



# The Journey to Continuous Improvement

By Winston P. Ledet

While many organizations have attempted to create a Continuous Improvement culture, most organizations fail to create sustainable change for three reasons—getting an improper start, failing to create widespread change throughout the organization even when they see some successes, and failure to sustain that change over long periods of time.

## Getting a Proper Start

People get distracted from the change effort by everyday occurrences and upsets.

In order to capture the dynamics of organizational change, the key is to focus on eliminating the defects that are causing the poor performance. The sites, where sustainable continuous improvement has become a way of life, have developed a culture that has eliminated 70% to 98% of their failures by eliminating the sources of defects in their system. To keep the organization focused on defect elimination, a manager must believe that defect elimination works, and he must interact with people who also believe. One of the well known properties of dynamic systems is the “worse before better” phenomenon. Most things that make a system better in the future will first make it worse. Therefore



every effort to improve a system has to sustain that change long enough for the system to get through the worse in order to reach the better performance. Many of the change efforts that fail were doing the right things but did not sustain them long enough to succeed. One of the ways to deal with the ‘worse before better phenomena’ is to create a large number of small improvements in a short time. We recommend working on small defect elimination projects that can create improved results in less than 90 days.

In this fashion the early improvements can help pay for the later improvements and minimize the impact on the performance of the whole system.

Another way to deal with failures at the start of a continuous improvement change effort is to connect people who believe in defect elimination through the use of cross functional teams. As we studied systemic change, we realized the value of cross-functional teams is that you are more likely to see the potential effects of your actions on all aspects of your system instead of sub-optimizing for only one function. Many organizations are structured in a way that fosters working in functional silos, which

The Journey ...continued on page 2



## Reducing Caustic Use

The Georgia-Gulf VCM plant generates a strong acid (31.5% HCl) that is sold along with a weaker acid (15–25% HCl). If the weaker stream cannot be blended with the stronger acid and still meet sales specs it has to be neutralized with Caustic.

Using information from the operations measures review, the Action Team of Roy Mabile, Hillary Garner, Mike Melsheimer and Wayne Cooper noted that caustic usage was up significantly from previous years and that the source was weak acid neutralization. They realized the density analyzers in the 2nd and 4th absorber sections were no longer functioning correctly. This caused the blending to be done manually resulting in a high volume of acid that had to be neutralized. Originally, they believed that the current technology of the analyzer would no longer work in this service. However, Wayne Cooper got Operations and Maintenance to realize that when properly maintained they worked fine. A new technology was not needed just a replacement of the current analyzers that had fallen into disrepair. Mike Melsheimer worked with the operations team to develop an improved control strategy. He also recognized that with new operating conditions less weak acid was generated by optimizing the vent load to the thermal oxidizers.

Reducing ...continued on page 3

<b>What's Inside?</b>	The Journey to...	1, 2–3	Reducing Caustic Use	1, 3
	Calendar	2	What's Happening?	4

## SCHEDULE

Throughout the year, The Manufacturing Game® holds workshops for the general public at universities and/or professional organizations.

For more information visit [www.mfg-game.com](http://www.mfg-game.com)

### Public Workshop

The Manufacturing Game® will be holding a Public Workshop at the IMC Conference

December 8, 2008

for information visit

[www.MaintenanceConference.com](http://www.MaintenanceConference.com)

click on Bonus Workshops

Bonus Workshop #5

The Manufacturing Game®

### Conferences of Interest



#### 23rd Annual International Maintenance Conference (IMC)

Bonita Springs, Florida  
December 8–11, 2008

To register or for more information please visit:  
[www.MaintenanceConference.com](http://www.MaintenanceConference.com)  
or call (888) 575-1245



#### Reliability Centered Maintenance Managers' Forum & Enterprise Asset Management Summit

Daytona Beach, Florida  
March 23–26, 2009

For more information or to register visit [www.MaintenanceConference.com](http://www.MaintenanceConference.com)  
or call (888) 575-1245

Mark Your Calendar!



### The Journey...continued from page 1

isolates the various perspectives and makes it hard for the workers to see the big picture. Cross functional Action Teams remedy this situation by taking action together. It is important for the teams to take action themselves rather than issue recommendations. Accomplishing a purpose by taking a risk together makes this connection to other people very meaningful. Issuing recommendations is a relatively risk free activity. If it succeeds you can take credit for the improvement, but no one can blame you if it fails.

To hold a belief three parts of the brain have to agree that the belief is valid. The first element is the intellectual part. A person has to believe that defect elimination will improve performance. The second part of the brain controls our bodily movements. A physical task must be performed such as taking the action yourself to replace a defective part on a piece of equipment. Finally, the brain has to agree emotionally. It is important to have an emotionally safe place to test the belief. The Action Team provides this emotionally safe place through 'safety in numbers'. The team has to take their actions within the existing legal requirements as well as within their existing authority. This still allows a lot of freedom for action since someone on the cross functional team usually has the authority to take the necessary action.

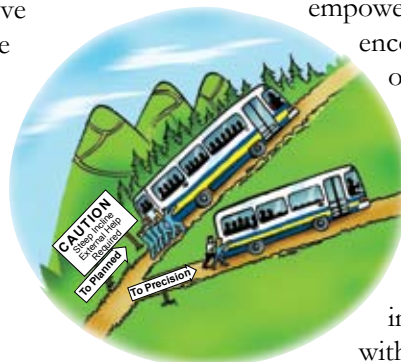
### Creating Widespread Change

In order to achieve organizational change the focus has to change. The workers must acquire the habit of doing improvements as a normal part of their daily work. Many initiatives fail in this phase because they don't create new work habits. The organizational performance requires thousands of small

improvements to achieve significant overall performance improvement. For this to happen, there needs to be constant reinforcement of defect elimination through cross-functional cooperation. Workshops and Action Teams are sufficient to satisfy the needs of the start of the change effort as a personal experience but are not enough to sustain the change of the whole organization. If 84% of the defects that cause failures are generated from Careless Work Habits the organization would have to sustain the defect elimination habit for 8 to 10 years to eliminate the sources of those defects. The sites that have succeeded have eliminated about 30% to 40% of their failures in the first three years and have become self-sustaining after that. If you want to create a culture change, a program of reinforcement is necessary for the first two to three years.

The organization as a whole has to see overall performance improvement to sustain the habit of defect elimination. A good process of publication of successful Action Teams and good management support for defect elimination is essential. Monthly Continuous Improvement Forums where the success of Action Teams is reviewed and celebrated accomplishes this. It is important that the management people learn how to lead change efforts through Continuous Improvement. The essence of creating such an organization is to empower the workforce.

The mechanism for creating this empowerment is to allow and encourage people in the organization to do work across functions, including managers. Managers must learn how to grant the workers the freedom to work with people in other functions without violating any of the company values—safety, being environmentally sound, and



...continued on page 3

## The Journey...from page 2

profitability. At successful sites, this change requires about two to three years of experience with the CI Forums. These forums should include a systematic agenda that contains a learning element to support continuous learning, and publishing the successes. The important thing to remember is that you are trying to create a symbol system to remind all employees that improvement work is part of their normal daily responsibilities.

## Making the Change Last

The final phase of the change is to create a culture that sustains the defect elimination habit long term in spite of all the changes in people, economy, etc. This phase requires a 'robust set of schemes' (as Ralph Stacey calls them) that are not dependent on any single person to be present for it to continue. It should become the way of doing business everyday, by everyone. These changes should become routine instead of just systems. By removing barriers that physically exist like having separate buildings or different record keeping systems for different functions people feel free to work across functions to solve their problems.

The main system for keeping the culture active however is the connections between people that pertain to the care of the equipment. In the past this has been called the socio-technical network to indicate that the equipment has to be part of the network. While many people have recognized the value of social capital in getting things done, they don't realize that the social capital that really matters is the connections between people that pertain to the producing equipment. In today's world, people don't produce products with their hands; they tend to the machines that produce the product. In order to keep defects from occurring in the equipment, the people must be skilled and attentive to the way the machines are used and

maintained. This involves a lot of tacit knowledge of the nature and history of that equipment. Good operations people will know not only the design capacities but also the limitations of that equipment. This type of knowledge is best communicated in person and connected to specific concerns. In this manner, the culture can be passed on to future generations through stories told in the acts of operating and maintaining the equipment. One of the essential systems to create and maintain sustainability is the method for orienting new employees and contractors. This requires organizations to retain a certain amount of redundancy in the work force and the need to protect the freedom for employees to cross functional lines as well as cross over to contractors. Many companies attempt to reduce their cost by awarding contracts to the cheapest bidder and change suppliers often to save a few dollars. This type of policy disregards the need for long-term commitments toward reliability and the value that adds to the

organization. The process of using defect elimination creates a rich set of cross functional connections that produces and enforces a robustness in the organization to orient new people into the continuous improvement culture.

In order to attain a Continuous Improvement Performance Culture you must include the whole package:

- Defect elimination through the use of cross functional Action Teams.
- Continuous Improvement forums with sharing of ideas, acknowledgement, and accolades.
- The empowerment of employees to continue to work cross functionally as they see fit to accomplish their tasks.



## Reducing...continued from page 1

The biggest obstacles they encountered were to get the new analyzers ordered, delivered, and then waiting for a system outage to get them put into service. Once the new analyzers were installed and a regular maintenance schedule established, they worked fine. Those that were skeptical that the existing analyzers would work were proven wrong by the team.

Now, operations monitors the system with a meter in place to automatically control the system rather than trying to manually control it. Maintenance performs regular PM's on the equipment to ensure that it stays in working order. Through their efforts the team reduced caustic use by 50%, a savings of approximately \$3 million per year.

## When you come to a fork in the road, take it.

CAN YOU IMAGINE a major league baseball player leading the league  
...in making the most errors  
...in being struck out the most times  
...in hitting into the most double plays and still being voted Most Valuable Player for that year? It happened. In 1942 Joe Gordon did all three of those things yet still won the MVP award that season in the American League. What's the business lesson in this? Joe Gordon's case shows that even though you (or others) have faults, you can overcome them and be recognized for your good points.

—Yogi Berra



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“Change is the law of life.  
And those who look only  
to the past or present are  
certain to miss the future.”

—John F. Kennedy

*Fall*

## TMG News

### What's Happening!

**Winston P. Ledet**, principal and co-developer of The Manufacturing Game®, will be **leading one of the Reliability Masters Learning Zones at the The 23rd International Maintenance Conference** in Bonita Springs, Florida December 8–11, 2008. This is a new learning zone for the IMC Conference. The premise of the Reliability Masters Learning Zone is that we already know all the strategies and techniques required — we need a new type of conversation. This Zone will include powerful conversations that change the listener—new ideas, presented in a new way and followed with a discussion between the speakers and the audience. Creating an evolution in maintenance and reliability through the sharing of ideas.

Winston's topic will be *Measuring Empowerment of the Workforce Through*

*Socio-Technical Network Theory*. The basic job of the people in a manufacturing organization is to tend to the machines that produce the product. The question is how do we empower people to do that? The people who have been very successful at achieving this have found ways to empower the workers to provide the proper care for the equipment. A means for measuring this empowerment is proposed and will be discussed.

**The Manufacturing Game®** will once again be holding a public workshop at the IMC Conference. Sign up for **Bonus Workshop #5 The Manufacturing Game®** on December 8, 2008. Bonus Workshops are free with Conference registration. It is a full day workshop 8:00 am – 4:00 pm so come prepared to work hard and have a great time learning. Find out how you can empower your workforce to give their best everyday through defect elimination and

continuous improvement.

**Winston P. Ledet** will also be speaking at the **SMRP Conference in Cleveland, OH October 20–23, 2008**. If you missed his speech at the RCM/EAM conference last spring on the **“ABC's of Failure – Getting Rid of the Noise in Your System”** here is your opportunity to find out how only 4% of the failures are caused by Aging, 12% by Basic Wear and Tear and that 84% of the equipment failures are caused by Careless-ness (not taking reasonable care of your equipment). A new way of looking at the causes of failures in manufacturing, where to find them and how to eliminate the defects that cause these failures.

**The Houston Chapter of SMRP** will be holding it's quarterly meeting at Brady's Landing November 5, 2008 from 11am–1pm. Come join us for food, information and networking