

Choose Your Partners Wisely

Or Discover Another Reason Why PdM Programs Can Fail

by Alan Friedman

Many companies have failed to experience the 10:1, 20:1 or even 30:1 ROI promised with the adoption of a Predictive Maintenance (PdM) or Condition Monitoring (CM) program. In recent years, the industry has seen a trend towards outsourcing these monitoring functions to experienced third parties. This article will explore one aspect of why in-house programs often fail to produce the expected results, namely a lack of good partnering, and how this knowledge can be used to revamp a dead program or select the best partner to help you manage it or manage it for you.

A Bit of History

Back in the 80's and earlier, vibration analysis was carried out by a few consulting companies who were experts in using complex equipment to collect and analyze vibration data. In some cases, individual plants or companies employed in-house experts to monitor key assets, such as steam turbines, but generally the expertise was relegated to specialized companies. As digital computers became the norm and digital data collectors and software came on the scene, many companies purchased this equipment and attempted to evolve their maintenance practices. These efforts produced a variety of results ranging from good long term successes and huge returns on investment to money spent on equipment that now sits on a shelf and training for long gone employees.

In general, the concept of PdM has been well accepted; the problem now is how to create a successful program and keep it running year in and year out. Some facilities have given up completely, others are looking to gain or maintain their in-house expertise and others are looking to outsource these functions entirely. Current trends seem to point to the latter option as being the most common as companies can now establish partnerships to either completely hand over their PdM program or combine in-house manpower with external expertise.

Successful Programs Depend on Consistency

One reason many in-house programs fail is a lack of consistency on many levels. A successful PdM program relies on long-term consistency on the technical level in terms of collecting repeatable data for trending. This means that assets must be tested the same way time after time, year after year, in terms of test speeds, loads, test positions, test types etc. Consistent testing ensures accurate trending of machine condition, the development of meaningful baselines and alarm criteria and, therefore, accurate fault diagnosis and repair recommendations. This is very different from the process of using the technology to troubleshoot an asset. Troubleshooting is a valid use of these technologies, but does not result in a change in maintenance philosophy, nor does it provide the large ROI's such a change in philosophy should produce.

On a higher level, such technical consistency also depends on the reliability of management and personnel. Oftentimes, due to lack of financial justification, PdM programs are stopped and personnel are reassigned to different tasks. New maintenance managers may not understand the technology and may recommend a new approach to using – or not using – it which disrupts the consistency of a program. In-house “experts,” in seeking to keep their jobs secure, may not document or follow fixed procedures for monitoring equipment or share information with others, causing programs to fail when they leave for greener pastures.

There are many reasons why programs bloom and then decay. People who have different ideas about how PdM should be done come and go, priorities change, technology changes, expertise changes and approaches change. The one sure thing is that all of these starts and stops and changes in direction ensure a program will never be successful. This is another reason why an external partner is a good option to keep the program running steadily regardless of what is happening within the maintenance department of your facility.

In general, it can be said that a good PdM program requires a consistent approach, with a clear set of objectives that can be measured to monitor the success or failure of the program. The program must continue to remain consistent through good times and bad, regardless of who in the facility (or outside the facility) is running the program, collecting data, analyzing it or writing reports. This sort of consistency is often difficult to maintain within a facility, and is an example of where a good partnership with a PdM service provider can be a huge asset. Especially if this partner has a long track record of managing successful PdM programs and has a well-defined approach to managing such programs. This is different from hiring a vibration expert to come on-site at times to troubleshoot machines or structures.

A Good Partner Has the Right Tools and Approach

A good partner will promote a specific methodology or approach to condition monitoring, will help you understand its

goals and set up in-house procedures to manage the program and measure its results. The partner is not just someone who can tell you what all of the buttons on the data collector do or how to install your software, nor is it someone who will spend most of their time training you on how to interpret graphs. A successful program depends more on methodology and consistency than analysis prowess.

Regarding tools, a good partner should provide or recommend software that facilitates trending, baseline and alarm configuration and reporting. Another common feature in some of today's packages is the ability to easily share information over the web. This allows your partner to help you when you need it, simply by logging onto your database in order to check test setups or baselines, or to help you analyze data or review your recommendations. In the long term, this allows you to outsource program management to the service provider when times are lean and your workforce is stretched to their limits, or when an in-house expert leaves. Later, your partner may help train a new employee and move the program back into your hands. It is exactly this sort of back and forth, getting help with your program or even outsourcing the work from time to time, that makes partnering so important and keeps programs running smoothly from year to year.

Program Audits

Regarding methodology, if your partner has set up your program correctly, or helped you set it up correctly, then all of the procedures will be well defined and documented. This allows your partner to occasionally audit your program to make sure the physical equipment in the plant matches the information that has been entered in your software. For example, if the software defines a test point as being in the vertical direction on the motor free end bearing, but the motor itself has a sensor mounting pad installed only on the motor coupled end bearing in the horizontal direction, then there is a discrepancy that needs to be resolved. It is exactly these sorts of issues that cause programs to fail – not the debate over which point is the better one to test, but that the machine is always tested at the same point, and that this point is correctly defined in the software.

On a similar note, a good program will include the management of asset information to ensure that the actual machine in the plant you are testing today is identical to the machine you entered in your software five years ago. Oftentimes motors are replaced with similar motors of a different make or model, but these changes are not updated or accounted for in the monitoring

program. Documenting and periodically auditing this information for accuracy is an important component of a successful program, and a component that a good partner can help you with.

Ongoing Training

As noted earlier, many successful long-term programs are those that take advantage of a reliable partner to go back and forth between in-house and outsourced in varying capacities whenever necessary. Although there are many professional benefits to certified training classes and in learning how certain technologies work, they are not a replacement for in-house, on-site courses that involve reviewing your application, actual database, baselines, reports, questions and concerns. It is one thing to understand how it is done; it is a very different thing to do it yourself successfully. In order to do the latter, it helps to have a partner come in, review your work and answer questions, or collaborate online to have them remotely view your database.

On site training should not be limited to how to use a software or hardware product and understand its features, nor should it be relegated to data analysis. Both of these topics are useful and important, but do not lead directly into the proper management of a good long-term program. On-



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site training should be a combination of theory and actual review, help and support in setting up and managing your program on an ongoing basis. Once your PdM program has matured, the on-site training and support should evolve its focus towards Proactive Maintenance, Reliability, Performance Monitoring or other levels of competency that can be attained only after an effective PdM program has been in place for some time.

Economic Justification

A good PdM program should earn you money. A good PdM partner should be able to help you see the bigger picture and monitor the efficacy of the program in financial terms. It is often difficult to quantify the cost of an averted failure, we don't often consider that our airplane did not crash this trip due to all the money we put into testing and maintenance, but we certainly become aware of the costs and implications when an airplane does crash! Sometimes the economic justification is done in these terms and we have to remind ourselves that failures are constantly being avoided, perhaps by comparing current performance to prior performance, looking at reductions in orders for spare parts and a reduction in planned and unplanned downtimes etc. You might also look at key performance indicators (KPI's) such as Overall Equipment Effectiveness (OEE) to measure the impact that PdM technologies are having on the profitability of the plant. In any case, a good partner should be in a position to help justify your program and calculate the return on investment.

Conclusion

Whether you are considering starting a new program, revamping a dead one, outsourcing or looking for someone to become a long term partner to step in when needed and step back when not needed, make sure you pick the correct partner. The company should have a good track record of managing successful programs, should use good equipment for the job, and should make necessary equipment available to you as part of a sale or service or as a lease as needed. Make sure your partner can train staff at all levels, from using the products to analyzing graphs, but, more importantly, is capable of managing your particular program and answering specific questions related to auditing your program. The importance of helping you calculate the economic impacts of these technology and maintenance practices to your bottom line can not be underestimated.

More than anything, consider that choosing the right partner may make the difference between a consistent and effective program that runs smoothly over the next ten or twenty years and an endless series of false starts and investments in misused equipment. One thing is for sure, successful programs, more often than not, involve good partners.

Alan Friedman is a senior technical advisor for Azima DLI (www.AzimaDLI.com). With more than 18 years of engineering experience, Friedman has worked with hundreds of industrial facilities worldwide and developed proven best practices for sustainable condition monitoring and predictive maintenance programs. Friedman contributed to the development of Azima DLI's automated diagnostic system and has produced and taught global CAT II and CAT III equivalent vibration analysis courses. Friedman is a senior instructor at the Mobius Institute, an independent provider of vibration training and certification, and an instructor for the Instituto Mexicano de Mantenimiento Predictivo (Predictive Maintenance Institute of Mexico). He is also the founder of ZenCo, a positive vibrations company. You can contact Alan at 206-327-3332 or at friedmanalan1@gmail.com

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