



Solutions

THE SOCIETY BY PRACTITIONERS FOR PRACTITIONERS

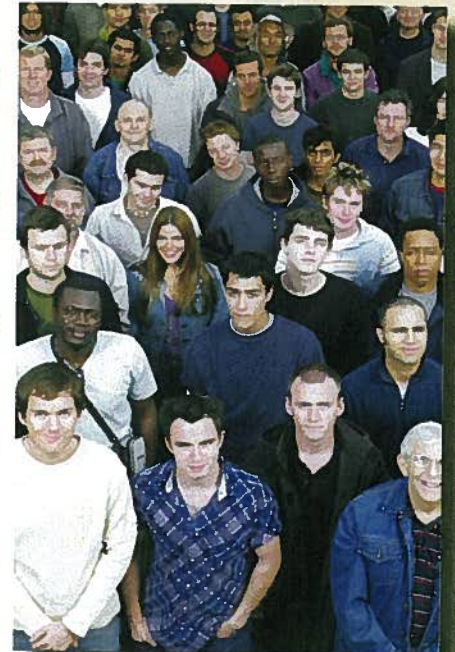
INSIDE

- Page 2**
 - Officers & Directors
 - Chairman's Letter
- Page 9**
 - Conference Highlights
- Page 12**
 - Body of Knowledge
- Page 15**
 - New SMRP (SEVA) Chapter
- Page 16**
 - ANSI audits CMRP Certification Program
- Page 17**
 - From the Exam Team
- Page 18**
 - SMRPCO Sustaining Sponsors
- Page 19**
 - New CMRP's
- Page 22**
 - New Executive Members
- Page 24**
 - New Individual Members
- Page 29**
 - SMRP Staff
- Page 30**
 - SMRP Call for Volunteers
- Page 31**
 - New SMRP Staff

■ Reliability Isn't Just About the Machines

Developing Your Other Assets... THE PEOPLE

By *Shon E. Isenhour, CMRP*
Business Consultant
ABB Reliability Services
shon.isenhour@us.abb.com



In the economic storm that is raging through the manufacturing sector every dime has become exponentially more important to the bottom line. In these times it seems that one of the first places we go to cut our budgets is training and development. In this article we will discuss ways to make the best use of the training dollars that we keep, and how to begin the paradigm shift that must happen for us to keep training in the forefront and propel us to the next level in the maintenance and reliability realm.

Key points will include:

- Identifying your training needs
- Determining how you can get the training you need with the budget you have (in this section we will discuss

free and reduced price training and what it can do for you)

- Making training contagious
- Sustaining your efforts for more than a week...

Along the way we will discuss real life examples that have shaped my opinion of training and how a cookie cutter approach is destined for failure.

The background

With all the various maintenance training opportunities and our limited budgets, how do we insure it is a worthy investment of our time and money? The following information was devel-

Continued on page.4

■ Reliability Isn't Just About the Machines...

Continued from Page 1

oped as a result of research to formulate a training strategy for plants of various sizes within a business unit. Some of the plants consisted of as few as two maintenance craft-people or as many as forty-five, so obviously each shared different challenges but the same goal. It became apparent very quickly that there was no silver bullet or a cookie cutter approach that addressed all the issues within each facility. The budget, time, management commitment, employee interest, morale and other factors dictate each facility's needs. The following is the process I used as well as the options I considered during my research and the experiences that were gained during implementation.

Accept it, we have training weaknesses...

How much training do you provide per year per maintenance employee? Most of us can say not enough, quite easily, but just in case you are not sure, a world-class facility is said to do more than 40 hours of training per employee (maintenance and operations) per year. It has been estimated that one should spend one thousand four hundred dollars per maintenance supervisor per year for training and development. The Department of Education funded a survey with the Bureau of Census to understand how training impacts productivity. In this study they discovered that increasing one's educational level by 10% increases productivity by 8.6%. This was the largest productivity improvement of any of the motivators considered.

One piece of training programs that is very important and often forgotten is refresher training. Training that is not refreshed at least biannually is forgotten and ineffective. According to a recent study 70 percent of all equipment failures are self-induced. This could include equipment that is damaged by neglect and abuse or improper operation and maintenance. Keith Mobley stated in *Plant Services Magazine* that 17 percent of all reliability problems can be attributed to improper maintenance. Improper maintenance stems from a few critical areas. The major players in the game tend to be lack of understanding of the effects of production changes, lack of expectations from supervision, lack of proper tools and standard processes and lastly, lack of training in developed processes, procedures and core skills. By implementing a basic training program it is possible to address the lack of training and see substantial improvements in maintenance cost and downtime, which as we all know adds the money to the bottom line.

Hunt our weaknesses down

Once you admit that you have a problem, the next step is to really identify what areas it is affecting. This is crucial for identifying the skills that are less than adequate, justifying the expenses of a training program and building a business case. As part of this needs analysis you need to look for data that is repeatable and collected consistently. One should not be overly concerned with the accuracy of the data because realistically most of us are not world class and will spend more time concentrating on the trends than the individual points. A CMMS system is obviously an excellent source of data but it should not be the only source. Working with the other departments to get purchasing reports, quality, and operational reports works exceptionally well. It will provide you with indications of problems that warrant extra investigation. It also begins to build connections with the other parts of the organization by showing that you share a common goal, common problems, and common data to identify solutions. This will build buy in and support for when you need it later. Once you get the data, don't concentrate too much on the exact numbers, look for the trends and repeat offenders. What failures affect your critical or bottleneck equipment? Once you have identified the failures that account for most downtime or overall cost then identify root causes. Some of these root causes will point back to skill deficiencies. These become your business case for training and development, a must in a world of bean counters and budget cuts. I suspect that if your facilities are like mine you will find root causes that can be directly related to the following training issues: bearing installation, shaft alignment, bolt looseness, belt installation, part misapplication and lubrication. These have historically shown up in root cause investigations and will be addressed in the next sections.

The next part of the training plan of attack is to begin to define each of the jobs and positions within your maintenance organization by performing a job task analysis. There are multiple ways to complete this step. The most economical seems to be a team format with the people it affects as part of the team. The team of subject matter experts will build the list or pick the task from a task database and try to determine frequency and difficulty as well as how crucial the task is to the reliability of the equipment. Another possibility is to observe a craftsman noting every task completed



day after day, asking questions, and building a task list from these observations and conversations. This can be a very expensive way of collecting the data and thus is not preferred. These processes help to identify all the facets of the job as well as building more buy in

for the whole training process. People enjoy talking about what they do and we, as supervisors, do not always know all the intricacies of the job they perform. As all of the skills for each position become more defined, we can then begin to understand who needs what on our developmental training matrix.

The next step in the process is to assess the skills of the crafts; this can be done with job performance appraisals if direct, consistent, unbiased information is available. Most of the time, however, this information is not the most effective or accurate way to populate the training matrix. Two other options to accomplishing this task are the written and computer based test. These tests can be developed in house for your specific equipment, providing the most accurate measure of applicable skills at a much higher cost, or these can be purchased through various training and testing vendors. Once you complete and score the test and populate the training matrix with the skill level of each employee in each area that applies to them then you can also store this in your CMMS work order scheduling system to facilitate maintenance supervisors and planners assigning work orders. The planners or supervisors can then pair technicians on jobs so that you get a highly skilled person with one of your developing technicians. This will of course build depth in your maintenance organization.

Now let's get some training....

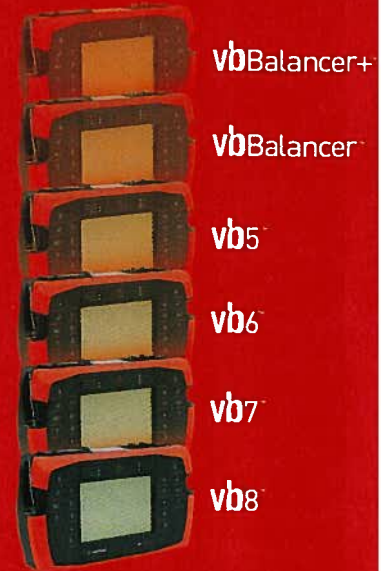
I have divided the training courses offered into three major categories by cost for ease of discussion. The first section is all the "not free but better than the alternatives" training sessions. These included certifications, vocational schools, and other full price training opportunities.

Vocational schools offer many programs for the millwright in your plant; however it is very hard to generalize the learning experience that can be gained from them. Before embarking into a training program with your local community college it is worthwhile to visit the campus and instructors, and review the curriculum. Many will appreciate your input into their program, especially if you may be hiring or have already hired their graduates. The downfall of this area of training plan is that most community colleges have little to offer your more advanced employees other than the possibility of occasional refresher courses in the basics.

The next type of training is the certifications such as vibration analyst, or oil specialists. These tend to be more expensive but they provide some very good information and opinions and tend to rejuvenate the participants with new ideas.

Continued on the next page...

**WHEN WE SAID THINGS
WERE GONNA CHANGE
WE WEREN'T
KIDDING**



**Introducing the New
Extended vbSeries®
family from the World
Leaders in Vibration
Analysis Technology.
The Revolution is not just
a 'tagline' at Commtest.**

Commtest Extended Range vbSeries® Instruments fit every application and every budget - no matter if you are new to vibration or a Category IV Analyst. Take your pick - Single Channel, Data Collecting, Dual Channel, Full Four Channel Analytical Instrument, Even Four Channel Balancing. Commtest has them all! See how easy it is!

Be one of the first to test drive one of our new instruments and Award Winning Ascent® Software, call us today at 865-588-2946 or email us at sales@commtest.com.

commtest
The Revolution

■ Reliability Isn't Just About the Machines...

Continued

The predictive maintenance analysts in your plant typically need to attend at least one certification type session per year that deals strictly with their trade because this area and its technology tends to move very quickly and one can get stale in short order. The other types of training do not change as quickly and provide for more time between sessions without losing the edge, however you should never exceed more than two years in any core area of your training plan if you expect to remain competitive.

University programs, online courses, degrees and certificates for reliability engineers and managers are available from the University of Tennessee, and the University of Alabama as well as others.

Craft skills training and courses for your planners, engineers, and supervisors are also available from various consulting groups as an option or by attending conferences such as the ones provided by the Society of Maintenance and Reliability Professionals (SMRP).

The last full price training offering does not always fit into this category. It can vary in cost depending on when and how it is handled. This is training that is provided by your equipment vendors through the initial commissioning or as part of a troubleshooting effort. This is training that effects the largest percentage of your total plant population because it should include training sections for operator, maintenance crafts, reliability engineers and technicians that interface with the particular pieces of equipment. When new equipment is installed it is common to offer training to the

operators and crafts on general operation. However, many neglect to get training for the maintenance and troubleshooting of the equipment. This is as important as basic operating instructions in your long-term quest for reliability. The knowledge that is gained by the crafts will facilitate troubleshooting and improve mean time to repair. Once you get a good foundation from the equipment vendor don't forget to plan on refreshers down the road for new employees or to reinforce proper procedures as time removes them from your existing employee's memory.

If the full price offsite classes can be set up onsite they become quite economical. The key becomes having a large number of people from your organization to attend at one time leveraging the cost across the group. However, we all do not have a large group of technicians we can have out of the plant for training at the same time unless they put management in to do the work. So, in these cases many of the training companies are allowing one plant to host the training and open it up to other plants in the division or company to leverage the cost. I recently saw one plant in an industrial park host training and open it up to other companies in the area to distribute the cost. This provided for not only a good training session at a reasonable price but also some good networking time for all those involved. Another variation on distributed cost training is the "train the trainer" model where one respected unofficial leader who will work with all the reliability offenders is trained to teach the correct maintenance practices within your organization. This can work with very good results as long as the proper person is chosen to steward it. One thing to remember here is that the trainer still must be refreshed yearly lest that person starts to teach bad habits and your results will start to fail. Another one of the more common, lower cost solutions is the CD-ROM, web based, and video with workbooks type training that is offered. When this is structured as part of the compensation plan then it does tend to get more attention.

The last portion of the training section is centered on the "Free or almost free training" Ah the holy training grail we have been looking for, right? Well not always...this option can be very useful for refresher courses on anything from belt installation to lubrication practices. The only drawback is that you must really pay attention to the material that the vendor wants to present to avoid too much sales propaganda.

Planning 2009 Maximo Training?

- Online, onsite, or classroom
- Inquire about special offers!
- Custom classes available

1-800-611-2884 or training@projetech.com to schedule!





I have used many different vendors for this type of training and I have only had one that turned out to be there for a sales pitch. Using the rules to follow I caught this before wasting the craft's time in the session. The key to my success with the vendors training includes the following:

1. Try to have the vendor bring in their technical people and not just the sales guy.
2. Make it clear that the maintenance staff is not the purchasing department and a whole lot of sales hype will be futile.
3. Ask the vendor if he has done sessions like this before.
4. Review agenda ahead of time and suggest topics of interest to your group.
5. Always give the vendor a tour of the plant prior to the presentation so that he can speak to the types of equipment that you have and the problems you face.
6. Make sure you talk with the presenter ahead of time to make sure he has a certain level of charisma and presentation skills or bring pillows for the sleeping technicians.
7. If you are worried about a vendor then have them do two sessions the same day and you and a few others attend the first session before committing a larger portion of the maintenance group to the second one. I have only had to do this once and it turned out to be ok in the end.

I also have some experience with other smaller regional vendors such as nut and bolt vendors for proper fastener application and torque, etc. It can work to satisfy many of the training needs especially refreshers that are required to keep us competitive as long as you put in the work up front.

Now we have some training, how do we spread it like the flu bug in a preschool?

Once you identify your weaknesses and get the training started you have to make sure that the knowledge that is gained through the training is transferred within the organization and applied to do the work. The first part of the process is training and coaching your "leaders." These may be the supervisors, but more times than not they are your unofficial leaders, the ones that the maintenance group looks to for answers and example. If the newer maintenance technicians or apprentices see "Good Ole Joe" banging on that new 6232 ball bearing with a hammer and a chisel to get it on the shaft then nine times out of ten they will then assume that that behavior is acceptable and they will do the same from then on. This cycle has to stop to take maintenance from the reactive world to a proactive one where you don't get those breakdown calls in the middle of the night. Another

Continued on the next page...

Reliability
WEEK
For Operations & Maintenance

March 23 - 27, 2009
Raleigh, NC
www.reliability-week.com
800.849.2041



Need Reliability & Maintenance Training?

Bring your management team and hourly employees from operations, maintenance and engineering for an action packed Reliability Week! We will equip you with a shared understanding that will immediately impact your bottom line.

The reliability workshops by IDCON and practitioners cover the major business processes needed to achieve improved equipment reliability in any organization. The Reliability Week includes:

- Reliability Management
- Planning & Scheduling
- Root Cause Problem Elimination
- Preventive Maintenance
- Materials Management
- Centrifugal Pump Troubleshooting

Enroll Today: www.reliability-week.com
or call 800.849.2041

IDCON
INC

Our Specialty

is improving the way people, processes and EAM/CMMS technology are managed for Maintenance and MRO Inventory.

We Offer:

- **Pre-defined and configured best maintenance practices for all major EAM/CMMS software systems.**
- **Streamlined RCM training.**
- **World Class Storeroom and MRO Inventory best practices.**
- **Planner training customized to your own software.**
- **Practical and affordable consulting solutions.**

PCA

Performance Consulting Associates, Inc.
770-717-2737

Celebrating **32** years
in business

www.pcaconsulting.com

■ Reliability... *Continued*

option is to start a mentor/apprentice program for your newer technicians where they can learn from the ones that do things right. Just make sure you reward your mentors and let them know what they are doing for the company, for you, and for themselves.

Now that we have spread it, how do we keep it going longer than a week?

This section is possibly the hardest to complete. It requires our dedication to the level of safety programs we have focused on in recent years. It has to become part of our daily schedule. It has to be supported by management. One option is to have different technicians give a brief five-minute maintenance topic during the morning toolbox meeting that they have researched on their own. It could be something as simple as the differences between grade eight and grade five bolts, or how to properly use the bearing heater. This keeps our expectations in the forefront. Another option is to leave maintenance related tip or topic from the web on the break room tables. It is amazing what we will read while eating lunch.

If you have good public speakers in your group have them recap their training for the group during the monthly meeting, if they do not like to speak have them just pass around a copy of their notes or the manual. There are many other ways to keep quality maintenance in the forefront, and many of them we can borrow from our safety programs that are successfully in place within our facilities. The key here is that you have to make good maintenance practices a lifestyle and celebrate the successes you acquire through their application.

In conclusion...

We must identify our weakness, use them to build a business case and a plan of attack, we must not forget to work with our partners both maintenance, production, and engineering to get their buy in and celebrate our victories together to retain the support. Maximize your training budget by leveraging class cost across groups and using free and low cost training with the proper prework. Training is one of the most important building blocks of overall equipment reliability, and reliability delivers availability and ultimately money to our bottom line.

If you have questions, have had success with other methods, or have a tip you would like to share please feel free to contact me at shon.isenhour@us.abb.com

REFERENCES

- 1) Moore Ron, *Making Common Sense Common Practice*, published by Gulf Publishing Company 1999
- 2) Wireman, Terry, *World Class Maintenance Management*, published by Gulf Publishing Company 1990
- 3) Mobley, R. Keith, *Maintenance Engineering*, published by plantservices.com 2003