



Don't Lose Your Steam!

For over a year SembCorp Utilities UK have been running The Manufacturing Game® workshops at Wilton Power Station in the UK, facilitated and supported by Reliable Manufacturing Ltd.

At an early workshop, a team comprising of Vaughan Hauxwell, Jon Cook, Tony Skillcorn, Tony Thorpe and Mal Corbyn set themselves the task of changing and maintaining the defunct steam



Vaughan Hauxwell, Jon Cook, Tony Skillcorn, Tony Thorpe and Mal Corbyn

traps in one pipe trench for a month. They believed that their ownership of the trench would result in fewer defects, save money from loss of steam, and most important of all, make the roads safer by improving the visibility for drivers by removing the steam drifting across the site.

Working together, they identified the number of traps that needed changing and then ordered and fitted the traps, a total of four traps, at a cost of £100(\$197.61)

Initiative Overload?

In Dupont there were so many initiatives, Butch Hoffman, a maintenance foreman, said to Winston Ledet, *“Winston, you are not the only person who shows up here, and you have eight initiatives you want me to implement in maintenance. Can't you guys create some way of showing us how to apply all of these initiatives in our work?”*

This request was the impetus for creating something that would encompass a means to accomplish the integration of all the initiatives at Dupont—The Manufacturing Game®.

The source of all reliability, safety and environmental problems are defects in equipment, processes, policies and practices. While some of these defects are created through normal wear and tear, the largest portion is created by random events that could be avoided through good organizational discipline and precision in the way work is performed. A method is needed to rationalize all initiatives into one integrated initiative that can be understood by all the employees: operations, business services, and maintenance—planners, schedulers, and mechanics.

Leadership's role is to choose the best initiatives to improve performance. The mistake most organizations make is to undertake multiple initiatives to address different kinds of defects. These initiatives are very well intentioned but are conceived in separate contexts and are not integrated.

The secret to integrating initiatives is to recognize that they are all attempts to eliminate particular defects. Separate initiatives don't require separate

means for implementing them. The most effective approach is to apply defect elimination to the whole system at once. This avoids creating an improvement in one part of a system that creates a defect in another part of the system. Applying a systemic implementation requires an understanding of how the whole system works. A clear understanding of the manufacturing process along with a structurally authentic experience is important to allow everyone to see how their job makes a difference to the whole system. Once a person has had this experience, it is easy for that person to see how defects affect his job or role in the facility as a whole. It is necessary to create a whole system solution, through cross functional teams, who can design and implement the solution in a way that all roles are considered. This is best done in small increments so everyone has a chance to participate in the improvements and own the results.

From a leadership perspective, the other consideration is what pace of change is appropriate for the entire organization. This can

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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

Public Workshop

Reliability Center Inc. will be holding a Public Workshop at the RCI Conference Center in Hopewell, VA August 7-9, 2007.

For more information call
(804) 458-0645 or visit
Info@Reliability.com

Conferences of Interest



SMRP 15th Annual Conference

October 7-10, 2007
Louisville, KY

To register or for more information please visit: www.smrp.com



22nd Annual International Maintenance Conference (IMC)

Daytona Beach, Florida
December 5-7, 2007

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

Note

MaRS Symposium Houston Chapter of SMRP

Originally scheduled for Sept. 26, 2007 at Brady's Landing in Houston, TX has been rescheduled to February 28, 2008.

Inquire: EdFoster@mundycos.com

Mark Your
Calendar!



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be determined by assessing the magnitude of defect generation in the organization and the capacity of the organization to eliminate the source of defects. This should not be done as a static question. The capacity to eliminate defects can be significantly

increased when people are motivated by a clear understanding of the structure of their situation. It is also important to take into consideration the fact that motivation decays with time. The longer the change takes, the harder it will be to insure its success.

Don Kuenzli, a plant manager who has taken two different refineries through complete transformations to the Precision Domain, says, "The only way to make this transformation is make defect elimination your way of doing all of your business."

Recommendations on How To Deal With Initiative Overload

What to do

1. **Significantly reduce defect generation rate in equipment and processes through the use of equipment proprietors.** A well-designed proprietor system restores the infrastructure deterioration back to acceptable standards. The proprietor system should be designed to match the distributed nature of the defects. Basically, all property should be assigned to a proprietor who is in a position to visually inspect the real estate and hardware personally. The proprietor should be the voice of the needs of the property he is assigned. Each proprietor should be assigned no more property than he can inspect in one day. The role of proprietor is simply to run equipment within standards or shut it down. When a property is shut down, only the aging defects accumulate. This is a reduction of 96% in defect generation rate so the property can remain relatively stable until the resources are available to deal with the higher defect generation rate. The proprietor should not be the budget holder for his property – that way he can concentrate on maintaining standards and not have that over ruled by monetary constraints.

2. **Engage the entire workforce in defect elimination using cross functional Action Teams** as a means of creating a culture that assumes equipment improvement as a normal part of the everyday job. Once a particular proprietor determines his

facility to be out of the Regressive Domain and into at least the Reactive Domain, a systemic process of defect elimination must be created within the workforce. The basic need is to learn how to work cross functionally instead of in silos and to learn to treat contractors the same as employees in this process. Many of the defects created in the random category come from the lack of appreciation for the needs of the other functions that impact common equipment and work processes.

By using cross functional teams to eliminate defects, people learn how to be a team while doing their normal work. An incredible amount of organizational learning takes place among people in these teams. Launching cross functional Action Teams should continue until this cross functional way of working becomes a habit and the generation rate from random events is reduced by about 30% of total work orders.

3. **Create a leadership process for the culture change based on boundary setting** that creates freedom for the workers and proprietors to make decisions aligned within standards established through reflection and dialogue. Management must learn how to create boundaries for cross functional teams so that the teams are free to make decisions on their own that are within tolerable levels of risk to management. The focus of management's work should

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be to avoid two other kinds of imperfections—excesses and recycles.

This requires conscious and creative energy. The best questions a manager can ask are “Where did the excess energy come from that created these defects?” and “How can we keep this kind of a failure from happening again in the future since we can’t change the past or the present?”

4. Standards should be set on the tolerance of imperfections in the outcome of work and not on controlling the process for attaining these results. Process controls only deal with the functional aspects of an operation and ignore the “will” and “being” of the situation, therefore, dealing with only one third of what the people are actually experiencing. While many processes have universal application to many different situations functionally, they do not deal with the will of the situation or the being of the organization. Attempts to apply universal processes to all situations tend to get so

complicated that people are not able to use them. Many of these processes are based on the assumption that aging and basic wear and tear sources of defects are the only defects present and therefore ignore 84% of the random defects.

What not to do

1. Do not treat each initiative as if it were independent of all others.

Use defect elimination potential as the key principle in rationalizing all initiatives into one. Maximize the probability of success and minimize the risk of catastrophe.

2. Do not use internal change agents. Using outside change agents is advised to preserve the talent of employees to concentrate on the main line work – pursuing the corporate vision. Change agents will only be required for a short period of time to make the culture change and once the desired change is reached remove all change agents so that the organization can refreeze into an efficient operation of the new culture.

3. Do not focus on implementing systems. Implementation of systems to institutionalize the new culture should not take place until the correct stage of the change process. If you implement systems first, you do not have the culture to use them so the systems get perverted to accommodate the old culture, which takes an incredible amount of time and distracts the most talented people from the main work of changing the culture. Implementation is important when the work practices match the system being implemented, by this time as much as 84% of the defect generation rate has been eliminated so the job is one-sixth the size it would have been before the change.

4. Do not focus on team building. Focus on cross functional teams to deal with defect elimination on the job as a daily habit. This will create the desired teamwork and is an example of how resources can be made available by integrating initiatives.

Recommendations taken from a paper written by Winston P. Ledet “The ABC’s of Failure”

The Hatcher’s Hatch



Rio Tinto Coal Mine Australia

The people at Rio Tinto Coal Australia’s Blair Athol Mine found it very difficult to see through the rear window of their light utility vehicles due to the accumulation of dirt during a normal workday. It was necessary to have a fixed wire meshing across the windows to protect the cabin from unrestrained loads, such as shovel slings. The gaps in the wire mesh were too small for a human hand to get through to clean the window properly. The driver’s vision was severely limited especially at night with the glare from the pit lighting. It posed not only a personal injury risk, but also the possibility of equipment damage.

Because of an operator’s

persistence in bringing to everyone’s attention that this issue was “an accident waiting to happen,” the cross functional team of Clinton Thompson, Butch Woodward, Clare Foley and Ian Watson was formed from a Manufacturing Game workshop. Clinton, Butch, Clare and Ian set out to find a solution for cleaning the rear window of the light utility vehicles. Some of the important issues that were considered during the design work were the need to retain rear window protection from the tray area, a preference to utilize the change without the need for hand tools and without the introduction of additional hazards.

The Action Team came up with the perfect solution. They devised a way to include an opening they designated as “The Hatch” that would open like a gate in the wire mesh. When “The Hatch” was

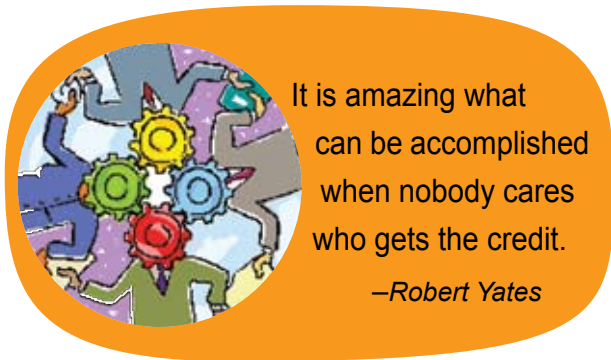
open it was possible to thoroughly clean the window. “The Hatch” was closed with a catch that didn’t require any tools, yet was secure enough to keep it safely closed during use. Materials are commercially available and fitted before delivery of the vehicles to the site. Retrofitting is also possible and will occur as necessary. This month’s TMG Safety Award goes to the Action Team of Clint, Butch, Clare, and Ian for their vision.



Utility truck with the new “Hatch”



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each. They also involved the planning section, which set up the system to raise a Maximo work order every six months, ensuring that the traps will be checked regularly and are working efficiently.

The team found this system so reliable; they have now implemented it on two other trapping systems on the site. This is a perfect example of how, by identifying a relatively small problem, taking responsibility for it and then finding a solution, reliability can be significantly increased, thereby enhancing not only the business, but also safety.

In Vaughan's own words, speaking on behalf of the team, "We don't want to come across as a bunch of swots – we're just an ordinary shift team, but the workshop gave us the opportunity, time, encouragement and impetus to work together, to look at the whole

picture and eventually, to make a real difference.

Through working on the project, we communicated much better with each other than we had done before, not just within our shift team but with colleagues in purchasing and planning too. We really wanted to succeed and through working together, each person, concentrating on their own expertise but pooling our ideas—we succeeded far beyond our initial expectations."

The team identified a saving on the first system, after the initial cost of the steam traps of £3,393(\$6,704.53) per month and after the six months this equated to a savings of £20,361(\$40,233.12). These figures have been agreed upon and the project signed off on. A huge 'first' in many successes to come out of The Manufacturing Game® Workshops.

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Public Workshop



August 7–9, 2007
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