TMG News

The Manufacturing Game®

January 15, 2013

"Sharing Information to Improve Reliability"

Where There is a Will, There is a Way

By Winston P. Ledet

The manager's job is to find the "will" to pursue the values that the organization expects to realize in order to serve its purpose. This is distinct from his/her leadership role which is to get the people in the organization to come together to apply their energy to a path that will lead to this realization of value.

"Will" is a difficult concept to understand. John Bennett said that "will" is a power that directs energy and activity but is different from either. He went on to say that "will" is the voluntary putting of yourself under a set of laws. There are three powers attributable to will. The primary power of will is attention. The two others are the power of choice and the power of decision. These powers can be used to direct action but are not the action itself. Therefore the main role of managers is to exercise their power to specify what to pay attention to, how to choose, and how to make decisions. The distinction between choice and decision is a manager chooses between alternatives, while decisions require the generation of alternatives to choose from. Only when these powers are exercised voluntarily are they "acts of will." Therefore, the exercise of these powers derives from understanding relationships and the laws that govern those relationships.

In order to see how to relate these concepts to an actual value, let me describe how the value of employees' safety was instilled in me fifty years ago when I joined E. I. DuPont de Nemours. DuPont had a strong culture of safety that evolved over 100 years of experience and four generations of DuPont family employees. A number of family members working at their gun powder mills were killed in explosions. This was probably the origin of the company's focus on safety.

I grew up on a farm with tractors, trucks, plows, and other dangerous machines to operate and a father who was missing a couple of fingers from spending his whole life farming. I pretty much assumed that the working world was a dangerous place, and you just needed to be lucky to avoid personal injuries. When I went to college, I worked two summers at a steel fabrication yard that had 600 employees including one of my uncles who also had fingers missing. His advice to me was to avoid doing work that I thought was too dangerous. He said that the management of that steel yard did not take responsibility for personal injuries and that the Safety Man's main job was to take photos of the injuries that did occur. In the two summers I worked there, three people were killed in that steel yard including the person who took my welder's helper job when I went

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Falling Ice Not Nice!

After attending a Continuous Improvement Game workshop, Ian Cole, Eric Simpson, Hunter Edin, David Attla, and Josh Adams created an action team and chose to tackle a defect that was a well-known hazard to North Slope employees, contractors, and visitors alike.

Because of freezing conditions on the North Slope, hanging ice—when it eventually fell, was a potentially dangerous situation for anyone unlucky enough to be walking or working below.

Although the idea of eliminating this defect was brought to light in the CI Game workshop, many employees were already aware of the potential hazards and instantly jumped in to contribute to a much needed solution.

The project took on a life of its own. Everyone got involved because they were enthusiastic about solving the problem. They requested help from the Engineering department to design a device to stop ice from falling. Engineering readily agreed and their work paid off when they designed and created a prototype for a new safety device they called an "Ice Deflector." The team identified key areas most affected, and based on those observations they then worked to fine-tune the design and create them on a mass scale. They are now being installed in those much needed areas all over the field.

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What's Inside?

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 Workshops

Reliability 2.0 Manfacturing Game Workshop
South Point Resort Las Vegas, NV
April 12, 2013
For more information or to register visit
www.MaintenanceConference.com
or call (888) 575-1245

2-day Manufacturing Game Workshop at San Jacinto College
April 16–17, 2013
Pasadena Campus, TX
Contact Sara Malloy at 281.991.2644
or sara.malloy@sjcd.edu
For more information see page 4

Conferences of Interest

RELIABILITY 2.0 Las Vegas

Reliability 2.0
South Point Resort
Las Vegas, NV
April 8–12, 2013
For more information or to register visit
www.MaintenanceConference.com
or call (888) 575-1245

AFPM American Fuel & Petrochemical Manufacturers The new NPRA

Reliability & Maintenance Conference
Orlando World Center Marriott
Orlando,FL
May 21–24, 2013
For more information or to register visit:
www.afpm.org

Mark Your Calendar!

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back to school the first year. He was electrocuted while plugging in a welding machine that had broken insulation on the plug. This further reinforced my mistaken belief that luck played a major role in being safe.

When I started with DuPont, I was working in a semi-works doing research on polyethylene and was assigned to rotating shift work with two laboratory analysts reporting to me as operators of the semi-works. In my third week on the job, I was putting a Swagelok fitting together when it slipped out of my hand and cut my lip. The two analysts who worked for me immediately said, "Boy, you are in a lot of trouble now." I said that it was just a small cut and didn't matter. They sat me down and made me fill out a minor injury report which I discovered was the standard at all DuPont plants. Later in that week we had a couple more minor injuries and the plant manager of the site that employed 1,900 employees plus a couple hundred contractors, showed up at our unit and took a tour around the small facility. He told us to shut it down and that we could not run it again until it looked like a DuPont plant. We were shut down for thirty days correcting the installation to meet DuPont standards. I learned a lot about safety standards in that month, but more importantly, I learned how to be a participant in a safety culture by willingly obeying the safety standards that DuPont had developed over 100 years.

My next indoctrination into the safety culture came about five years later when I had been promoted to manager of a small engineering support group for a polyethylene unit that operated at 20,000 pounds per square inch pressure in a vessel that had three foot thick walls to contain that pressure, and the reaction took place in eight seconds. I came into work one morning and the whole unit was shut down. I asked why and was told that the supervisor had shut the unit down because the maintenance people had not repaired the public address system in the compressor building. I asked the supervisor why such a small thing caused him to shut down the whole plant. He said that it was not safe to operate the huge compressors without a way to communicate from the control room to the people operating the compressors. We only had a few radios back then so the public address system was used to give instructions.

I thought the supervisor would be severely reprimanded for this shut-down because when the pressure was released this put a lot of strain in the equipment and could cause damage. However, no one said a cross word to the supervisor. This reinforced my earlier experience and helped me understand how important it was to shut down operations when they were not safe.

Thirteen years later, I had become the operations superintendent for a unit which produced intermediates for nylon production. One of the units in my area was a cyclohexane oxidation reactor. This huge reactor was filled with cyclohexane, which is similar to gasoline, and if released to atmospheric pressure was above the boiling point and would immediately vaporize into a cloud that could explode. About five years earlier, a similar unit in Flixborough, England, operated by another company, had a disastrous explosion when an expansion joint ruptured and released a huge cloud of cyclohexane in the air that was ignited by a flame in the area. Twenty-eight people were killed in that explosion.

Because of the Flixborough incident we had very strict policies to avoid having a flame in this area of our plant and were very concerned about any leaks of cyclohexane. We went even further and did not allow any spark producing operations in this area without completely removing all of the flammable liquids from the reactor which took almost a whole day.

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We began having some small leaks on our distillation columns that were generated by chloride stress corrosion cracking of our stainless steel vessels and pipes under the insulation. When we had these leaks, we had to remove all of the flammable liquids and then repair the leaks by welding up the cracks. The cracks had developed over twenty-five years because of the magic markers used in construction to identify the equipment before it was installed. The markers, we learned later, contained some chloride compounds. Because of the time it took for these cracks to appear, we were not concerned about a sudden rupture of any pipe, but I was concerned about creating bad habits in the unit and concerned that one day someone would decide to try to repair a small leak by welding in spite of our strict rules. I was concerned about losing the safety culture because of all the work it took to repair one leak at a time.

We put a plan together and started to build up some inventory of the final product and let the maintenance people know that the next time we had a leak; we wanted to go through the whole unit and fix all the cracking. According to the plan, the next time there was a small leak, we had maintenance take the insulation off all vessels and pipes in the unit and inspect for chloride cracking. We found a huge amount of cracking throughout the unit and decided to replace four distillation columns and the associated piping. The columns were about ten feet in diameter and forty to sixty feet tall. Our maintenance people ordered new ones from a contractor firm and began changing out the piping and removed the columns to allow for the replacements.

I personally knew this was the right thing to do, but I knew that my boss at the time would not take the heat from management at headquarters. To avoid a compromise, I decided to take two weeks of vacation, which I had already delayed for a couple of years. I left town after instructing the people who reported to me that they did not have my permission to run this unit until I returned. Of course, this was before cell phones and internet so no one could get in touch with me to reverse my decision. The maintenance people did a marvelous job of getting those columns built and replaced in the allotted two weeks. They were pretty mad at me but understood that I was reinforcing a culture. They did this without taking safety risks, and we were able to supply all the product our customers needed because we had approached this work in the same manner that we prepared for a turn-around. We stocked up product, made specific plans based on the contingencies we recognized and staged materials that we might need to accomplish the task in two weeks.

The payoff for me was a couple of months after the replacement of the columns, one of our operators found a small leak in a pipe that was 140 feet in the air and the nearest platform was forty feet away. The leak was not chloride stress cracking but a bad weld from years before. The leak was so small we had to die check the pipe to find it. This was the kind of diligence we wanted in this unit. Every time I walked into that unit, I made myself visualize twenty-eight bodies that could have been laying out there if we had an incident like the one in Flixborough. That is the price we pay if we do not exercise our power and pay the right attention, or make the right choices, and decisions. I still remember the plant manager and supervisor quite vividly who helped me to have the courage to shut things down when they are not safe by the examples that they set. A statement made repeatedly by one of my bosses was, "Safety requires meticulous attention to detail." Culture comes with a price to pay with "acts of will" but where there is a will, there is a way.

"Sir, What is the secret of your success?" a reporter asked a company president.
"Two words."
"And, sir, what are they?"
"Good decisions."
"And how do you make good decisions?"
"One word."
"And sir, what is that?"
"Experience."
"And how do you get Experience?"
"By making bad decisions within simulations rather than in the real world."
—Unknown author

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This dangerous slope-wide defect was effectively and efficiently eliminated with a minimum of funds and people resources, all due to the action team bringing to light this potentially hazardous defect.

Although everyone was previously aware of this hazard, it took one small group to actually verbalize the need for a solution to make it happen. By bringing the problem to light, the action team was able to jump-start a fast and effective result by inspiring everyone to get involved. It took teamwork to inspire, design, create, and then install these potentially life-saving devices throughout the North Slope, and that's what team work is all about!

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Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishment toward organizational objectives. It is the fuel that allows common people to attain uncommon results.

– Frank Crane

TMG News

Two Opportunities to Attend Manufacturing Game Public Workshops this Spring

The Manufacturing Game® is a hands on learning experience that creates a reliability culture. Participants will experience how they can increase their organization's reliability through defect elimination and cross functional work, become more proactive and increase business performance.

This is the perfect opportunity to see how you can reinforce and improve your company's reliability initiatives.

It gives participants a chance to share their experiences with others. New and experienced employees get an overall view of their manufacturing, refining, and mining industries, etc. The simulation and workshop allows participants to see the whole system at one time and not just the function in which they work. Because the simulation collapses time, participants experience how the actions of one area impact the functions of another in a short period of time.

San Jacinto College

The Manufacturing Game® workshop at San Jacinto College in Pasadena, TX April 16–17, 2013 is the full 2-day session normally run onsite for various industries. This session is designed for small industries that cannot release 24 or 36 people at a time to attend a workshop or larger companies who would like to see how The Manufacturing Game® can aid them in engaging their workforce to eliminate defects as a part of their daily work and improve employee participation in the reliability initiatives.

For more information contact Sara Malloy at San Jacinto College sara.malloy@sjcd.edu 281.991.2644 or to register https://www.sos.sjcd.edu/flexibleregistration/index.jsp?frc=100 and search for The Manufacturing Game.

Reliability 2.0

A Manufacturing Game Public Workshop is coming to the South Point Resort and Casino in Las Vegas, Nevada during the Reliability 2.0 Conference on Friday, April 12, 2013 from 8 a.m. through 3:30 p.m. Call (888) 575-1245 or visit www.maintenanceconference.com for more information or to register.