSS was implemented.



This chart tracks a reduction in natural gas use by both plants after LSS was introduced.

- Quantity of waste (number of inefficiencies in your value stream)
- Magnitude of waste (significance of eliminating inefficiencies from your value stream)

Regardless of size, if a laundry has a lot of waste in its value stream, LSS will provide significant savings. We currently are implementing an LSS project that will return over \$230,000 in annual savings for a client that's doing about \$70,000 a week in revenue. No matter how large your operation may be, that's substantial savings. However, for this company, the project will *increase their profit by 65%*.

If you're a larger company, the quantity of waste in your value stream isn't as great. In fact, for you to succeed you've had to reduce waste and improve efficiency over time. So, the quantity of waste isn't the issue; it's the magnitude that provides opportunities. Due to your size, small inefficiencies add up to big dollars. For example, a company producing 500,000 lbs. per week at 100 PPOH requires about 5,000 productive hours to do the job. If the average cost of labor is \$10 per hour, a 5% increase in PPOH equals \$124,000 per year in labor savings (not including benefits.) A 10% increase is equal to \$236,000 in savings per year. So you may not have as much waste to eliminate, but each opportunity will pay big dividends.

Where to start

To find the greatest opportunity for improvement, you follow the dollars. The three biggest plant costs for any laundry are labor, inventory and utilities. Therefore, eliminating waste in these areas will provide the greatest return on investment. It's that simple. I'm amazed at how many operators spend time squeezing a penny or two out of their chemical supplier or negotiating a better deal on poly wrap, while significant savings in labor, inventory and utilities go untapped. Granted, negotiating better pricing from your suppliers is an important part of controlling costs. But focusing on these secondary expenses, while your primary costs are spiraling upward is like climbing to the highest deck on the Titanic—you may be a little better off for now, but you're still sinking.

To maximize the impact on your operation, focus on these six key production metrics:

- PPOH
- Inventory costs per 100 weight
- Used garment utilization (uniforms only)
- Btu per lb.
- Gallons per lb.
- kWh per lb.

Your goal is to identify and eliminate all the wastes that negatively impact these metrics. For example, the following issues affect water consumption:

- Water system leaks
- Leaky washer drains
- Underloading washers
- Formulas using high-water levels

- Unnecessary steps during the wash cycle
- Steam system losses/boiler make-up
- Improper operation of the process water systems
- Improper operation of water reuse/recycle systems

If the water system or washer drains are leaking, fix them. If employees are underloading the washers, retrain them and implement procedures that ensure that the washers are loaded properly. Take a look at your formulas. Do you really need all those rinses? Do the water levels need to be that high? For most laundries the answer is “no.” Lower your water levels and eliminate the extra formula steps. Not only will this reduce your water consumption, it also will improve washer cycle time and increase productivity. Your boiler uses a lot of water. Do you have steam leaks? Are your steam traps working properly? Are you capturing condensate and returning it to the boiler make-up tank? Fix the steam leaks, repair your traps and return condensate to the boiler. This will minimize the amount of fresh water you need for boiler make-up and will simultaneously reduce your natural gas usage.

By identifying and eliminating these wastes, you will dramatically reduce water usage. Notice that LSS isn’t about buying new equipment, or building a new plant. You just focus on eliminating the waste in your operation. And by eliminating waste, costs go down, speed goes up and value flows faster from you to your customer.

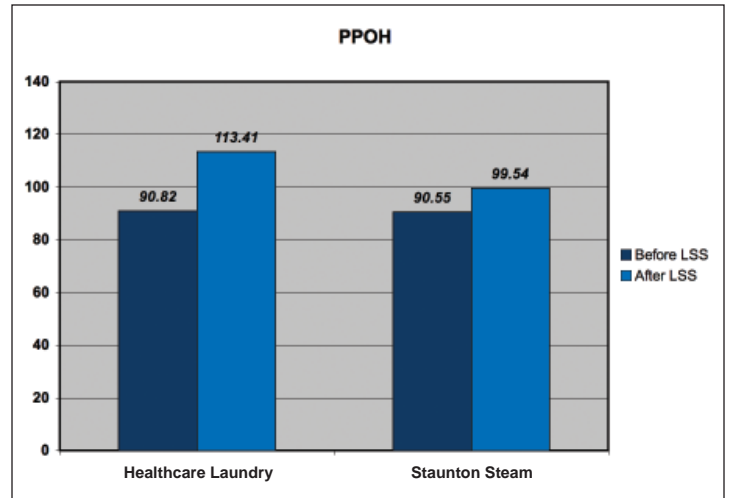
Real results

It’s time to stop talking the talk and start walking the walk. Let’s examine two real projects. Earlier this year, we partnered with a U.S. healthcare laundry facility and Staunton Steam Laundry. We then began implementing LSS initiatives in both operations.

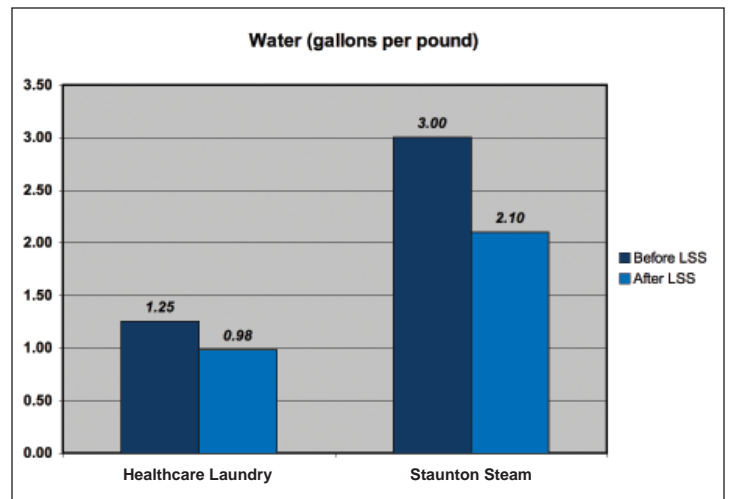
Let me begin by offering some background on these two companies. Our healthcare laundry client has asked us not to share any specific information about their operation. What I can tell you is that they use a combination of automated and manual equipment and that the company has experienced growth in recent years. The operators of the healthcare laundry company wanted to use LSS as a way to increase productivity, improve quality and lower operating costs, thereby strengthening their position in the healthcare sector.

Staunton Steam Laundry is a single-plant independent operator (see, April 2007 *Textile Rental*, pg. 30). They are the epitome of a mixed plant, providing food and beverage, hospitality, healthcare, industrial and dust control products to their customers. Founded in 1912, the plant operated today by Staunton Steam Laundry is a mix of old and new—an old building and new boilers/mechanical systems, old washers and new soil-count systems. Their product mix is complex and the process flow is intricate. Lee Beam, president of Staunton Steam Laundry, and her Operations Manager Don Mayer are no strangers to improvements. In 2008, they finished a complete retrofit of their plant’s mechanical infrastructure, including new boilers, new process water systems and a new heat reclaimer. Staunton Steam Laundry’s vision was to use LSS as an opportunity to continue to “tighten their belt”—i.e., further reduce costs and increase productivity—in a challenging economic climate

Although these two companies differ in size and product mix,



This chart compares the improvements in pounds per operator hour by both plants before and after LSS was implemented.



This chart shows significant savings in water by both plants after LSS was adopted.

they share a common trait—a strong desire to make themselves better. So, let’s consider the results of these two projects.

LSS project results – healthcare laundry

In May 2009, Turn-Key began implementing LSS in the healthcare plant. The project was a true partnership between the two companies because it was delivered using a ‘shared savings’ model. The concept was simple: Turn-Key and the healthcare laundry agreed to split the savings generated from the project—the more savings taken to the bottom line, the greater the reward; the lower the savings, the lower the fees.

The project began by analyzing the current operation and identifying areas where LSS would have the greatest impact. Plant productivity and utility consumption became the main focus. Next, we provided just-in-time LSS training for the production team, including management, supervision and floor employees. Then we mapped the value stream and identified the wastes and associated improvements. Finally, we implemented the improvements and

measured the results. Here is an overview of key production metrics before and after LSS implementation.

Metric	Before	After	Improvement
PPOH	90.82	113.41	25%
Btu per lb.	2,456	2,118	14%
Gallons per lb.	1.25	0.98	22%
kWh per lb.	0.0909	0.0722	21%
Annual Savings			\$154,015

LSS project results—Staunton Steam Laundry

One month after beginning at the healthcare laundry, we kicked off the Staunton Steam Laundry project. This project also was performed on a shared-savings basis. We started by pinpointing plant productivity, natural gas and water consumption as the greatest opportunities for improvement. Next, we identified the wastes that were causing these inefficiencies and implemented methods for eliminating them. Here's an overview of the project results.

Metric	Before	After	Improvement
PPOH	90.55	99.54	10%
Btu per lb.	2,528	1,856	27%
Gallons per lb.	3.00	2.10	30%
Annual Savings			\$63,576

As of August, we completed implementation of both projects. We'll spend the next year controlling the existing improvements, while simultaneously eliminating additional waste from the value stream to ensure maximum project impact.

Lessons learned

As I stated earlier, Turn-Key is implementing a number of LSS projects in the laundry industry. Based on our experience, I'd like to share some important lessons that will help you successfully integrate LSS into your organization.

LSS is continuous

LSS is a continuous process—not a quick fix. There's no doubt that it will dramatically improve your operation. However, these benefits are the beginning, not the end of the journey. With each round of improvements you'll discover more waste. And that waste must be eliminated by implementing additional improvements. It's a never-ending loop.

LSS is counterintuitive

In the LSS world, value, waste and flow are all defined differently. In fact, many LSS concepts are counterintuitive and clash with the "tried and true" methods of the laundry industry. For example, it's a common practice in our industry to wash everything by the end of the day. This is known as "washing out." LSS states that you should wash only what you need to fulfill the customer's needs and not a pound more. If you have filled all your orders, stop washing.

The additional labor, utilities, chemicals, and time you are using to process goods that are not needed is wasteful and should be avoided. However, many laundries continue to "wash out" because that's considered standard operating procedure.

Production must be on board

Your production team, including the plant manager and supervisors, *must be on board*. They must be willing to break from tradition and embrace a new thought process. This isn't easy since LSS is so counterintuitive. According to LSS, storage shelves filled to the top with clean inventory, a monorail system filled with slings and carts waiting to be loaded on trucks, are all examples of waste. Yet, most plant managers have been taught that these are good things. LSS will turn your production manager's life upside down! So, you need to provide the proper tools, training and expectations as well as a carrot—an incentive to help facilitate change in your organization.

Lack of maintenance is a killer

Nothing kills an LSS initiative faster than lack of proper maintenance. Lack of maintenance causes excessive equipment downtime. Equipment downtime is a root cause of all eight process wastes, including transportation, excessive work-in-process, wasted motion, waiting, over processing, over production, defects and underutilization of human resources. LSS projects won't gain momentum if your equipment is always down. So, if you have a maintenance problem, fix that before moving forward with LSS.

Measure and control

Earlier in this article, I reviewed the DMAIC (Define, Measure, Analyze, Improve, Control) methodology used to implement LSS projects. It's always Define, Analyze and Improve that get the headlines. You define the problem, develop the solution and then improve the process. How exciting! But its Measure that determines how successful you are and Control that prevents your improvements from eroding. Without the ability to measure and control, you'll not be able to identify or sustain your improvements. Accurately measuring key metrics is critical to the success of any LSS project.

I hope I've answered your questions about LSS and its impact on the laundry industry. Now I'd like to ask you a few questions. Are you committed to improving your operations? Can you break from traditional production methods and embrace a new way of thinking? Are you prepared to declare war on waste? If you answered "yes," then it's time to take action. You can cut waste and enhance your bottom line by using Lean Six Sigma to convert your organization into a lean, mean laundry machine! TR



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