



**DOW CORNING SUCCESS:
FIRST WAVE OF ACTION
TEAMS LEADING THE WAY**

As part of a program to increase efficiency and production, Dow Corning has been using The Manufacturing Game® at its Carrollton, Kentucky plant for almost a year. The goal is to have all employees at the plant participate in a workshop. They have run 10 games thus far, and the results have been gratifying already.

Members of a benchmark team had been impressed by the changes The Manufacturing Game® catalyzed at the Lima refinery; Dow Corning had also used an earlier version of The Manufacturing Game® at their site in Seneffe, Belgium. The benchmark team felt that The Manufacturing Game® would add another dimension to problem-solving and decision-making training by giving employees a practical, hands-on application for the new knowledge they had acquired.

The first run of The Manufacturing Game® at the Carrollton plant was in June of 2001. Dow Corning trainees for facilitating the game were certified in September, and the first Dow Corning facilitated gameplay occurred later in September. The first group of participants consisted of staff-level managers, operators, and mechanics. Additional cross-functional groups have been engaged monthly since September.

One of the more impressive Action Team successes at Dow Corning thus far has been with an Action Team consisting of Shane Brown, Larry McBurney, Tom Cook, Mike McGee, John Evans, John Gayle, Linda Davis, and Donna Burns that began work in December.

The site had been receiving raw material in disposable totes. But the disposable totes were not as simple to deal with as might be implied by the term “disposable.” These caused numerous problems:

ACHIEVING PROACTIVE MANUFACTURING

Learnings in leadership on Premcor’s journey to become a world-class refinery

Over the last two years, Premcor has embarked on a journey to transform the Port Arthur, Texas refinery into a world-class facility with Pacesetter performance. This is the second such effort for some of the leadership team who also helped to transform the Lima, Ohio plant. During the current implementation at Port Arthur and the earlier one at Lima, they have experimented and worked hard to discover what the proper role for leadership is in this sort of an effort. Over time, through trial and error, Premcor has developed a set of leadership principles that have worked well for them in achieving performance goals and creating a better place to work.

Leadership Transition

At Lima, success had come from a deep engagement of the hourly workforce in eliminating the defects that were creating reactive work. When they looked back on that experience, they recognized that their role as leaders evolved over the implementation. The key principles that they had implemented in Lima and that they hoped to take to Port Arthur were:

- 1) Site management must define a business driver.
- 2) Create a shared vision.
- 3) Engage everyone in eliminating defects.
- 4) Use mandatory participation to

get the message across to get voluntary participation later.

- 5) Create a dedicated team reporting to the site manager.
- 6) Create an environment where people can express their ideas openly and frankly.
- 7) Utilize Production/Shop floor workers as part of the leadership team.
- 8) Support people willing to take risks.
- 9) Identify a learning organization coach for the site leader.
- 10) Start with a centralized effort and move control out over time.

These 10 principles have guided Premcor’s improvement process, and the team works everyday to implement them and factor them into the things that they do. You may recognize some of these principles from our Project Approach (TMG News, Jan. 2002), but we will focus here on a couple of them that were unique to the implementation at Port Arthur. For more detailed understanding, see the full article by Jim Griffith at <http://www.manufacturinggame.com/docs/ProactivemanufacturingPremcor.doc>.

“Premcor” continued on page 2

“Dow Corning” continued on page 4

What’s Inside?

Achieving Proactive Manufacturing	1, 2, 3
Dow Corning Success: First wave of Action Teams Leading the Way	1, 4
Connecting Practices to Performance	3

Public Workshop Calendar

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

18 June 2002
PIMA's 83rd Annual International Management Conference
San Francisco, CA
For more information, visit
<http://www.pima-online.org>

8 October 2002
Productivity, Inc. 7th Annual Conference on Lean Management
Orlando, FL
For more information and registration, please visit <http://www.productivityinc.com>

Public Workshops
United Kingdom
17-18 June 2002

23-24 September 2002

25-26 November 2002
For more information about these UK workshops, contact Andrew Fraser at ACFraser1@aol.com

Other workshops for 2002 may be announced at a later date. Please check our Web site at <http://www.manufacturinggame.com> for registration details and frequent updates

Project Value Game®
Public Workshops:

21-22 August 2002
PMI Conference
Denver, CO
For more information, visit <http://www.pmi.org>

Please check the Project Value Game® Web site at <http://www.practicefields.com/pvg.html> for more information and updates.

"Premcor,"
cont'd. from pg. 1

Site management must define a business driver.

For the amount of effort and change required to implement this sort of initiative, there needs to be a clear and compelling reason to do it.

Premcor was looking at making a massive \$800 million investment in the site to allow them to partner with Mexico to process their sour crude. This investment provided them with their business need. Don Kuenzli, the new plant manager from Lima, looked at the new project and benchmark data and realized that with this investment Port Arthur could have a world-class \$4 per barrel margin even at the low point in the business cycle if the old plant and the new could both operate reliably. As a first step, Don articulated a very simple personal vision: "Become a World-Class Refinery with Pacesetter Performance." Instead of the short-term fear of shut down that was present at Lima, they had an opportunity to be one of the best refineries in the world, but with an \$800 million note to pay off.

Use mandatory participation to get the message across and get voluntary participation later.

Voluntary participation without a strong message is likely to be adopted by too few people to make a difference and can lead to all of the same old problems that came with Quality Circles in the early 1990s. The initial communication of where the site is headed, what are people's roles and what are the expectations should be the responsibility of the site leadership team who understand the goals and the process well and who strongly believe in the approach.

Premcor's goal is to inspire voluntary participation by first educating people on the path forward and their role in achieving world-class performance. The analogy is a truck representing the large organization that they wish to get moving, but it is sitting at the bottom of a steep hill that represents the lack of understanding and skepticism that has built up over the years. It can roll freely down the hill if it can just get to the top, but if it goes on its own in the beginning, it will either go nowhere or even worse, backwards.



Create a dedicated team reporting to the site manager.

One of the most difficult parts of this undertaking is getting organized and prepared to launch the magnitude of the involvement that is required. To be successful, an initiative that attempts to give everyone at the site an opportunity to get involved in defect elimination must be seen as coming from the site leadership and also the individual area and functional leaders.

Premcor put in place a person with operations background to organize proactive manufacturing sessions, the defect elimination teams and the tracking of progress. Premcor also put in place a team of facilitators made up of engineers, managers, supervisors and shop floor leaders who kept their regular jobs but were assigned part time to the defect elimination team. The facilitation team's main role is to organize, train and track defect elimination teams. This is such a daunting task it is called "cat herding" because it feels like about the same level of control.



The feeling of organizing and tracking defect elimination teams

Based on experience, Premcor believes strongly in keeping the effort centralized at first, even in a large plant like Port Arthur with over 800 personnel. Centralization ensures that the message is correct and consistent and that there is a single point of accountability.

"Premcor" continued
on page 3

Results to Date

Premcor Port Arthur’s journey to become a world-class refinery with pacesetter results is an ongoing effort. Completion of the sour crude cracking facility late last year has put the refinery in a position to be competitive in any market condition. In some areas they have met their goal of pacesetter performance, but in others they still have a way to go. Port Arthur has documented direct annual savings of over \$5 million from action team activities. The average action team has returned over \$38,000 in annual savings. According to a survey, employees believe that the organization has moved from having barriers to teamwork and infrequent use of problem solving to having effective empowerment, accountability and a widely used problem solving process.

Premcor Port Arthur has also seen increases overall in production in several units. Environmental performance has improved in terms of air releases, wastewater permit compliance, and oil spills. They have also reached near-pacesetter performance in safety for both Premcor employees and contractors.

The journey to leave the reactive approach of the past and move to world-class performance has led Premcor to focus on eliminating the defects that led to wasted time, high costs, low yield and other problems. Premcor has put the ten principles mentioned earlier together to engage their organization and to make progress in becoming a world-class refinery with pacesetter performance and a better place to work. The journey continues.

Adapted from a paper presented by Jim Griffith, Manager of Maintenance Premcor Refinery – Port Arthur, TX

**CONNECTING PRACTICES TO PERFORMANCE:
DYNAMIC BENCHMARKING**

Starting in the late 1980s and continuing today, benchmarking has been one of the key tools for evaluating and improving reliability performance. However, most benchmarks used today are a snapshot: they give a good view of what you look like today and what you could look like given best practices but they provide little insight into the cause and effect. Conventional benchmarks also suffer from an apples-to-oranges problem - managers always wonder if the plant they are being compared to is adequately similar. Today’s benchmarks don’t provide any what-if capability and many fail to capture the key benefits of greater reliability - costs related to lost opportunity and waste.

One of the earliest comprehensive benchmarks came out of DuPont in the late 1980’s. The DuPont Benchmark led to a detailed dynamic model of plant operations and reliability to better understand how the “Best of the Best” companies achieved their performance and the true cause and effect relationships. The benchmarks and subsequent model were also the starting points for The Manufacturing Game®. That model led to an important insight - eliminating sources of defects is a much higher leverage point than taking out defects more efficiently. This insight along with tools like the Manufacturing Game® to make defect elimination happen has led to dramatic improvements at DuPont and many other organizations. However, the model itself was never used directly as an analytic tool. We have worked to update and push that model further with our clients and several experts and now have a comprehensive model of reliability that provides a tool

for looking at the consequences of decisions and policies.

The model has three key components. The first is plant data much like any benchmark would have including data on work order mix, production, waste, staffing and systems. The second element, missing from conventional benchmarks, is performance differences in practices. For instance, included in the model is the difference in productivity for completing a job that has been planned and one that has not been planned. These performance differences come from data from best practice plants and from experts in the field. The final element is management policies like overtime caps, desired improvements in Maintenance Systems, headcount, and priorities of various types of work. Changes in these policies allow for what-if scenarios.

The advantage to this type of benchmark is that the impact of various practices and strategies can be easily examined. Plug in a couple more planners and more jobs get planned, productivity goes up, store room stock outs go down, and maintenance costs are lowered. Additionally, this type of benchmarking eliminates the apples-to-oranges problem because plants are no longer comparing their results to those of some other plant. Instead, they are looking at their own results with best practices.

We plan a series of articles to cover the key elements of this model over the next few newsletters. You can find out more about our Dynamic Benchmarking by looking at our white paper at <http://www.manufacturinggame.com/docs/dynamicbenchmarking.doc> or you can call us at (404) 370-3900.

Dynamic Benchmarking

Use of Model	Correlational Benchmark	Dynamic (Causal) Benchmark	Example
Help for strategy and goal setting	Shows only end states	Shows the path to get there	How many planners should I have to achieve world class results?
Focus on the key drivers	Correlation does not indicate causality.	Causality and drivers explicitly modeled.	World class producers have 20% lower costs. To achieve world class performance should we simply cut budgets by 20%?
Ability to deal with defect elimination concepts	Outside the scope of the model	The heart of the model	Which sources of defects are our biggest issues and how should we go after them?
Identify bottlenecks in the system	Variables are assumed to be independent	Models the actual dependencies between variables	Planning resources are sufficient but CMMS system does not allow for capture and use of data.
Quantify opportunity for improvement	Always has some apples to oranges issues	Models your plant with best practices	A plant that is two years newer and closer to feedstock is world class in performance. Is its better relative performance due to location and age or practices?



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TMG News

*"Dow Corning," cont'd.
from pg. 1*

storing the empty totes; keeping track of them (inventory); time spent by the environmental techs in dealing with them; having to pay for their removal – particularly if the totes weren't completely empty, in which case there was an extra fee for the disposal of the raw material. Initially, the team suggested moving the empty totes off-site for disposal; however, the savings for the company calculated out to be only approximately \$1,200 per year. And this solution would not have addressed the issue of the totes that were not completely emptied. The solution the Action Team hit upon was to have the raw material brought in by tanker and reusable tote. By getting tankers in, and by eliminating the disposable totes and replacing them with reusable totes, the Action Team eliminated a lot of hand-off work, storage/space issues, and cuts in stocks. According to Shane Brown, the monetary savings involved have topped \$100,000 thus far.

Mike Searcy, an Engineering leader at the Carrollton site and a member of the benchmarking team, participated in bringing The Manufacturing Game® to the site. Searcy reports that The Manufacturing Game®, and the changes that Action Teams are producing, have been of great benefit to the plant. "One of the most important things The Manufacturing Game® has done for us is to help the organization as a whole recognize the need for planning and scheduling work. It is also focusing the organization on defect elimination," said Mike Searcy. Thus far, The Manufacturing Game® has shown itself to be a highly effective tool for Action Teams at the Carrollton plant.

To share your company's action team successes for possible publication in future newsletters, please e-mail Mary Payne at MaryIPayne@aol.com.

