Creating Alignment for Your Ultrasound Team

White Paper Sponsored by:

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Great ideas are often handcuffed by poor execution. Implementing ultrasound condition monitoring with the intention of generating condition based maintenance tasks promises tremendous upside; But only if the program can achieve liftoff. This paper addresses the first, and most important step of the implementation process; achieving alignment for your Ultrasound Team.

Key Takeaways:

- Learn how to plan for your first ultrasound team alignment meeting
- I will provide you with five questions designed to generate discussion and debate amongst your team member
- Understand which concepts can help steer your team in the right direction.
- Discover the different team member roles and how their participation adds positively or negatively to your outcome
- Realize that alignment is the first step in the implementation process and prepare for the journey forward

Getting Everyone on the Same Page

There are many things we can accomplish individually. Creating a world class ultrasound program is not one of them. It requires a team; and teams function best when they have balance and a common vision. Deciding who will make up the team roster requires thoughtful consideration. Attention to the selection process will, in the end, provide the balance needed to do well. Getting that team on the same page is the essential first step. Sound like a daunting task? It doesn't need to be. I'm going to give you a list of questions that map out your first planning meeting. These questions will help you identify purpose and cultivate unifying debate.

In preparation for your first planning session list the questions on a sheet of paper. Leave adequate space below each question to allow for answers and the ensuing debate notes. Begin the meeting by describing what the team will accomplish today; alignment. Be careful here. If you are championing this journey this is neither the time nor the place to enforce your vision.

Follow the questions, debate the answers and the vision will be reached unanimously as a team. It cannot be dictated from above.

Begin the meeting by distributing the questions to each team member. Review each of the questions together and ask if anyone has any questions. Encourage participation and achieve full clarity before they begin. Reassure everyone this is not a test. There are no wrong answers and no one will be judged. This is a fact finding mission pure and simple. Okay, ready to start. It should take no more than fifteen minutes to write their thoughts in the space provided. Stick to the 15 minute time limit. You don't want them to write a tome. The team is searching for clarity of thought and the goal of this exercise is to inspire debate.

5 Questions

What are we setting out to accomplish?

What are we attempting to change?

Who do we need on our side?

What are our primary pain points?

How will we measure success?

Let's start at the beginning and work our way through what could be some typical responses to our alignment questions. Remember, these are typical answers, but no one company is any more or less typical than another. What we expect the team's answers to be may be entirely different than what this exercise produces. Have fun with it.

1. What are we setting out to accomplish?

Taking a page from SDT's corporate value statement, ultrasound implemented to full potential provides a better understanding about the health of our factory. It helps us to predict failures. If we can predict potential failure early enough, we have sufficient time to plan the maintenance needed to fix the problem. Since the maintenance is planned it doesn't interrupt production. That translates to better uptime statistics which translates to a stronger bottom line. A stronger bottom line gets everyone's attention.

But wait there's so much more that can be done. Ultrasound programs are notorious for reducing energy costs. This is accomplished several ways but the familiar one is compressed air leak management. Certainly this application will get a lot of attention. It is easy to implement, provides convincing results that are straightforward to document, and an ROI that grabs the attention of management.

There are other compelling applications that promote energy cost savings. Steam systems efficiency is not always tops on the priority list but failed steam traps account for huge potential wins. Steam leaks to atmosphere are invisible and dangerous. One archaic method for detecting steam leaks was to tie a cloth to a pole and run it along the lines. Thankfully this

hazardous technique can be replaced with an ultrasound detector. Internal leaks and blockages are not as easy to find because they happen inside the valve like body of the steam trap. But they detract from system efficiency which wastes energy and they detract from the purity of the steam which, depending on your process, can impact product quality.

Ultrasound contributes to product quality. Many of the problems you will uncover, if left unchecked, can negatively influence your finished product. Who wants dirty steam in a food processing plant? Not me.

I still recall our friend William James at Tamko Building Products. Tamko makes roof shingles. William used ultrasound to detect a poorly maintained chain drive. Before maintenance they experienced several paper tears per day. Each paper tear stole 20 minutes of uptime and introduced defects in their finished product. After maintenance the paper tears stopped, uptime was returned, and product quality improved to Tamko's high standards. There are lots of stories just like this one. What will your story be?

Let us summarize the first question. In basic terms your ultrasound program gives a greater understanding about the health of your factory. Your team is in a position to predict failures and act timely on those predictions. Reduced energy costs will fuel future funding while your plant's improved efficiency will lower your carbon footprint. For companies where carbon offsets are important the energy saving aspects of your ultrasound program is a huge benefit. Some may argue that product quality is a lesser concern to maintenance and reliability. It falls on production and quality control. But when the maintenance department can document wins that positively contribute to quality a culture of excellence is cross pollinated.

2. What are we attempting to change?

There is no shortage of reasons to seek change when change makes us better. Change addresses the way we act, react, and interact in our environment. To call it a cultural renaissance may be going too far. That an ultrasound program breeds a culture of awareness that infects everyone involved is undeniable. The infection spreads beyond the team members and to all levels. I've seen it happen. So what are we attempting to change by starting an ultrasound program? "Culture."

The Culture of Reactive Maintenance

When we do things on the spur of the moment as a response to a sudden and unexpected change we are in reactive mode. A fire alarm and subsequent building evacuation is an example of a good reaction to a sudden and unexpected change. Stopping a production run because a bearing failed is an example of a bad reaction; a necessary, but bad reaction.

Reactive culture prevents us from doing meaningful work. If the entire day is spent responding to interruptions, when do you get time to start something new? When do you get to be creative and take initiative? How can you offer real value to your company if all your creative energy is zapped by reactive requests? How can you go home feeling fulfilled and satisfied by your work?

The Culture of Scheduled Maintenance

To eliminate many of the problems that cause reactive interruptions companies turned to Scheduled Maintenance or PMs, short for preventative maintenance tasks. PMs carry many definitions. They can be visual inspections, lubrication tasks, changing or cleaning filters, tightening or re-aligning a belt drive. The point is they are routinely scheduled based on either a calendar or time in service. The question to ask: "Is a time-based schedule the best solution for the given task?"

A few tasks will always be done on a time-based schedule. But throwing every task into the CMMS calendar scheduler leads to many PMs being performed unnecessarily.

CBM represents a culture change away from time scheduled maintenance. Work orders can't continue to be pushed out because a predetermined amount of time has lapsed. A CBM culture dictates that we manage maintenance tasks in response to changes in condition. Your ultrasound program will serve up data indicating the health of your plant. You will know when the condition has changed from good, to worsening, to critical.

So question 3 is intended to establish your team's goal to move the culture of your maintenance department from react and repair to plan and schedule. The culture of time based PMs will be replaced by condition-based tasks.

3. Who do we need on our side?

This question is designed to accomplish two things for the team. First identify all the stakeholders and second, define their roles and expectations. Who are the stakeholders?

Let's start with upper management. History shows there can be stark differences between companies defined by two divergent approaches.

The first approach is a positive one. Upper management is on board and their expectations are high. They support an ultrasound program for its potential to save money, increase reliability and productivity, reduced stress in the workplace, and even improved product quality. This group does not care about the technical details of how it works so do not waste energy here unless it is clear that your management is truly interested. All they care about is the positive impact the program represents.

The second approach is negative. In this scenario upper management needs to be convinced. They do not care that the program is tried and tested and works at other facilities. Proof that it will work here is needed to go further. In reality, their resistance is a cover up for their reluctance to deal with culture change. They downplay the concept as a flavour of the month.

Long term success begins and ends with upper management since that is where the funding comes from. Which approach characterizes your current situation?

Middle management can be defined as the classic “Go-Between”. It makes sense that this group shares the highest representation on the ultrasound team. Companies use different titles to define the same position but we are talking about Maintenance & Production Managers, Planners, Reliability Managers, and Superintendents. They have the difficult job of conveying the expectations of upper management to the front liners. On the one hand they must advocate for the front lines while pushing both sides to embrace cultural change. As a leader and champion of your company’s ultrasound program, we are likely talking about you here.

Front liners are tasked with carrying out the heavy work. It is important to understand their expectations too. And not unlike upper management, we can expect to see both negative and positive reactions. Is ultrasound perceived as a new technology to them? They might not want new when they already believe old is working perfectly well. These folks are busy enough and your flavour of the month program is going to just create more work. Of course your counter argument to this is that it will reduce the amount of firefighting they are currently doing. But they believe they are good at firefighting and their job could become redundant.

What about the role of the Salesman that sold you your ultrasound equipment? Is he a typical B2B sales organization? These guys follow the classic model that’s been around for 100 years or more. That model involves transferring assets from their balance sheet to your balance sheet and very little more.

Be wary of the former and seek out a Solutions Provider that makes your outcomes his priority. Your team needs an ultrasound provider that is invested in your outcomes. They take the time to listen and understand your pain points. The solutions they suggest are neither under nor overkill. Even though she might not be onsite for every meeting, the solution provider is a necessary and integral part of your team.

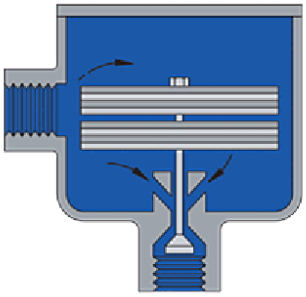
Invite your ultrasound solutions provider to your next summit.

Maintenance summit meetings are a great idea. A lot of my clients run them annually. Usually it represents a gathering of middle and upper managers held over one or two days at corporate headquarters. These meetings are great for sharing ideas and creating alignment across plant sites. Bringing in a third party subject matter expert lends a fresh face to the

agenda. I have lost count of the number of presentations I have made for clients over the years but they are always warmly accepted. If the message is delivered in the right way it serves to educate, and also sway naysayers who are not ready for the cultural change presented.

4. What are the pain points?

Identifying your early pain points is a good starting place. Create a list of the small day-to-day problems that continually erode productivity and profitability. There are things that bite you hard every hour of every day and cost you more money in the long run. The problem is that most of those problems are now almost invisible to the business. They are just considered the cost of doing business. Some examples:



- Compressed air leaks
- Steam leaks
- Defective steam traps
- Inspection of electrical systems
- Over-lubricated bearings

This list represents five huge daily drains on resources. Targeting each of these will yield almost immediate justification for additional investment in Ultrasound and CM.

Are they difficult to do? No, not at all.

Do they need a long history and a lot of technology? No again.

Do they require a huge investment in labour and technology? Once again, “No.”

‘What are the pain points?’ is really an extension of the first question, “what are we setting out to accomplish.” It is intended to help the team define known problem areas and set them as priorities.

Why? It is the pain points that motivated this culture change in the first place. Turning them into quick wins will score high marks with all the stakeholders.

A summary of the alignment meeting notes presents a clear document of the expected investment returns. Beyond this first alignment meeting will be subsequent planning meetings. There your team will create strategies to address the long list of applications presented by this versatile technology. Here is a list of things NOT to do first:

- Buy stuff without due diligence, just because there is budget available
- Take it all out of the box
- Don’t worry about training – we were told it was “user friendly”
- Install the software
- Create some databases

- Collect some data
- Stare at the screen and wonder... what does it all mean?

This all-to-common haphazard approach can spell a death sentence for your program. It lacks focus and planning. Without training it lacks education.

The list generated here will prove helpful when your team moves to the planning stages. You have effectively aligned team members and created a list of tangible and measureable goals for your ultrasound CM project. Each stakeholder knows the way forward and there is a clarity over what you will achieve.

5. How will we measure success?

To give meaning to a measurement requires a benchmark for comparison. When I stand on the bathroom scale I know my weight but little else. What do I need to give meaning to this single static measurement? How about history?

- How much should I weigh relative to a person of my age and height?
- How much did I weigh a month, a year, or even 5 years ago? In other words, what is my trend? Am I getting heavier? Am I getting lighter? Am I staying the same?
- If my weight changed, was it sudden or gradual?

Armed with some benchmarking data, now I can make an educated decision about what my next move should be.

- Go on a diet
- Get more exercise
- Eat better
- See a doctor
- Call 911

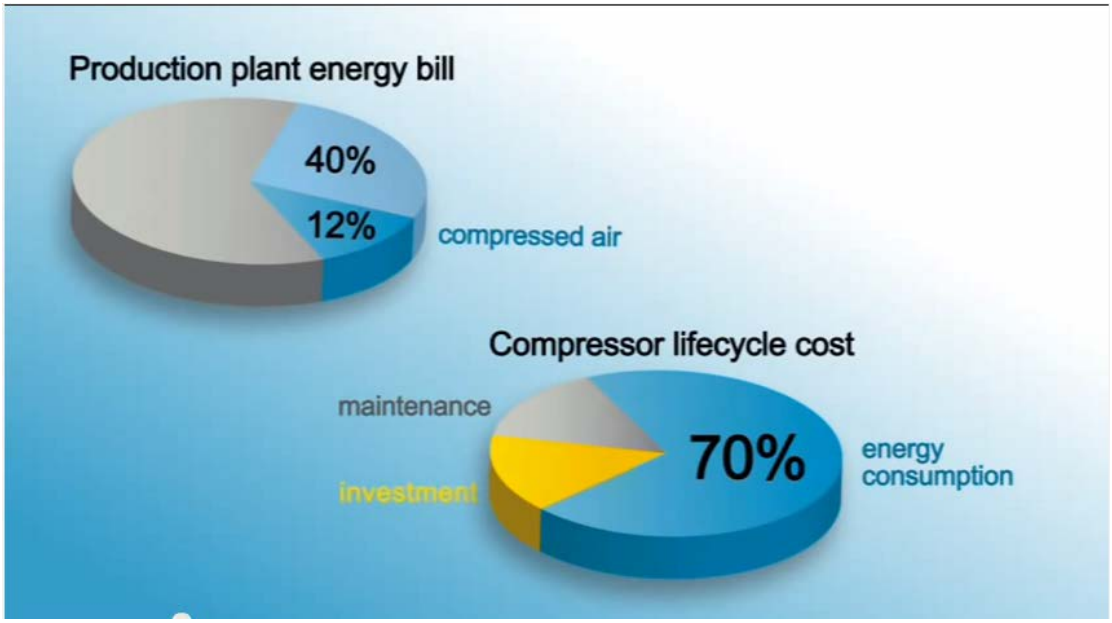
In question four we listed our pain points. Let's remind ourselves quickly what they were.

- Compressed air leaks
- Steam leaks
- Defective steam traps
- Inspection of electrical systems
- Over-lubricated bearings

How can we measure success for our ultrasound program based on compressed air? Start with the cost to run the system. Call up accounting and get your hands on hard figures. What did we spend last year on energy for the compressor room? What about maintenance on the

system? If its running overtime and you reduce the artificial demand of leaks should you not expect lower overall maintenance costs to follow?

Atlas Copco provides us with this wonderfully graphic statistic about the cost of compressed air:



Compressed air leaks can represent as much as 40% of the energy costs if there is no leak management program in place. A more reasonable target should be <12%. Is this your reality?

- 40% Reality
- 12% Target
- ??% What will you achieve?

Over the lifecycle of your compressor, 30% of the cost is buying and maintaining the system. The other 70% goes to electricity to power it. That is a compelling argument to focus on leak management.

Similar data can be gathered from your steam plant. What was the cost to power the boilers and create steam? Set targets to reduce it over the next 6 months. If you track uptime statistics relative to your steam system's performance include those in your reductive targets. Collaborate with production to get their advice on throughput increases and product quality improvements. And of course, document every win.

Inspecting electrical systems may be more difficult to tie direct cost savings. What should not be downplayed is the safety elements of being able to inspect switch gear without opening the panels, listen to transformers and insulators in your substation from a safe distance, and provide collaborative data to your infrared thermography team.

Lubrication of rolling element bearings is one of the most misunderstood maintenance tasks in industry. Nearly all bearings never live to their engineered life cycle and bad lubrication practices are the leading cause of this infant mortality. Bearings depend on grease to reduce friction levels. Not enough grease and the bearing will fail. Too much grease and... the bearing will fail and you are wasting money on grease.

Your benchmark to measure the effectiveness of ultrasound assisted lubrication shall therefore be directly tied to lubrication tasks and grease consumption. How frequently are bearings greased currently? Is that the correct frequency or can re-lubrication intervals be further spaced out to reduce labour costs? Is the amount of grease being used to much or too little? If too much, there are cost savings by using less. Document where you are and where you think you can be and regularly measure your pace.

Concluding Thoughts

This five question exercise is the important first step in the process of implementing and deploying an ultrasound condition monitoring program. The discussion these questions invoke presents a clear picture about your expected outcomes. You have successfully created alignment across all of your team members. Input was generated from upper management, middle management, front line staff, and you're your ultrasound subject matter expert, be it solutions provider, consultant, or other. Now your ultrasound committee is ready for the next step in the implementation process.

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