

west
MICHIGAN
green suppliers network



LEAN
and Clean

how real people make a difference

"It is not enough to do your best; you must know what to do, and then do your best."

*W. Edwards Deming
1900-1993*

LEAN *and Clean*

Companies of all sizes are turning to lean manufacturing techniques to reduce waste and save money.

Introduction

Measurement and accountability require more collaborative approaches to problem solving at all levels in an organization. Organizations that will survive will need to be increasingly receptive to customer expectations, environmental performance, product stewardship and the social implications of their products and processes.

Supply Chain Management and Sustainable Product Design

Many industries are already anticipating the need to address economic, social and environmental impacts by integrating product design and supply chain collaboration into the development of new products that are less toxic to human health, protect the environment, and provide economic value to their shareholders and customers. Innovating new materials and processes that reduce the negative impacts on natural resources and human health is becoming more and more prevalent in the marketplace. Standards and criteria are being developed to recognize and reward companies that take action to continuously improve their sustainable footprint.



Workforce Engagement

The Lean and Clean Program available through the Green Suppliers Network provides small and medium sized manufacturers with the technical assistance needed to identify strategies for improving processes, reducing waste, using materials more efficiently and realizing increased profitability. Systems to measure and benchmark progress in the application of lean and clean practices require continuous improvement and workforce engagement.

Adding Value

The Green Suppliers Network (GSN) in West Michigan is a non-regulatory, voluntary partnership between industry and all levels of government to leverage services supporting the transformation of economic value, environmental performance and social equity. Michigan suppliers and their customers are being recognized as national models for the next generation of sustainable manufacturing. The incorporation of environmental cost recovery through improved energy efficiency, water conservation and materials handling is reaping a strong financial benefit to participants. \$13,535,292 is the aggregated value of environmental impact savings reported in the September 2008 Executive Update for the GSN. GSN Reviews employ Lean & Clean methodologies, which concentrate on the root causes of waste of one process line in a facility and provide a framework for achieving specific measurable environmental and business objectives. Through the GSN Review process, companies learn how they can:

- Decrease the use of toxic and/or non-renewable materials
- Establish systems to use energy more efficiently
- Improve use and selection of more environmentally friendly raw materials
- Institute consistent work practices and procedures to reduce labor and capital costs and
- Promote a culture of greater employee participation in improvement activities

Michigan Suppliers and Customers Aggregate Realized Annual Cost Savings		
	Water Conservation	Energy Efficiency
Suppliers	\$30,000	\$116,655
Customers	\$80,000	\$28,276

Laura L. Rauwerda
MDEQ Project Manager, Green Suppliers Network
September 2008

Metalworks

Ludington, Michigan

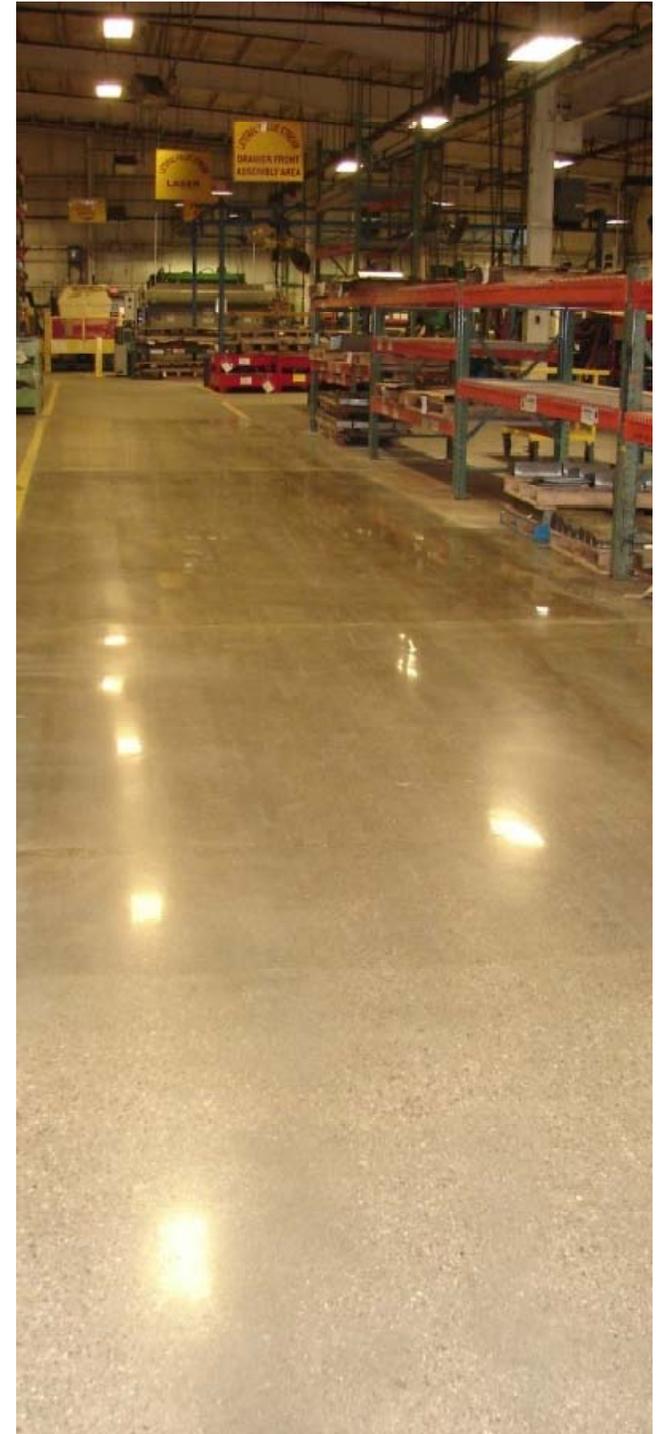
In 2008, this small, family-run company with 300+ employees and three manufacturing sites was recognized with the premier manufacturing award in North America, the Shingo Prize for Operational Excellence. This story is about the people inspired to create positive change.

The floors gleam, the shelves and bins are dust-free, labeled and organized. Operational statics, metrics graphs and accountability charts are posted for all to see. People gather to communicate ideas at an information kiosk, then quickly get back to work.

This is not the way it always was.

In the past, stock was piled on pallets, disorganized, over-crowded, dirty and potentially dangerous. Workers were frustrated as they waited or hunted for parts or tools to complete jobs.

Something had to change.





SCOTT LAKARI, METALWORKS, LUDINGTON, MI

5S

JAPANESE	ENGLISH
Seiri	Sort
Seiton	Set in Order
Seiso	Shine
Seiketsu	Standardize
Shitsuke	Sustain

Where to begin

In the “middle of the supply chain” Metalworks receives raw materials and parts and fabricates products for shipment to other manufacturers. When informed by their customers that Lean Manufacturing processes were expected as, Metalworks needed to learn how to operate in a whole new way. While not the only company faced with new methods, facing these changes alone would have been a daunting experience.

The enormity of the Lean Manufacturing led Metalworks to Lean and Clean Advantage program available through the Michigan Department of Environmental Quality (MDEQ). According to Scott Lakeri, vice president of operations, at Metalworks, the Lean and Clean Advantage guidelines provided a framework for new processes.

Staff learned that beginning with waste elimination would reduce costs to the customer and create the capacity for new business opportunities. Metalworks adopted the Lean and Clean Advantage and implemented a “5S” approach.

5S refers to five Japanese words, translated into English, that focus on visual order, organization, cleanliness and standardization. The expected results include improved profitability, efficiency, service and safety. Followed in order, the words become an understandable process for “cleaning house”.

Kaizen

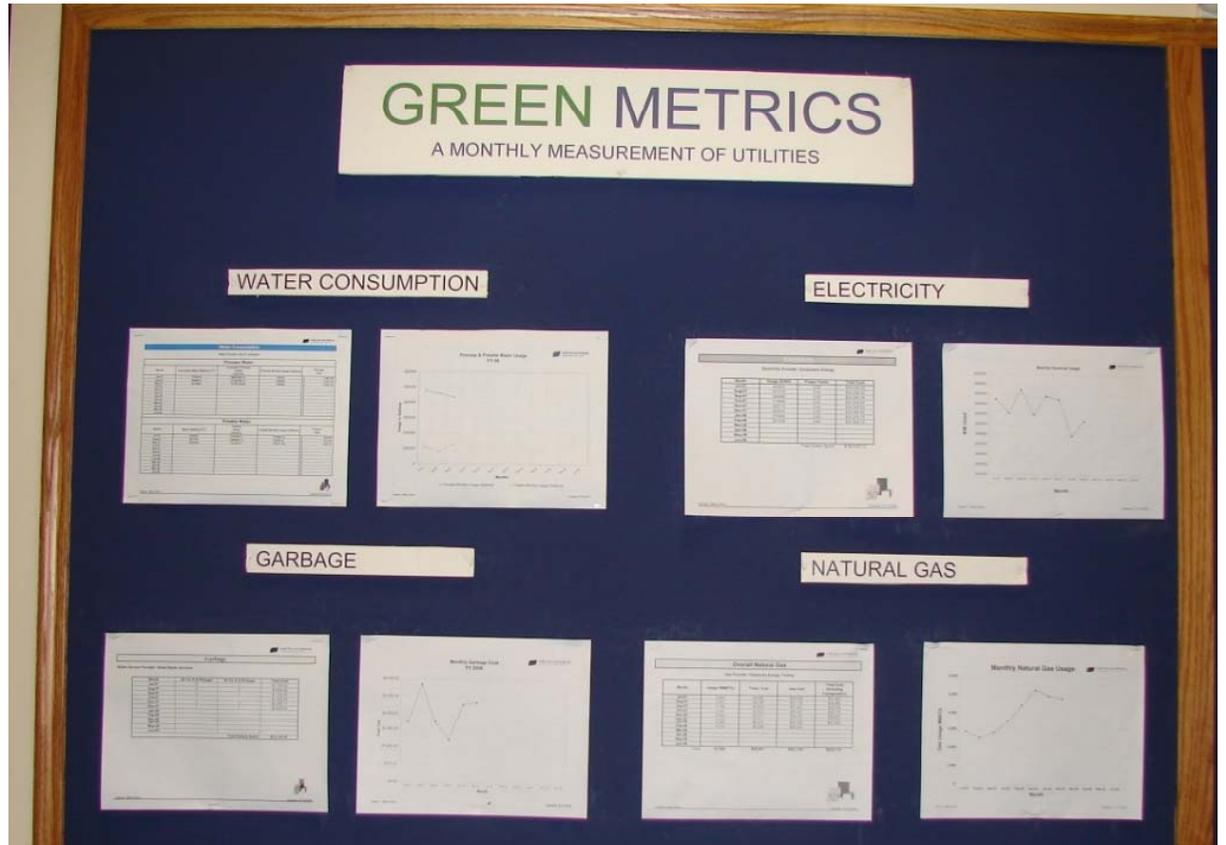
An opportunity for teams to brainstorm and implement improvements on the factory (or office) floor.

Lean Manufacturing

A way of producing goods through the removal of waste and changing flow.

“Essentially, it was time to clean house, and get things in order. We had to figure out how to eliminate wasted time, space and material. We had to standardize our work processes, both in the factory and office areas. Only then could we measure waste reduction.”

*Kandy Alverson
Continuous Improvement Coordinator*



Teams were created and work areas were cleaned and organized. People developed a labeling system that worked for organization and reorders.

All parts, materials, tools were sorted and stored in bins and shelves. Old or unused materials were disposed, recycled or reused.

“We didn’t know what to expect. We dealt with fears through open, honest conversation. Only then were we able to work together to identify issues and create solutions. We’re proud of the results.”

*Kandy Alverson
Continuous Improvement Coordinator*

Major Operational Steps	Time	Work Time
1 STEP ON RIGHT FOOT PEDAL	10	
2 PLACE FRAME ON FIXTURE		
3 PRESS RIGHT FOOT PEDAL	15	
4 PLACE WRAPPER ON FRAME		
5 PRESS RIGHT FOOT PEDAL		
WELD REAR CHANNEL (TOP TO WRAPPER)	22	
6 PRESS LEFT FOOT PEDAL		
7 WELD BOTTOM OF PED.		
8 WITH CROSS BRACE	11	
9 PRESS LEFT FOOT PEDAL		
10 WELD TOP CORNERS	15	
11 PRESS LEFT FOOT PEDAL		

Kanban

A signaling system designed to trigger action using cards or markers to signal the need for movement, production, or supply of an item in a factory.

A place for everything, everything in its place

Workers organized tool areas at each factory work station for tools needed on a daily basis and created a central tool storage location for specialty items. This simple change eliminated time wasted searching for tools and saved workers 15 to 20 minutes every day. When multiplied by 22 people in a department, a staggering 7 hours of wasted time was eliminated every day.

Next, work process was addressed. Prior to the implementation of the new methods, job process and quality was as varied as the number of workers.

It was time for work instructions, standardized processes and a shared responsibility for cleanliness and order on the floor.

Initially, standards were not well received, but with open communication and the workers’ active participation, they created their own work guidelines. Following the Kanban system of visual aids, each work instruction was written, diagramed and located in plain sight at each workstation.

The new instructions ensured quality, consistency and improved productivity even with new or temporary employees.

“Work instructions ensure jobs are completed the same way, every time, no matter who is at the work station.”

*Gloria Hilden
Pedestal Value Stream Supervisor*

Sustainability SWAT Staff

“As processes evolved, so did jobs. We were able to provide training to successfully reassign, rather than layoff staff.”

“We think of Tony as a Sustainability SWAT Guy...he created a whole new job for himself.”

*Gloria Hilden
Pedestal Value Stream Supervisor*

Not knowing what to expect or where to start, the management team recruited volunteers to create labels and tool boards. Tony Helminiak was cautiously curious. He stepped forward and took on the 5S challenge and organized workstations, built tool boards, closeout boxes and labeled... everything. Tony became a Metalworks “Sustainability SWAT Staff”. His energy is boundless as he seeks, finds and resolves issues on the floor.



“My 5S job allows me to help the whole shop stay organized and continuously improve. Everyone benefits in one way or another.”

Tony Helminiak

Sustainability SWAT Staff



“Standardized work creates a uniformed way for production lines to run smoothly.

Tom Harmon

“Tom helped double our capacity and smooth work flow by reorganizing the lateral welding area.

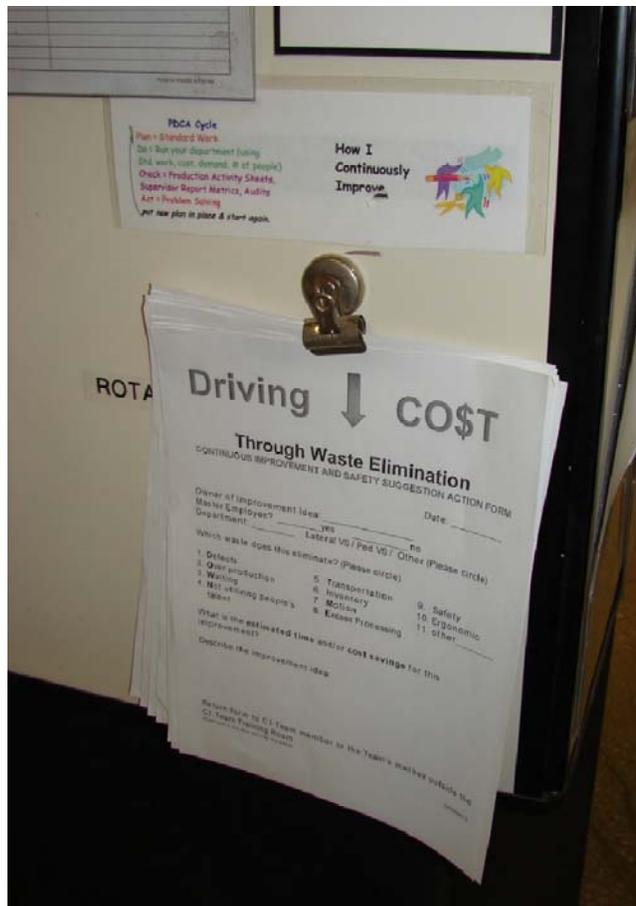
*Steve Hunt
Lateral Value Stream Manager*

Value Stream

A technique used to analyze the flow of materials and information currently required to bring a product or service to a consumer.

"We have to help one another be more successful, and we hope to assist others in their lean improvements."

*Kandy Alverson
Continuous Improvement Coordinator*



Making connections

Metalworks staff met with each of their own suppliers to provide the new processes and to request their compliance. Miller Metal, the steel source for Metalworks had to completely revamp their delivery systems. Before the changes, Miller made daily steel deliveries, but Metalworks needed smaller more frequent shipments. To resolve the need, Miller established a warehouse in Shelby, Michigan, allowing two small deliveries twice a day. Miller staff scan the specially designed storage bin labels and electronically downloads the order requirements to the warehouse. The same labels are used for month end inventories.

The idea caught on and is the model for a similar system used in the office supplies area.

As the staff analyzed work process, they incorporated equipment inspections. To assess the washer system, which is used to clean raw steel post fabrication, they turned to DuBois Chemicals, a division of Johnson-Diversey. DuBois, headquartered in Ohio, with a Western Michigan connection, sent in a team to evaluate the effectiveness of equipment and examined the work process involved. The DuBois Chemicals experts were able to help standardize processes across three different washing systems, reduce heat usage across the board and eliminate a stage in the process. They suggested a reverse osmosis system to ensure water sent to all three washers was consistently purified. The collaboration included training and coaching staff as they worked through the new processes.

Realizing benefits

Within their local community, Metalworks is leading the way as they support the process improvements being made by other manufacturers in Mason County, Michigan by sharing their new understanding of the powerful connection between people, profit and planet.

Admittedly, the task is arduous and it never really ends, but the success at Metalworks exemplifies the power and value of every worker's individual contributions. Each person knows their importance to the company, community and planet. People are more productive, feel better about working, and enjoy the bonuses that are a direct reflection of their efforts.

"Prior to the Lean and Clean initiative, we were using all our "tools" but not looking at the "whole system. By changing our work environment, habits, processes and reporting methods, we are using fewer "tools", gaining more efficiencies and realizing the benefits."

Scott Lakari



LEAN and Clean

The value add included: the assessment, access to the technical assessment process, environmental technical assistance, access to internship program (associated with RETAP) MI Business Pollution Prevention Partnership (MBP3), Michigan Manufacturing Technology Center (MMTC)-West, Shingo award and national recognition.

\$10,193 electricity cost savings per year related to improving compressed air use.