

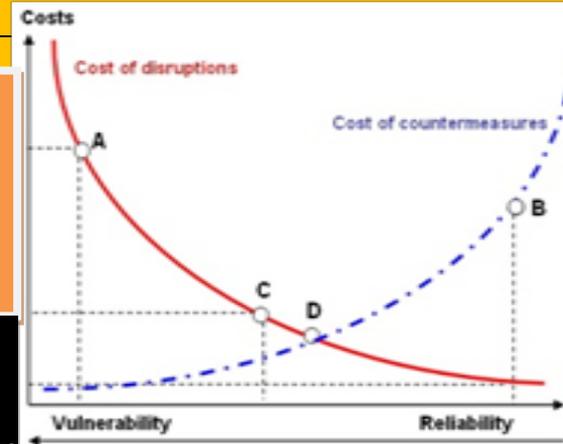
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MEETA National Maintenance Conference 2012

November 16 2012 - Venue Engineers Ireland Clyde Road Dublin



MESSAGE FROM THE CHAIRMAN

IN THIS ISSUE

As we leave Autumn behind us, and head towards the Winter months, MEETA's focus turns towards our annual conference, which this year is to be held on Friday 16th November. The theme of this year's conference is "Turning Points – from Surviving to Thriving" and is concerned with helping business, enterprise, and individuals working in maintenance and asset management to progress and prosper in the current climate.

Over the years the annual MEETA conference has developed into an event that is truly of international standing. The topics for this year's conference and the corresponding speakers keep very much to the international standing and I am very excited about the line-up for the conference. The MEETA conference affords an ideal forum for all maintenance practitioners to engage with experts and solution makers within this vast and exciting field of asset management.

The theme of the conference is very much in line with where we all are in terms of our respective industries and MEETA felt duty bound to share all our of collective experiences and expertise in what has been a very tough number of years. Recent evidence suggests that industry is stabilising and beginning to look forward with a degree of optimism – hence our conference this year will focus on 'thriving' against a backdrop of 'surviving' over the last number of years. Further details of the conference are available on:

www.engineersireland.ie/cpd-training/cpd-training/training-calendar/2012/november/meeta-annual-national-maintenance-conference

For this years conference the organising committee have introduced a number of new initiatives and I can assure all conference attendees that this will greatly add to the conference. These new initiatives have come from feedback from MEETA membership, over the past year since the last conference, and I am delighted to be able to facilitate this in a meaningful way for the whole of the maintenance and asset management industry.

Another new initiative is that this year MEETA are hosting a half-day workshop on Thursday 15th November at the Aviva Stadium. The title of the workshop is "Using Root Cause Analysis to improve plant performance". The purpose of the problem solving workshop is to demonstrate to the participant that structured problem solving will deliver faster and more accurate solutions to problems, as well as teaching participants how to solve problems using a simple process but accurate process.

www.engineersireland.ie/cpd-training/cpd-training/training-calendar/2012/november/meeta-workshop-using-root-cause-analysis-to-improv

Both the conference and the workshop are ideal vehicles which enable all maintenance practitioners, decision makers, experts and solution seekers to meet, discuss problems, seek advice, network, and hear the latest industry news. I would urge you all too please support the MEETA annual conference and where possible the supporting workshop.

The MEETA committee are actively putting the program of events together for 2013. In order to encourage active participation and to get out and about to the MEETA members, we are planning a number of regional "discussion evenings". As always if you have any ideas or topics that you would like to be part of these regional sessions please do not hesitate to contact me or any of the MEETA committee members.

Eric Bergin BSc (Hons), CEng. MIET, MIEI, MIAM.

Chairman **MEETA**

Message from the Chairman

MEETA Conference

Thor Idhammer on Root Cause elimination

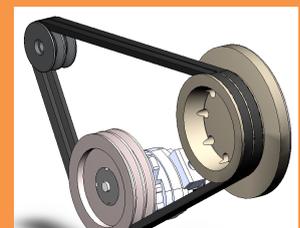
Meeta Awards

Steam Traps

V-belt drives

The number one cause of V-belt failure is under tensioning. Under tensioned drives allow a belt to move or slip independently of the sheave. The resulting friction gives the belt's sidewalls a shiny or glazed appearance. Left unattended, this slippage creates heat that hardens the belt's rubber. The consequent flexing required of the belt and this new hardened condition causes cracks on the belt surface.

The belt may last a week or two, or it might make it a few months. But ultimately, the belt will fail prematurely and usually at an inopportune time. A slipping belt is easily identified by squealing on start-up, excessive heat at the driver or driven sheave, black carbon dust underneath the drive, or polished belt sidewalls.



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Asset Management and Maintenance

The maintenance and management of assets are critical to organisational performance. Come to the MEETA National Maintenance Conference and learn from successes achieved in organisations across the spectrum of manufacturing, process and service industries.

About the Conference

Since 1984, the annual conference has provided a forum for maintenance practitioners, decision makers, experts and solution seekers to meet, discuss problems, seek advice, network, and hear the latest industry news. The conference has developed over the years into an event of truly international standing.

Programme overview The theme of this year's conference is "Turning Points – from Surviving to Thriving" and is concerned with helping your business, enterprise, and individuals working in Maintenance and Asset Management to progress and prosper in the current climate.

Tor Idhammar, the world renowned speaker and consultant on Maintenance and Asset Management will present the keynote address

All the presentations will address "turning points" i.e. some realignment or action that will lead to recovery. For example, the main papers present turning points such as:

"Selling Maintenance to top management"- how to communicate effectively and prioritise Maintenance e.g. as a contributor of Value to the business

"Asset Management Standards – why such a fuss?" – addresses PAS 55 and ISO55000 and why they are important to you in this period of economic uncertainty.

"Turning Points" - presents a story of organisational success and also outlines the challenges and frustrations.

"Comparing performance"- outlines the process and different means to compare performance.

TOOLBOX TALKS are short presentations of topical issues and useful tools that are designed as takeaways for easy application. In keeping with the conference theme, these topics in themselves are turning points and are presented as:

Caring - equipment and people are critical to an Asset Care programme. Learn how Reliability will drive up Safety.....

Sharing - ways to share the load and ease the burden for the organisation and the maintenance practitioner....

Comparing – we can't aspire to be the best if we don't know about the rest.....

Open Forum The open forum is a mediated discussion among the delegates & speakers to explore issues relevant to their needs and priorities. It is a vehicle to share and explore the concerns of the broad Maintenance community, and generate ideas and opportunities for this particular community of delegates. The forum is a new initiative for the conference, but one that is particularly relevant to the current climate and the conference theme.

The programme is designed so delegates will be able to use and apply the tools, knowledge and learning's presented to make a contribution that will greatly benefit their organisations.

[Book your Place here](#)

Engineers Ireland and MEETA members: €245*/295

Non-members: €295*/€345

*** Early bird special available until Friday November 2nd 2012**

Paid-up MEETA members can bring another delegate free.

Delegates can nominate a guest for €100 - max one guest from each organisation



IDCON, INC is a highly specialized management consultant firm working within the industry to maximize productivity through improvement in maintenance and operations practices. All consultant services are based on the Results Oriented Reliability and Maintenance™ (RORM) philosophy. This philosophy has been developed by IDCON, INC over the years through project experience in the industry.

Tor Idhammer, President of IDCON INC will present a workshop on Root Cause Problem Elimination at the Aviva Stadium on Thursday 15th November and will present the keynote address to the meeta Conference at Engineers Ireland Conference Centre in Clyde Road on Friday Nov16th.

Further Info on IDCON INC at <http://www.idcon.com/index.htm>

Workshop Booking [Click Here](#)

Conference booking [Click Here](#)

Torbjorn Idhammar writes briefly on topic of the workshop being held in the Aviva Stadium on Thur. 15th Nov 2012.

Root Cause Problem Elimination

What's in a name? For one, getting a name right can help to accurately define an issue or a process. In our example, Root Cause Problem Elimination (RCPE) is more commonly known in the industry as Root Cause Analysis (RCA). We prefer the former term. We know of numerous analyses where the root cause has been identified but not eliminated, so RCPE offers a better process. Analysis costs can be expensive, so this process is a good investment only if the identified root cause is eliminated.

INVOLVE THE FRONT LINE ORGANIZATION

I believe that 80% of all reliability problems can and should be solved by the frontline organization. The frontline organization includes supervisors/team leaders, operators, maintenance crafts people, maintenance coordinators, and planners representing both operations and maintenance. In a world class maintenance organization, up to 30% of all hours could be used to do RCPE.

One of the best maintenance organizations I have worked with used 20% of all maintenance hours on RCPE—including a process to shorten duration of critical jobs. Today, this Canadian manufacturer has 30% fewer components in its process lines than when it was built 38 years ago. Its reliability performance is 96%, based on quality performance and 8760 available hours a year. The mill's focus is to eliminate everything that can go wrong. If this organization had instead used a special group of design engineers to do the RCPE, I would not have been surprised to see more complicated components in the process line. This would produce more things that can go wrong and lower reliability.

DRIVE OUT THE FEAR

Before your plant starts implementing a plant wide RCPE process, make sure that you're planning and scheduling performance has reached a level of 70% or better. If your plant's performance is lower than that, most of the analyses will simply point out that the root causes of most problems are lack of preventive maintenance and poor planning and scheduling. When your mill significantly improves planning and scheduling performance, the results will include increased maintenance productivity and lower demand for maintenance hours. This may be seen as a threat to jobs and a silent resistance will likely impede results. At this point, you must involve the frontline organization as much as possible in RCPE to drive out the fear of job elimination.

If you can demonstrate to your organization that the newly available maintenance hours will be used to do more RCPE, you will have started a process that can dramatically improve reliability and efficiency. Cost reductions will follow reliability improvements due to fewer safety incidents, reduced material and spare parts consumption, lower demand for contractors doing routine maintenance work, and attrition through retirement.

If you are able to demonstrate over a two-year period that you are committed to this cultural change, your organization will accept it and grow to like it. Your accomplishments will generate breakthrough results. You will change your organization from a "doing" to a "doing, thinking, and continuously learning" organization.

START WITH THE BASICS.

As you gradually improve maintenance productivity, document all meaningful problems. The digital camera is a good tool for documenting observations and the best people to document maintenance problems are the crafts people; they are often the first to visit "the crime scene."

The purpose of Bearing clearance

(Taken from a number of manufacturers handbooks)

Virtually all rolling element bearings are designed with a specific internal clearance. The internal clearance is defined as the total clearance between the rings and the rolling elements. This clearance provides:

- ✓ Free rotation of rolling element
- ✓ Compensation for thermal expansion
- ✓ Optimum load distribution

Selecting the correct internal clearance is important because bearings hold the rotating parts of a mechanism in proper position across the entire performance envelope of the application. The amount of internal clearance can influence:

- ✓ Noise
- ✓ Vibration
- ✓ Heat build-up
- ✓ Fatigue life

Vibration, interface fits and temperature will also have some affect on internal clearance. To obtain the optimal internal clearance for a specific application, these parameters must be taken into consideration. In certain applications, the correct choice of clearance for the bearings is critical. Internal clearance can be separated into two categories:

- ✓ Radial
- ✓ Axial

The total internal clearance is the amount that one ring can be displaced relative to the other ring, either radially or axially. The radial clearance is the total clearance between the raceway and the rolling elements - measured normal to the bearing axis. The clearance changes with the expansion or contraction of the bearing rings. The axial clearance is the total amount that one ring can be displaced relative to the other in an axial direction.

In ball bearings, as the radial clearance increases, the axial clearance increases as well. The more room between the balls and the rings (radial clearance), the more the elements can shift in relation to each other. Generally, internal clearances are designated from C1 (the tightest) through to C5 (the loosest or largest). The 'normal' clearance is CN, a range sitting between C2 and C3. It is worth noting that if the bearing clearance is not stated in the bearing reference it can be assumed to be normal clearance. With a higher clearance there is more tolerance of thermal expansion effects on the rings and rolling elements. When noise and vibration must be restricted, lower clearances are necessary. Ultimately the specific application and operating conditions determine the appropriate internal clearance. For example, paper-drying machines that operate under hot conditions usually need C3 and C4 clearances. The severe vibration in vibrating screens normally means that C3 and C4 clearances are required. Selection of the correct radial internal clearance group is by calculation and you should refer to your bearing manufacturer's handbook. Factors to be assessed include:

- Expansion of the inner ring due to interference fit on shaft
- Contraction of the outer ring due to interference fit in the housing
- Differential temperature between the inner and outer rings
- Differential expansions due to non-ferrous mountings

In addition to the ISO clearances, manufacturers such as NSK also offer specific clearances for electric motors known as CM clearance. This class includes a tighter noise specification. The CM clearance falls within the range of the CN clearance. Some motor manufacturers specify CM clearance where closer radial internal clearance helps reduce noise. C3 clearance, which is frequently used in the aftermarket, is greater than the CN and CM clearances.

The National Maintenance and Asset Management Project Awards 2012

PMI Software Ltd is once again proud to sponsor the National Maintenance and Asset Management Awards.

The aim of this prestigious awards scheme is to highlight and reward the ingenuity shown in providing value to their companies by those in maintenance and asset management.

The awards agenda is an annual programme to recognise and honour Irish organisations and individuals that excel in performing the maintenance and asset management process to enable operational excellence. The objectives are to:

- Increase the awareness of maintenance as a competitive edge in cost, quality, service and equipment performance.
- Identify industry leaders, along with potential or future leaders, and highlight "best" practice in maintenance management.
- Share successful maintenance strategies and the benefits derived from implementation.
- Understand the need for managing change and the stages of development to achieve maintenance excellence.

Any maintenance or asset management project involving any of the following features: planning, designing, specifying, installing, modifying, operating, managing and maintenance of plant facilities, systems and equipment is eligible.

Benefits of participating:

- **Maintenance process assessment.** Applicants find that completing the application facilitates an internal audit of strengths and opportunities for improvement in maintenance and equipment reliability.
- **Competitive awareness.** Applicants find that entering the award programme increases awareness of their maintenance process and reflects favourably on their commitment to utilise maintenance as a competitive advantage for their business.
- **Goal setting.** Applying for the award helps companies establish priorities and competitive performance goals because the application is based on standards of maintenance excellence.
- **Increased cooperation.** Applying for the awards builds a sense of company teamwork and emphasises the value of interfunctional cooperation.

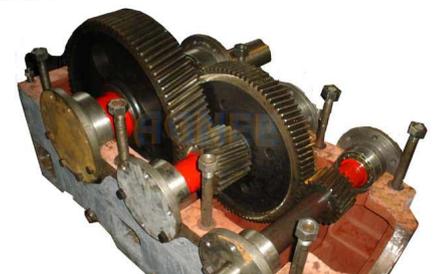


PMI Software

PMI's Maintenance Software is a powerful but simple maintenance management system empowering Maintenance & Engineering Departments to manage their key functions and drive value for their business. The PEMAC maintenance system allows you to protect your investment in assets and equipment. The system helps companies to manage maintenance, reduce downtime, control maintenance costs and minimise the investment in engineering spare parts. PEMAC often becomes the showcase for maintenance departments during client and regulatory audits the system allows you to get full visibility and traceability on all engineering and maintenance activities.

Some Key Benefits of the software

- Simply and Easily manage both planned and unplanned maintenance PEMAC for both internal personnel and contractors
- Improve your understanding of your equipment behaviour, monitor recurring problems and costs
- Gain a clear visibility on workload through effective resource planning
- Analyse maintenance effectiveness through KPI Reporting
- Prioritise Maintenance activities through a simple graphic interface that highlights essential work
- Create a knowledge base to identify recurring problems with equipment and to reduce time to repair
- Reduce downtime through effective analysis of problems through a simple but powerful root cause analysis tool
- Manage your investment in engineering spares using PEMAC's Multi-store functionality
- Improved information quality with key information captured during fault resolution
- Extend the life of assets through the effective management of preventative maintenance



ANNUAL STUDENT AWARDS 2012

Kindly sponsored by ESS of Limerick



At ESS, we work with people to improve maintenance and asset management. For years now we have been proud to sponsor the annual MEETA ESS Student Project Awards. Last year, three students from Cork Institute of Technology entered their Continuous Improvement project which won because of the quality of their design, development and manufacture of an automated system for the sand blasting of prosthetic shoulder stems.

The shoulder stem is used in reconstructive surgery

of the shoulder joint and can give a whole new lease of life to those undertaking the surgery. Part of the existing process for the manufacture of the stems carried out in the bio-medical manufacturing plant Croom Precision Medical was too time consuming, inefficient and led to a high volume of rework.

"We built a machine to take all of the manual labour out of it. It went fully automatic so that the person who was working on it was able to be repositioned to a new station." explained Richard Childs, 21, who is a third year student of mechanical engineering.

The judges were particularly impressed with the practical nature of the solution including automation of a very labour intensive loading and unloading process, improved operator safety and full traceability. Ray O' Neill, Managing Director of ESS commented: "It's great to see this standard of practical work being done by students. It's a very valuable project with a great return and increased safety too - hard to beat that. Well done to the three lads and we've no doubt they'll make further valuable contributions in their working careers. Well done also and thank you to the judging panel for their time and expert contribution to the success of these awards."

This year, the MEETA Annual Student Project Award 2012 will be awarded to applicants who have completed a project as part of their final year of course. The project must be in maintenance, reliability or asset management related area and the assessment criteria reflect this.

The Sponsors of the awards - ESS are an Irish Company, headquartered in Limerick. Specialising in maintenance and asset management, they are in business since 1991 and work with people to improve maintenance in Ireland, UK, India and South Africa. They can help you implement lasting improvements, improve your competitive position, meet regulatory compliance and offer you peace of mind. The ESS Maintenance Portfolio consists of Consultancy, Maintenance Resource Outsourcing & Recruitment, CMI, Condition Based Maintenance, and Training & Systems.

Analyse Gearbox failure to prevent re-occurrence

Gear reducers fail for a reason. Ideally, they are properly sized and maintained and live a long life, only failing as a result of having reached their expected life span. Unfortunately, many times this is not the case. Unpredictable overloading, worn accessory components, and changes in the application often present undesirable conditions for gear drives.

The weak link of a gearbox is almost always the gear train or the bearings. Therefore, when a gearbox fails prematurely, the first inspection should be gear condition. If the gearing is damaged or has broken teeth, it is a safe deduction that the unit has been subjected to loading beyond the mechanical limits of the gearbox.

This is, of course, assuming the unit was properly lubricated. Replacement with another identical gearbox is likely to produce similar results if the load requirements are not lessened or the drive modified to within the mechanical limits of the gearbox.

Perhaps more is being asked of the drive in the form of more production and consequent load increases. Perhaps something has failed elsewhere in the drive train which causes more drag and requires the gearbox to work harder. So when having to replace a gearbox with gear failure, it is essential to evaluate the cause of failure closely before automatically replacing the gearbox with a "like for like" unit.



Maintenance

Health and Safety Award

MEETA, the Irish Maintenance and Asset Management Society with the support of the Health and Safety Authority has just concluded the evaluations for the National Maintenance and Safety Award. This award scheme will recognise companies or organisations that have made outstanding and innovative contributions to promoting an integrated management approach to safe maintenance.

Maintenance can be defined as working on something to keep it in a working and safe state and preserving it from failure or decline. The "something" could be a workplace, work equipment or means of transport (e.g. trucks). Two main types of maintenance can be distinguished as follows:

- Preventive/proactive maintenance; carried out to keep something functional. This type of maintenance is usually planned and scheduled.
- Corrective/reactive maintenance; repairing something to get it working again. This is an unscheduled, unplanned task, usually associated with more hazards and higher risk levels.

The award aims to demonstrate, by example, the benefits of following good safety and health practices.

Working safely, and having safe systems in place is as important as any maintenance procedure.

"I could have saved a life that day"

Anonymous author.

I could have saved a life that day,
But I chose to look the other way.
It wasn't that I didn't care,
I had the time and I was there.
But I didn't want to seem a fool,
Or argue over a safety rule.
I knew he'd done the job before,
If I called it wrong, he might get sore.
The chances didn't seem that bad,
I've done the same, he knew I had.
So I shook my head and walked on by, He knew the risks as well as I.
And with that act I let him die.
He took a chance, I closed an eye,
I could have saved a life that day,

But I chose to look the other way
Now every time I see his wife,
I'll know I should have saved his life.
That guilt is something I must bear,
But it isn't something you need to share.
If you see a risk that others take,
That puts their health or life at stake,
The question asked, or the thing you say,
Could help them live another day.
If you see a risk and walk away,
Then hope you never have to say,
I could have saved a life that day,
But I chose to look the other way

Check those steam Traps to save energy

When it comes to testing steam traps, a frequently asked question is, “What is the best method?” The true answer is to use all of the technologies available today. No single test method provides the best results all of the time for the variety of steam traps in the marketplace.

Therefore, all tools available in the marketplace should be implemented and used where they return the best results. These fall into three main categories

1. Visual
2. Temperature
3. Ultrasound

Understanding the usefulness of these tools is like anything in life – the more you use it the better you become. Practice and gaining the knowledge of the methods is the key to successfully using different devices.

Visual Methods

The use of a test “T” valve arrangement, test-valve combination, or an inline sight glass for reviewing the steam trap discharging to the atmosphere is a very effective way of testing steam traps. This visual method can accurately determine the following conditions:

- Blow-through steam or a failed open condition
- Severe steam leakage
- Under sizing

There is a downside to any form of testing method and the visual examination of steam traps is no exception. The inspector must understand the concept of flash steam and become aware of the difference between flash steam and blow-through steam. Also, there are safety concerns due to the release of hot steam to atmosphere during the testing phase and there is an additional cost associated with installing the components that permit online testing.

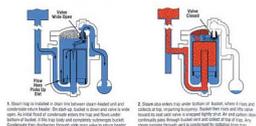
Temperature measurement must be an integral part of a steam system testing program. It is by no means the only method, but it can help provide information that would otherwise not be available. Understanding the limitation and capabilities of your temperature measurement equipment is important. The pressure/temperature relationship of steam makes temperature measurement extremely helpful in establishing existing steam system pressures.

Infrared testing devices will detect the temperature of the steam line ahead of the trap and at the discharge of the steam trap, but it is only estimating the existing steam pressure. The person examining the steam trap must understand the significance of steam pressures on the trap inlet and the condensate line pressures out of the trap in order to fully understand the steam trap performance. The inlet temperature provides insight into the saturated steam pressure at the inlet of the steam trap. Results using temperature only are not very accurate and can only give a “good indication” – based on the inspector’s experience. Low steam pressure systems are practically impossible to evaluate properly using temperature. The primary role of infrared devices is to provide a surface temperature while checking the traps.

Types of Temperature Measurement Devices

Basically, there are two types of temperature measuring devices on the market today:

1. Contact
2. Non-contact



Contact Temperature Devices

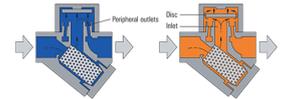
Contact temperature measuring devices require time for the temperature at the point of contact to reach the same temperature as the object being tested. Depending on the surface conditions, this may not be an acceptable method of temperature measurement.

When measuring surface temperature, the area where the readings will be taken must be clean and free from rust, process build up etc. It must be possible to make good contact with the temperature probe to get an accurate measurement.

Non-contact temperature devices measure the surface temperature of a given piece of an object utilizing radiated infrared energy. Infrared devices provide an instantaneous temperature measurement, however surfaces must be reasonably clean and the emissivity factor must be estimated reasonably well. In the case of highly reflective surfaces, the surface should be prepared such that the infrared energy can be absorbed and detected by the instrument.

Infrared devices provide varying degrees of accuracy depending on the following criteria:

1. Quality of optics
2. Spot or target diameter
3. Range
4. Emissivity compensation for varying surface emissivity
5. Ambient temperature



It is important to realize that not all infrared temperature measurement equipment is created equal. The main variable that affects how well a unit will work for a given application is its ability to adjust for different emissivity.

What Is Emissivity?

Some objects reflect infrared energy as well as radiate it. Shiny or highly polished surfaces will reflect more infrared energy than dull surfaces. A factor called emissivity is the ratio of radiated energy of an object compared to radiation of a black body. The higher the emissivity numbers, the smaller the portion of heat energy reflected and the more accurate the reading. Infrared sensors are accurate for emitted energy. Reflected energy requires adjustment.

Most steam carrying surfaces will have an emissivity between 0.8 and 1.0. This range of emissivity has little reflected energy. When selecting infrared scanning equipment, it is necessary to decide the degree of accuracy needed and then select tool that suit

Ultrasonic Testing Equipment

Ultrasonic testing equipment provides the most versatile and accurate steam system diagnostics available today. The ultrasonic unit allows the operator to hear sounds undetectable to the human ear. This type of equipment receives a high frequency signal and outputs an audible sound for the operator to hear with the aid of headphones. Typical applications for performance testing include the following components:

- Steam traps
- Steam valves
- Steam leaks

Ultrasonic steam trap testing is the final test method to be used in the steam trap testing program for detecting faulty steam traps. The operator utilises the ultrasonic unit to contact the discharge side of the steam trap, and has the ability to sense and detect even small changes and malfunctions – such as worn linkage in the trap. Steam trap inspection is much more complex than many people realise. When it is carried out well and the whole steam system is well maintained it can result in significant savings in energy.