



Pump 9583 Can't Keep It's Cool!

The defects that had infested Pump 9583 were creating chaos at the Motiva, Port Arthur site. This pump's average run time was very short. It had two ground level vapor releases that fortunately only caused two LOPC's but could have led to bigger safety problems. The pump cost the site over \$180,000 in maintenance costs in a year, and about 10,000 barrels of output. The production team spent about 3,000 man-hours in 2007 dedicated to trying to cope with these defects—besides the obvious time to OK and repair. Operators had to do extra monitoring of the spare pump. Operators, OMC's, planners, schedulers, engineers and management were spending time troubleshooting and rescheduling other work to keep this pump working. Since so much time was being consumed by these defects, other more satisfying work was not being performed.

It is no surprise that Kevin Gilliam, Billy Werner, Jeff Watkins, Jim Monnot, and Chris Riche' from Flowserve, had been working to eliminate some of the defects by putting the pump in 'like new' condition, however they were not happy with the speed of the progress they had made. What was surprising was that the same pump at four other refineries was also having similar problems. They believed the root cause was a marginal seal cooling that would require two significant changes—a new seal design and a new seal flush cooling system. The new seal design featured greater cooling water flow. The cooling system was 'off the shelf' technology. The combination of a new seal and cooler would drastically improve the cooling capacity. The team ran into their next obstacle, which

Cross Functional Teams + Defect Elimination = Effective Networks

As most of you know we are as dedicated to the concept of cross functional teams as we are to defect elimination. Not only do cross functional teams and defect elimination go hand in hand they actually form a synergy that makes the whole greater than either of the parts. By combining the two we have seen amazing things happen. When an organization makes a decision to actively pursue defect elimination and are unable to take a cross functional approach (for various reasons), they can achieve limited successes for a period of time but rarely get the huge benefits that are possible, and typically the results are not sustainable. Not only is it important to involve operations people, engineers and internal subject matter experts on these cross functional teams...it is also imperative to involve materials procurement people and in some cases even the manufacturer or vendor. An example of recruiting a manufacturer can be seen in this issue's Action Team Story *Pump 9583 Can't Keep It's Cool* where the representative from Flowserve helped with the pump seal redesign. It is only by taking this cross functional approach to the work that networks between functions begin to form making the process of defect elimination possible.

We have been advocates for this synergistic approach for a long time, but we find that it is important for

people to discover it for themselves. Below are a few quotes from people that we have worked with at various locations who have made this discovery and put it into their own words:

- “Brainstorming with a group causes the light bulb to come on! It seems like such a simple solution now. I'm wondering why I didn't think of that.”
- “It's amazing what you can get done if you have a small focus group with the right people dedicated to the cause.”
- “Sometimes you need to bring in a new set of eyes to give insight to a problem.”

When people are on a cross functional Action Team focusing on a defect they intend to eliminate they begin to recognize that this is a new way of working, and as they embrace this experience and the ensuing results, they become advocates themselves for this approach.

One of the benefits that evolves from cross functional teams becoming defect eliminators is the network connections that begin to grow. If you have an organization that operates mostly in silos there are connections between individuals within those silos but very few connections to other groups. The connections between these groups tend to exist only with a few people, usually supervisors. This creates the bottle necks that

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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

The Manufacturing Game® will be holding a Public Workshop at the IMC Conference December 8, 2008 for information see IMC Conference below

Conferences of Interest



MinExpo 2008

Las Vegas, NV
September 22-24, 2008

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



SMRP 16th Annual Conference

October 20-23, 2008
Cleveland, OH

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



22nd Annual International Maintenance Conference (IMC)

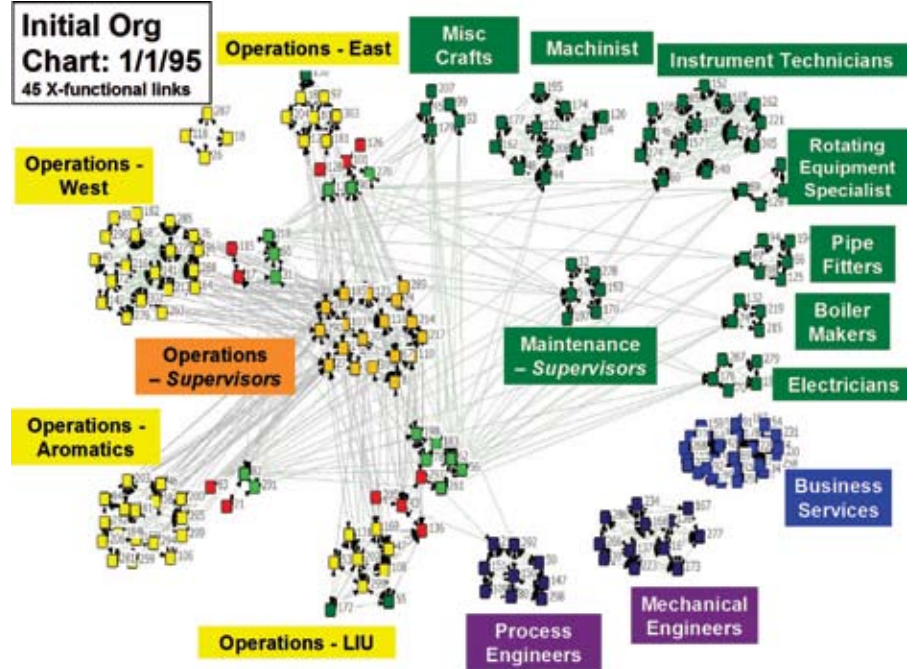
Bonita Springs, Florida
December 8-11, 2008

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

Mark Your Calendar!



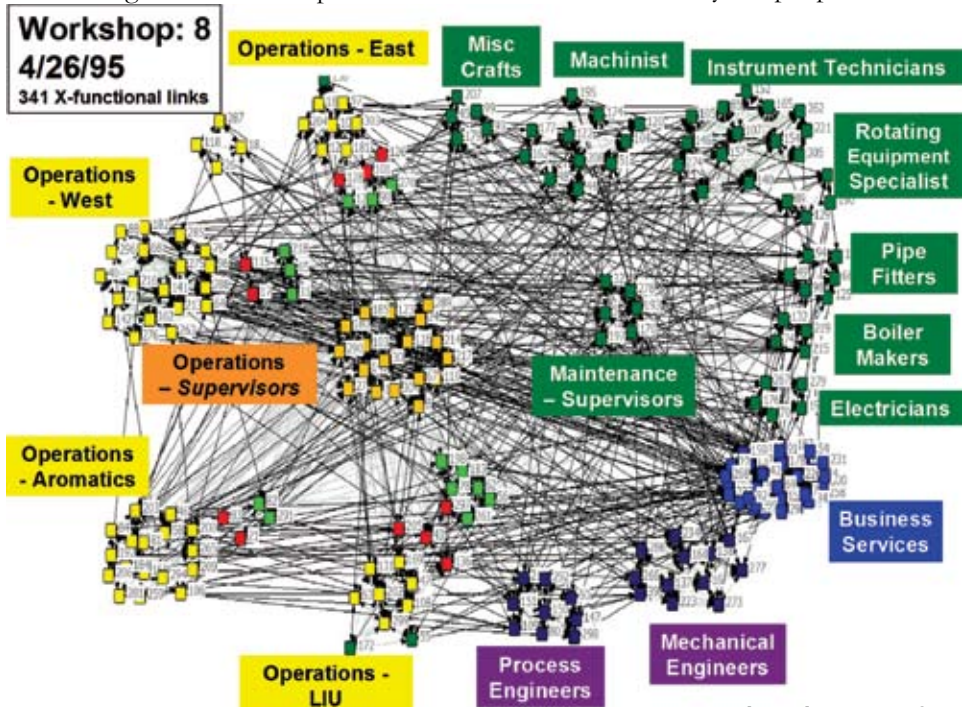
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keep the organization in the reactive mode since all attempts to work cross functionally must go through the few individuals with connections to the other groups. The above figure demonstrates this clearly. This agent based model shows a real organization that we worked with where working in silos was the norm. At the time we began working with them there were 454 employees. The above diagram depicts 225 of those employees with only 45 cross functional connections. After a three month period of conducting TMG workshops and

launching on-the-job cross functional Action Teams pursuing specific defects to eliminate, the model of the network connections that existed looks like the second figure below.

As you can see the number of cross functional connections that now exists among the 225 people depicted has jumped up tremendously (from 45 to 341). The important thing to notice here is the large number of connections between individuals from each of the functions to individuals in other functions. The bottlenecks that existed, because only the people with



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the connections to other functions could initiate or promote eliminating defects through cross functional work, have now been eliminated. Once individuals had multiple connections outside of their own function, they could work directly with others without having to burden one person with the heavy load of having to initiate everything. People started working cross functionally and networks began to evolve with others outside of their function. As they began to know and trust these people in other areas they began to realize that they could be proactive in identifying an on going defect and recruiting others who worked with this same equipment or area to help them in solving the problem the defect was causing. Everyone became more productive and the networks that were formed had the work as a centerpiece. We think this dense network of cross functional connections is the basic reason that this site has sustained such phenomenal performance over the last 14 years.

Belief Is All You Need

A man was lost while driving through the country. As he tried to read a map, he accidentally drove off the road into a ditch. Though he wasn't injured, his car was stuck deep in the mud. So the man walked to a nearby farm to ask for help.

"Warwick can get you out of that ditch," said the farmer, pointing to an old mule standing in a field. The man looked at the haggard mule and looked at the farmer who just stood there repeating, "Yep, old Warwick can do the job." The man figured he had nothing to lose. The two men and Warwick made their way to the ditch.

The farmer hitched the mule to the car. With a snap of the reins he shouted, "Pull, Fred! Pull, Jack! Pull, Ted! Pull, Warwick!" and the mule pulled the car from the ditch with very little effort.

The man was amazed. He thanked the farmer, patted the mule and asked, "Why did you call out all of those names before you called Warwick?"

The man grinned and said, "Old Warwick is just about blind. As long as he believes he's part of a team, he doesn't mind pulling."



*Adapted from Some Folks Feel the Rain
...Others Just Get Wet
James W. Moore
Dimensions*



Keep the Power Coming — Continuing Defect Elimination

The process control lab at the Motiva Refinery in Port Arthur averages just over 800 samples per day. Timely results from the samples sent to the product control lab are vital to the operations of the refinery. 12% of those samples (about 100) are analyzed by just one machine – the new Axios X-ray spectrometer. With so much riding on just one machine, it has to be reliable 24 hours a day, 7 days a week. The biggest risk to the reliability of this spectrometer is the loss of power, because the loss of electrical power could destroy the X-ray tube. Last year there was a power outage causing the X-ray tube in the old spectrometer to fail at a cost of \$15,000 (the replacement tube on the new spectrometer costs \$30,000). During the 24 hours it

took to get the machine running again, many of those 100 samples were not run at all and the results from the remaining samples took significantly longer to get back.

Fresh off their last successful Action Team that eliminated the defect caused by poor lighting between the main office building and the production control lab, Bridget Russell and Linda Mouton decided to form another on-the-job Action Team to eliminate the possibility of an unreliable power supply by installing an uninterruptible power supply or UPS. They recruited Barry Evans, Brian Hicks and Dirk Bader to work along with them.

Like all good teams, everyone participated. Dirk secured maintenance support for the Action Team and received assurance that

a maintenance supervisor would participate. When Bridget called the team together to develop their action plan, Brian Hicks volunteered to take the supervisor's place since he felt responsible to eliminate defects in the lab. Barry made sure the parts required were on site. The only obstacle they encountered was scheduling Brian's time and Linda easily handled that. Brian quickly installed the UPS.

Upon reflecting on their success, Barry, Bridget, and Dirk agreed, "A team works great as long as at least two people care enough to take action. That's how defects can be removed." Brian wanted to communicate the importance and value of taking ownership when eliminating defects.



You are the key to making a difference



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*Be the light that others can
come to with their ideas,
visions and dreams. Never
doubt that blending your
talents with those of others
can change the world.*
—Anonymous

Summer

TMG News

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was to authorize the necessary funds to make the changes. Cliff Faulk, Nikole Jenkins, Johnny Bob Briggs, and Michael Sleeper joined up with Kevin and his team as their on-the-job Action Team. The combined Action Team members stepped up to insure that nothing would slow them down. Flowserve did their part by only charging for part of the seal redesign and the new team members were able to get authorization for the rest of the funds needed. It was necessary to keep the pump down for a few weeks while waiting for the new seal and cooler. Because of its critical service and the significant risk to the Cat Cracker conventional wisdom would have been to minimize the risk by simply repairing the pump, which would have only take a few days. However, the team felt it important enough to do the job right and within three weeks of their first meeting, the changes were made in the field.

Since the risk of failure was so

high in the past, it not only caused the Action Team a lot of distress, but other operating areas and business planning personnel spent a significant amount of time and attention developing contingency plans. Cliff said, "We can all breathe easier." Kevin said that now he could spend his time working on other "bugs" that are chewing up people's time and attention.

Johnny Bob has been saying for some time that one of the biggest problems the site faces is too many emergency and schedule breaker work orders (E's & B's) which pushes back work that ultimately cause E & B work orders in the future. When asked how he felt about eliminating the emergency work orders due to pump 9583, his eyes twinkled and he said, "a new set of eyes gives insight to recurring, persistent defects. We are off to a good start in defect elimination." That is just one way that working as a cross functional Action Team helped the people at Motiva keep their cool!

Winston P. Ledet Keynote Speaker at RCM/EAM Forum

Winston P. Ledet principal and



co-developer of The Manufacturing Game® was the keynote speaker at the RCM/EAM Forum in Las Vegas, Nevada on

March 19, 2008. His presentation about the "ABC's of Failure—Getting Rid of the Noise in Your System" was well received by all. The realization that only 4% of the failures are caused by Aging, 12% by Basic Wear and Tear and that 84% of the equipment failures were caused by Careless-ness (not taking reasonable care of your equipment, by eliminating the defects before they become a source of major breakdowns) opened the eyes of many of the attendees. To read about Winston's paper on the ABC's of Failure refer to the April 2008 issue of the TMG News available on www.mfg-game.com website.