TMG News

The Manufacturing Game®

July 15, 2005

"Sharing Information to Improve Reliability"

Rewards and Recognition

From a leadership perspective we, at Ledet Enterprises, think it is important to provide proper rewards and recognition to succeed at improving organizational performance. However, we think different rewards are important in the different domains. Strangely enough, it appears that the Reactive domain has the rewards built into the work itself. When equipment breaks or won't do the job, there is a lot of satisfaction derived from the act of restoring the functionality of the equipment. There is overtime for the hourly employees who are needed to take the equipment down, restore the functionality, and get it running again. These are the typical "overtime heroes" who wrestle with the equipment and get "pats on the back" from everyone because they were able to repair the equipment and get it running again. There is innate value in restoring equipment to serve the purpose it was intended to serve. The problem with this mode of behavior is that it has many hazards associated with it. The most obvious ones being the risk of hurting people and the environment because of the chaotic way things happen in the reactive mode. While this chaos is stimulating and creates some excitement in life, it can easily become overwhelming for employees. This basic mode of operation is a fight between the equipment and people to see who will win or lose with the equipment taking the initiative.

Therefore, the motivation to go from the Reactive domain to the Planned domain is to avoid the losses, waste, and hassle of the Reactive domain. Planning behavior is basically a mode where the people impose their will on the equipment through techniques that anticipate the modes of failure and take action before the failures can happen. This mode is not innately rewarding because you can't tell if the amount of planning you are doing is enough. The outcome of perfect planning is that no failures happen, but it is impossible to know when the planning is over done because the consequence is that nothing happens. The motivation to do something disappears when the memory of the last failure fades. This causes the Planned domain to be rather cyclical where the planning is improved to the point that the failures are much smaller, and this leads to doing less planning until something happens. In organizations where planning has been successful, there are people with strong personalities pushing the planning in order to impose their will on the equipment. It is our experience that strong egos have to be fed.

Therefore, it is important to reward these people with things that will pump up their self-esteem. Some monetary reward is needed to compensate them for the overtime they are not getting but

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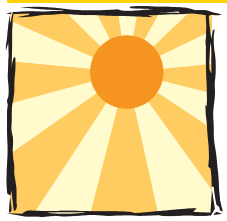

Mascot Helps to Boost the Transformation of Premcor Port Arthur

In 1995, the current Premcor facility in Port Arthur Texas, was sold by Chevron and acquired by Clark Refining & Marketing. At the time, Clark, a Midwest refiner, was not a dominant presence in its market. Clark wanted to acquire other refineries and upgrade their operations as a means of creating a public company that would increase the value of their under performing refineries. The Clark leadership team settled on a strategy that would solve several problems. They negotiated with PEMEX to supply Myan crude to the Port Arthur facility, thus giving them a stable outlet for this heavy crude in exchange for lower prices. With the guaranteed higher margins, expenditures that were not originally economically justifiable were now justified. This allowed the leadership team to secure nearly a billion dollars from various sources to install a "World Class" Coker to process the heavy crude at Port Arthur. Unfortunately, there were no more "rabbits to pull out of the financing hat" to purchase more equipment. They realized that they were going to need to rely on much of the old, deteriorating equipment. They needed a plan to improve reliability to meet the new demands that the new Coker would create for the old equipment.

Shortly thereafter, Clark decided to purchase the Lima, Ohio refinery from BP before it was scheduled for shut down in 1998. Clark executives had found out that the Lima refinery had made a great deal of progress in the previous two years and believed the refinery could be a valuable asset. With the acquisition, Don Kuenzli, who was the plant manager at the Lima facility and the leader of the transformation at Lima, joined the Clark organization. Clark

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What's Inside?

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more importantly, status must be awarded to sustain the strength of these egos. People without status can't impose their will on the equipment, or on other people who are not motivated. This is the domain where T-shirts, hats with logos, jackets, and other status symbols are so important. Of course, if you want this behavior to continue for 20 or 30 years, you have to find ways to reward people for the same amount of time. Extra T-shirts, baseball hats, etc. will not suffice as rewards, and the recognition will have to extend to promotions or other power giving status symbols. So the hazard associated with the Planned domain is it can become boring and even high status can't provide the excitement that people need to enjoy life. If the work becomes boring, people become complacent and quit doing the tedious work it takes to prevent all failures. People intuitively know that all failures are not predictable and therefore even with an infinite amount of planning you could not prevent every failure. The temptation then is to let some of the planning go until something happens. It could take quite a bit of time for something to happen to the equipment if planning has been done well over the years. In the meantime, the resources to do the planning are gone and you have to start all over again. This experience has led Dan Townsend, formerly at ARCO and Valero and now Program Director at H.B. Zackry Construction and Maintenance, to conclude that the Planned Domain is not as stable a domain as the Reactive and Precision domains and has led Vince Flynn, the leader of DuPont's Corporate Maintenance Leadership Team, to conclude that the Planned Domain is fragile. Vince said that in his experience, in general, people are not willing to keep up the systems that are necessary to stay in the Planned domain. The discipline of Master Data maintenance is the foundation for good planning, e.g. MRO Material Master Data, Bills of Materials, Preventive Maintenance Plans and Task Lists. We have seen instances where the Master Data resources are eliminated and the CMMS system data becomes inaccurate, with the result being lost productivity in the planning process. The discipline of planning deteriorates until something bad happens, like the maintenance costs reach some new unacceptable level, and the process starts all over again. The basic process is that people are imposing their will on the equipment by taking the initiative early enough to avoid failures.

The question of what rewards and recognition are necessary to get people to pursue the Improved Precision Domain is a very intriguing one. The first temptation is to conclude that creating a proper system to sustain the improved performance is the key. There are many cases to support the fact that people with great systems don't sustain the performance because of the reasons mentioned above. The second temptation is to say that it is the process that is key and rewards should be given to people for following the right process in spite of the quality of the system they have to use. It seems that the right question is, "How do you know if people are using the proper process and how would you reward them for it?" The answer seems to revolve around a point that Mihaly Csikszentmihalyi recognized in his studies at the University of Chicago and reported in his book *Flow: The Psychology of Optimal Experience*. He defines optimal experience as "those times when people report feelings of concentration and deep enjoyment". He concludes that people have these experiences when they feel that they are serving a purpose that they believe is important and right. Therefore, the rewards in the Improved Precision domain should be embedded in the work itself. In order to embed the reward in the work, the work should be designed to accomplish a purpose that the worker believes in. When we look at successful Action Teams, there are certain themes that keep recurring. Many are improvements of various kinds in lubrication, cleanliness and prevention. These are themes that can motivate people. Many people want to work in an organization that runs like "a well oiled machine" and believe that, "a stitch in time saves nine". The rewards here should come in the form of good stories that make people feel they are part of an organization that is making a difference in the world, and they are proud of that. The theme of these stories should be how certain people teamed up around some piece of equipment to serve a purpose that is dear to them, and the people took such good care of the equipment that the performance was wonderful. The processes and systems for doing this should not be the focus of the stories since creative people are able to make poor systems and processes work — that is the value that people are uniquely capable of bringing to the work place. The reward is these people will have more of "those times when they report feelings of concentration and deep enjoyment" and they can take that home with them every day.

TMG Public Workshops

Throughout the year, The Manufacturing Game® holds workshops for the general public at various universities and/or professional organizations across the country. To register or for more information, visit our web site at: www.ManufacturingGame.com

Conferences of Interest

13th Annual SMRP Conference
October 23 – 26 , 2005
St. Louis, MO

To register or for more information visit: www.smrp.org or call (800) 950-7354

International Maintenance Conference (IMC)
December 6 – 8, 2005
Tampa, Florida

To register or for more information visit: www.maintenanceconference.com or call (239) 985-0317

Mark Your Calendars!

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offered Don the position of Plant Manager at the Port Arthur facility to lead the transformation there. In July of 1999, all of the Clark Refineries changed their names to Premcor Refining Group, Inc.

When Don arrived at Port Arthur and surveyed the state of the facility, he concluded that it had great potential, especially with the Heavy Oil Upgrading Project, HOUP. It was obvious that reliability would have to be improved at the site to match the demands of the new Coker. He began to talk about a vision he believed should be pursued by the site. His vision was to create "A World Class Facility with Pacesetter Performance." He pointed out that potential margins from the World Class Coker could only be fully achieved from Pacesetter Performance.

To support Don's new vision, he introduced the Proactive Manufacturing initiative that had been used at Lima and began the process by running Manufacturing Game® workshops to introduce employees to the idea of defect elimination and the use of Action Teams as the means of engaging employees in performance improvement. This program started the engagement of front line workers and a continuous improvement forum was begun as a leadership process to support the teams that were eliminating defects. Don recruited Marc Schomerus who was very well respected throughout the refinery, and also open to change to help in this effort. They later attracted Jim Griffith, who had been the Maintenance Manager at Lima, to join the organization and be the Maintenance Manager at Port Arthur. Other key players in the improvement effort were Keith Mullins, Nat Byrom and Billy Job, among others who conducted the facilitation of the Manufacturing Game® workshops for the entire site. Eventually, every person at the refinery had the opportunity to attend a TMG workshop and employees became engaged, to varying degrees, in eliminating defects as the means to creating Pacesetter Performance. George Roth, a consultant, set up a new program on Productive Conversations to develop individual and organizational learning. Later Natural Work Teams were introduced as a means to take the continuous improvement forum idea down to the work areas.

In the beginning of the transformation, Don was met with some skepticism that the entire site would adopt his vision. Some viewed it as the initiative of the month for the new manager and believed that, in time, it would fall by the wayside. Others outside the facilitator team thought the vision was naïve and that there were other approaches that should be used to better train employees. There was also some concern that the union would not go along or participate.

Another obstacle the team faced was availability of funds. The Heavy Oil Upgrading Project, HOUP, needed large sums of borrowed money to fund the construction. This severely limited the availability of funds for other improvements like the defect elimination program. The company sold off the retail portion of the business to raise more funds in order to survive until the new facilities were ready to come on line. Not only was the survival of the refinery at stake, but the survival of the company was also in jeopardy. As the Manufacturing Game® workshops continued, people asked why money was being spent on the workshops when costs were being cut everywhere else. Don was steadfast in his belief that the workshops had to continue. The TMG workshop Action Teams were getting good results, but there was still a lot of other work to be done.

In preparation for the startup of the new Coker, Marc Schomerus was put in charge of operations for the new units and he began by assigning head operators and an operations supervisor to the project a year before the startup so they could begin the culture change in the operating people. They worked to have a committed and involved workforce by encouraging employees to be open and honest and to ask questions like "what", "why" and "how" when something went wrong instead of looking for someone to blame. They also studied an explosion incident report from another refinery that showed that the only way to avoid such incidents was to empower the operators to shut down equipment when it was not safe to run. They took the operators and some of

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Luzenac Rolls Out TMG Workshops

The Manufacturing Games were rolled out at the Houston Mill in September of 2004. Every employee at the mill participated in the game and the Action Team concept presented at the game is paying big dividends for the entire mill. Employees have the authority to organize their own self managed work teams to research and solve issues they face during their work day.

To date, over 25 projects have been completed by the employees, and they are becoming familiar with areas of the business with which they normally do not have the opportunity to interact. For instance, one recent project required the use of contract labor. The employees on the Action Team were subjected to Luzenac's rigid Contractor Management System. This provided them with an understanding of a major component of Safety Management System. Ben Padgett, Lead Warehouseman states that, "These type of work teams allow us to fix nagging problems that are easy to fix, but haven't been addressed in the past. It's nice to know our limitations and budgets prior to beginning a project. We now have more respect for the other departments we work with because we must work together to fix the problem." Most problem solving teams focus their efforts on safety and quality; however, maintenance, production and environmental projects are also popular.

The overall reception of the Manufacturing Games was very high, and they are scheduled to be rolled out at other Luzenac sites in 2005. The Action Team concept requires cooperation, respect and trust among all the participants and management commitment is a must. The Houston Mill is successfully moving forward with the program.

Ben Padgett, Bobby Hinton, and Owen Johnson (l to r) showcase their Action Team's solution to a barricading problem. This solution involved researching, purchasing, and installing a retractable barricade system for a high traffic fork lift area.

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"There are no secrets to success. It is the result of preparation, hard work, and learning from failure."
—Colin Powell

Summer

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the mechanics on benchmark trips to see other plants that were achieving higher performance and had programs in place to achieve worker participation in making decisions.

Marc Schomerus and Jim Griffith recognized that it was too expensive to eliminate every defect in the new equipment before it was installed, so they decided to back their supervisor who wanted to set up a new program to take all new rotating equipment down for an inspection every 45 days. This program was called Preventive Maintenance and became the hallmark of the new culture. It demonstrated that the management team was serious about the new philosophy of doing things right to prevent repetitive failures instead of the 1994 policy of running the equipment at all cost and getting the maximum production on a daily basis instead of taking care of the equipment so that you produced at higher levels in the long run. This endorsement of the Preventive Maintenance program migrated to other units in the facility.

Old work practices were gradually left behind and the new philosophy was taking root. One of the visible signs of the culture change was the creation of Boris, the new refinery mascot; a blue green bug with a yellow tooth sitting in a circle with a line through it quoting "DO IT RIGHT! DON'T LET THE BUG BITE." Boris started gracing shirts and Nomex uniforms, and every one who participated in a TMG workshop received one of the embroidered patches and displayed them as a symbol of defect elimination. Managers wore Boris on their shirts every single day. Boris was showing up everywhere; on posters, walls, clothing, memos and handbooks.

The benefits realized by this culture change were enormous in the first several years. The goal was set at $41 million improvement in operating profit and that was surpassed even before the large increase in the profit margins because of increased gasoline prices. The larger benefits are accruing now in the midst of much higher margins. Because of high reliability, record margins are being produced. This would not be the case if their performance were as poor as it had been in 1994. The new culture seems also to have carried over into the turnaround activities and the new expansion projects being installed. This has allowed the refinery to continue to grow and to attract more investments to ensure the future of the plant. It took a lot of hard work, courage, innovation, and a little help from Boris, the mascot bug logo symbolizing the defect elimination effort, to change the culture at the refinery. Now the hard won improvements have become the habitual way of doing business at the refinery. The emblem of Boris is worn on the shirts of every manager every day at the site. Each person who attended a workshop wears a Boris patch on his or her work uniform. This has become a constant reminder that elimination of the defects (bugs) is essential to maintain pacesetter performance. They can now boast that they are a World Class facility with Pacesetter Performance.