iLearnReliability™

ENTERPRISE

iLearnReliability™ [Enterprise] is reliability e-learning for your entire team that teaches reliability strategy, program management, best practices, condition monitoring and precision maintenance practices, and provides easy-to-understand awareness training for everyone that aids in developing a "reliability culture" across the plant-floor.

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Reliability Institute

MOBIUS INSTITUTE

iLearn**Reliability**™[Enterprise]
Training module details contained in iLearnReliability [Enterprise]

iLearnReliability [Enterprise] includes five series of training that are structured for Managers, Program Management, Condition Monitoring specialists and the plant floor craftspeople and operators. Each series has a number of training modules that range from briefings to detailed training covering the topic areas of Management, Condition Monitoring and Precision Maintenance.
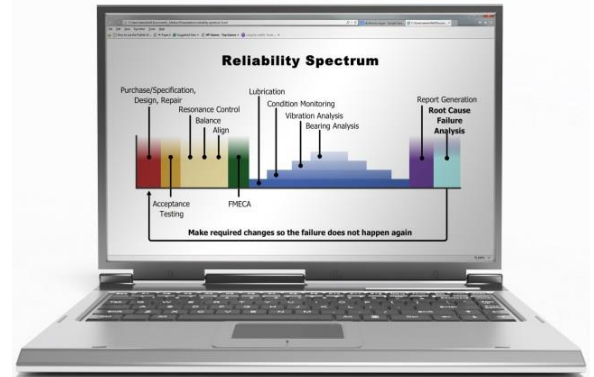
Essential Elements [EE]
The Essential Elements [EE] modules provide initial orientation of all of the reliability improvement topics covered in each respective version of iLearnReliability and can be used later for refresher training.

Manager Briefings [MB]
All Manager Briefings [MB] are short and focused. They are written for upper level managers who may not have the time to explore the intricacies of condition based maintenance, reliability improvement, and all the other topics, but do need a basic understanding of the issues, and most importantly, need to understand the financial benefits associated with the CBM program and reliability improvement initiative.

Program Management Training [MT]
The Program Management Training [MT] modules are intended for reliability engineers, PdM program managers, and other people who are charged with implementing the reliability improvement and PdM (CBM) program. These people generally do not need the same level of knowledge as the people who will actually use the condition monitoring tools and software, or the people who will work on machines (alignment, balancing, lubrication, etc.) but they do need to have a good working knowledge of those topics, and they certainly need to know how to run a successful program.

Skills Training [ST]
All Skills Training [ST] modules are very detailed and intended (primarily) for the person who is actually involved with the condition monitoring technique or craft (alignment, balancing, etc.). Of course, anyone can take the lessons in order to better understand the topic, but the detail provided is primarily intended for the practitioner.

Toolbox Talks [TT]
All Toolbox Talks [TT] are short and focused. They are primarily written for plant floor personnel or anyone who would like a quick introduction to a condition monitoring technology or precision maintenance activity without getting into too much detail. Toolbox Talks are intended to demystify condition based maintenance (and the associated technologies), the importance of reliability, and the techniques that can be used to improve reliability.

Essential Elements [EE]

iLearnReliability includes a series of brief modules called "Essential Elements" [EE] that provide a quick introduction to key reliability topics and can be used as a handy reference or refresher.

Code	Title	Slides	Description
EE-RR	Roadmap to Reliability	54	This module provides a quick introduction to the Roadmap to Reliability; the core strategy behind iLearnReliability. Roadmap to Reliability provides a strategy for defect elimination which includes condition monitoring, reliability centered maintenance, precision skills and guidance which are used alongside these tools to develop the reliability culture.
EE-DE	Defect Elimination	67	Your fundamental goal as a reliability professional should be to identify the root cause of the defects and proactively eliminate them. Taking proactive steps to eliminate the root causes of equipment failure is also known as, Defect Elimination. This module covers some common sources of defects, defect justification and how to use condition monitoring for QA/QC.
EE-ACR	Asset Criticality Ranking	55	Beginning to understand criticality analysis and the asset criticality ranking are the main goals of this module. Developing an asset criticality ranking is an essential step in the reliability improvement process, it enables work to be prioritized and investments justified. This module discusses the likelihood of failure, Risk Priority Numbers (RPN) and the detectability of the warning signs that must also be taken into consideration.
EE-RCM	Reliability Centered Maintenance [RCM]	62	The classic Reliability Centered Maintenance (RCM) strategy ensures the function of an asset is preserved without compromising safety or the environment. The main outcome is to determine the proactive tasks that can be performed to meet that goal. In this module, we will review the roles of maintenance, as well as the reliability centered maintenance process which covers operating context, failure modes, task intervals and more.
EE-MP	Maintenance Practices	57	This module focuses on several different types of maintenance practices; from reactive, proactive and preventive maintenance to planned, precision and run-to-failure maintenance. Some of these terms, and your understanding, are often broadly used, but in this module, we will begin to clarify each of their differences.
EE-FMEA	Failure Mode and Effect Analysis [FMEA]	47	The FMEA (Failure Mode and Effects Analysis) process is the examination of failure modes, the effects and consequences of failures and the focus on determining how to deal with those failure modes. This in-depth module begins to explain the purpose and benefits of using the FMEA process versus the Root Cause Failure Analysis (RCFA) method.
EE-PMO	Preventive Maintenance Optimization [PMO]	27	The Preventive Maintenance Optimization (PMO) process should reduce maintenance costs, increase availability and identify interval-based maintenance tasks that were not previously being performed. In this module, we will discover where preventive maintenance tasks come from and why these tasks are necessary.
EE-CBM	Condition Based Maintenance [CBM]	50	Just because condition monitoring test are being performed on your equipment does not mean that you are properly improving reliability of that equipment. The condition based maintenance technologies discussed in this module can be used to detect the root cause of failure and we'll cover how those technologies can be used in QA/QC function; checking installations, performing acceptance testing, etc.

Code	Module	Hours	Description
EE-VIB	**Vibration Analysis**	72	This module provides an overview of vibration analysis; a vital tool in seeing "inside" the machine. This module covers how to measure vibration to determine the health of rotating machinery by utilizing overall-level readings, time waveform and spectrum analysis. You will learn why vibration analysis is so vitally important in any condition monitoring and defect elimination program.
EE-UT	**Ultrasound Analysis**	56	This module introduces you to ultrasound analysis and how to use it to detect mechanical, electrical and process faults so that you can reduce failure rates and energy consumption. Leak detection, mechanical and electrical applications, as well as stream traps are a few of the topics that are covered in this module.
EE-IR	**Infrared Thermal Imaging**	46	Infrared thermal imaging, also known as Infrared thermography, is a powerful tool that can be used to detect faults in mechanical and electrical equipment. In this module, we discuss theory as well as the electrical, mechanical and other industrial applications that benefit from this type of condition monitoring tool.
EE-ALIGN	**Precision Shaft Alignment**	60	Precision shaft alignment is essential if you value equipment reliability. This module is an introduction to machine shaft alignment with dial indicators and laser alignment systems. We will discuss pre-alignment checks, straightedge and dial indicator alignment as well as proper methods to correct misalignment.
EE-BAL	**Precision Balancing**	49	The module on precision balancing is an introduction to correcting machine rotor unbalance. Bearings, shafts, seals and foundations will all last longer in precision balanced machines, that's why it needs to be a key element in your plan for reliably improvement.
EE-CC	**Lubrication Contamination Control**	54	This module focuses on how you can extend the life of all rotating machinery and the lubricants themselves by controlling lubrication contamination. We will discuss why contamination is so harmful, how to minimize contamination, contaminants that affect the surface and the importance of precision lubrication.
EE-PM	**Preventive Maintenance**	57	Preventive maintenance (PM), which is also known as interval-based maintenance, should be a part of a broader maintenance strategy that includes condition-based maintenance and run-to-failure maintenance. This module explores when you should use preventive maintenance, the goals you should have to preserve function and how to develop a preventive maintenance strategy.
EE-ODR	**Operator Driven Reliability**	33	This module covers the benefits of using operator driven reliability to performing simple condition monitoring tasks and inspections, adjustments and perform elementary maintenance tasks. By utilizing operator driven reliability as part of your reliability initiative, you will free up dedicated maintenance and condition monitoring personnel so that they can be more productive and effective.

Manager Briefings [MB]

Manager Briefings on *MANAGEMENT* topics [MB-M]
The majority of the Manager Briefings [MB] are written on Management [M] topics. These modules are focused on strategy and financial benefits, but they also explain the philosophy of the different maintenance practices that can be taken.

Manager Briefings on *CONDITION MONITORING* topics [MB-CM]
These Manager Briefings [MB] are written on Condition Monitoring [CM] topics. The aim is to provide the upper level manager with a working knowledge of how the condition of rotating machinery and other assets can be determined using vibration analysis, infrared thermography and other technologies. The aim is to demystify the topics.

Manager Briefings on *PRECISION MAINTENANCE* topics [MB-PM]
These Manager Briefings [MB] are written on Precision Maintenance [PM] topics. The aim is to provide the upper level manager with a working knowledge of how the reliability of rotating machinery and other assets can be improved by performing precision alignment and balancing, resonance elimination, precision lubrication, optimal operation, correct fastening, and other reliability improvement areas, as well as acceptance testing and root cause failure analysis. The aim is to demystify the topics.

Code	Title	Slides	Description
MB-M-1	Roadmap to reliability (a summary)	30	This Manager Briefing provides a summary of the PERI program, explaining how you can use iLearnReliability to transform your plant from reactive to reliable.
MB-M-2	Condition based maintenance vs. preventive maintenance	15	This Manager Briefing provides a quick overview of the philosophy of preventive maintenance and uses the results of numerous studies to demonstrate why it is flawed when applied to rotating machinery. It goes on to discuss why condition based maintenance makes more sense.
MB-M-3	Benefits of reliability and CBM	30	This Manager Briefing explains the benefits of the precision maintenance/reliability improvement strategy. It provides a number of examples of organizations that reduced costs, increased production and improved their stock price. It also discussed the benefits in relation to improved safety, improved quality, and improved asset utilization.
MB-M-4	What is classical Reliability Centered Maintenance (RCM)?	30	This Manager Briefing provides an introduction to classical RCM and its relationship to the PERI approach and the iLearnReliability content. It provides a basic understanding of RCM, and also shows the relationship between it and FMECA.
MB-M-7	Why condition monitoring does not improve reliability	20	This Manager Briefing presents a "story" that illustrates the difference between condition based maintenance and reliability improvement. We use car maintenance as a way to demonstrate that condition monitoring (while very important), does not improve failure, it simply provides a warning about potential catastrophic failures (that could have been avoided).

Program Management Training [MT]

Program Management on *MANAGEMENT* topics [MT-M]

These Program Management Training [MT] modules are focused on Management [M] topics. These modules are intended to ensure that a) the benefits of condition based management and reliability improvement are fully understood, b) the steps required to successful start and maintain a successful program are understood, and most importantly c) the steps required to gain buy-in from upper-management through to the "plant-floor" staff are fully understood.

Program Management on *CONDITION MONITORING* topics [MT-CM]

These Program Manager Management [MT] modules are focused on Condition Monitoring [CM] technology topics. These modules will provide a very strong base of knowledge on all of the condition monitoring technologies so that it is possible to speak with confidence to a sales person selling the systems, and carry on a sensible conversation with the condition monitoring specialist, whether he or she is a consult or an in-house employee.

Program Management on *PRECISION MAINTENANCE* topics [MT-PM]

These Program Management Training [MT] modules are focused on Precision Maintenance [PM] topics. These modules will provide a very strong base of knowledge on all of the precision maintenance techniques such as precision alignment and balancing, resonance elimination, precision lubrication, optimal operation, correct fastening, and other reliability improvement areas. It is assumed that the person taking these modules does not require the knowledge to perform these tasks but does need to fully understand how they are done so that purchase decisions can be made, work practices can be established, and correct practice is recognized.

Code	Title	Slides	Description
MT-M-1	**Roadmap to reliability improvement**	240	This Management Training [MT] module is the key training module in the iLearnReliability series. This learning module (and the associated PDF document) takes you by the hand and explains how to achieve the transformation from reactive to reliable at your plant using iLearnReliability. It presents the decisions you will have to make, and it will help you to determine where you are along the path. It makes recommendations regarding who should receive training and recommends which training modules should be used – however, you are free to use any lesson modules for any people.
MT-M-2	**Understanding maintenance practices**	200	This Management Training [MT] module provides a detailed overview of maintenance practices. After discussing perils of working in a plant that only practices reactive maintenance, the module moves on to a discussion breakdown maintenance (pros and cons) and preventive maintenance (and why the strategy can be flawed for rotating machinery). Next the module introduces condition based maintenance strategy. We explain the benefits of basing maintenance on condition, and provide an overview of each condition monitoring technique. And finally, we discuss how the greatest reductions in maintenance costs, energy consumption, inventory costs and production losses are gained through reliability improvement. We provide an introduction to RCM but then explain how most plants can make huge gains by focusing on precision alignment and balancing, proper lubrication and fastening/torqueing, resonance elimination, and other techniques.
MT-M-3	**Setting the targets: KPIs, benchmarking, and continuous improvement**	50	This Management Training [MT] module explains the importance of developing a vision statement, a plan, and a set of targets. The vision statement, and leadership from the top, is essential to the success of this program. If you don't have goals, and you don't have a plan, then it is impossible to measure your progress. Identifying and addressing the gaps are an important part of the continuous improvement program. In addition to providing a set of leading and lagging KPIs, with guidance on how to acquire the data, we provide a helpful benchmarking tool so that you can compare yourself to best practice in your industry.

MT-M-4	**Leadership and culture change**	70	This Management Training [MT] module is aimed at helping you understand the psychology of your fellow human beings, and navigate the change process. The best plan and vision in the world will fail unless you address the human factors. The culture in your plant will need to change, and the human-error issues will need to be addressed. Your only tools are communication and training; you need to manage both correctly.
MT-M-5	**Building a Master Asset List**	40	This Management Training [MT] module explains the need for a Master Asset List; a list that documents all of the assets that relate to the reliability of the plant, tagged with information documenting the location and function of the asset. This module explains why you need such a list and how to develop the list even if you don't already have a Computerized Maintenance Management System (CMMS). If you already have a functioning CMMS, then it will be unnecessary to go through this module (unless you want to check that your CMMS contains the required information).
MT-M-6	**Establishing the Asset Criticality Ranking**	115	This Management Training [MT] module provides guidance on how to assign the criticality to each asset and function. It is impossible to proceed with the reliability improvement program without an accurate assessment of criticality. Without it, it is impossible to justify which maintenance strategy should be applied to each asset. This module describes how you can involve different stakeholders from the maintenance, production, quality control, engineering, and health and safety departments to build a Master Asset List ordered by criticality.
MT-M-7	**Determining your asset maintenance strategy**	105	This Management Training [MT] module explains the importance of understanding the criticality of your assets and then, starting from the most critical asset and working down, determining the failure modes of your assets, the probability of failure, and the effects of the failure. The aim is to determine which assets should be part of the condition based maintenance program (and which technologies/monitoring methodologies should be applied), which assets should be part of a preventive maintenance program, and which assets should receive precision maintenance (and which techniques should be applied). All of these decisions have a technical *and* financial basis.
MT-M-9	**Establishing a new vibration monitoring program**	250	This Management Training [MT] series of lessons is intended for the person who intends to start a condition monitoring program, the person who has started a condition monitoring program but wants to check that it is set up correctly, and the person who wants to better understand the vibration program in their plant. The module presents a structure plan and then goes through all the key steps: selecting the machines to monitor, determining the best measurement strategy, selecting the measurement types, choosing the best measurement locations, options for mounting the sensor, specifying and controlling test conditions, selecting the optimal measurement settings, building the database, establishing baseline data, and setting alarms. The focus is clearly on vibration analysis, but many of its messages are equally valid for other technologies.
MT-M-10	**Supercharging an existing vibration monitoring program**	150	This Management Training [MT] is intended for the person managing the vibration monitoring program, or anyone interested in establishing a successful program or improving an existing program. This module goes through eight major areas that should be optimized in any vibration program in order to extract the maximum benefit from the skills of the vibration analyst: acceptance testing, the detection phase, the analysis phase, the diagnostic phase, the reporting phase, the correction phase, the improvement phase, and the verification phase.

MT-CM-1	**A brief introduction to the Condition Monitoring technologies**	75	This Program Management Training [MT] module provides an overview of each of the condition monitoring technologies: vibration analysis, ultrasound, oil analysis, wear particle analysis, thermography, electric motor testing, performance monitoring and inspections. This module is simply intended to provide an introduction for the person who does not require the more detailed training provided in the other remaining MT-CM modules.
MT-CM-2	**Vibration analysis and bearing fault detection**	95	This Program Management Training [MT] module provides a detailed introduction to vibration analysis, describing the different types of readings that can be taken, a little about how those readings can be interpreted, and how the data is typically collected (i.e. different monitoring systems). Topics include: overall levels, spectra, waveforms, phase and orbits, plus the monitoring systems: walk-around, periodic monitoring, and protection systems. The module also covers the unique high frequency techniques designed to detect rolling element bearing defects.
MT-CM-3	**Airborne and structure-borne ultrasound**	50	This Program Management Training [MT] module provides a detailed introduction to the use of airborne and structure-borne ultrasound for condition monitoring. Topics include: understanding ultrasound, airborne measurements, structure-borne measurements, mechanical applications (bearings, lubrication, and other rotating machine faults), electrical faults (arching, corona, etc.), and process applications (detecting leaks and steam trap issues).
MT-CM-4	**Oil analysis and wear particle analysis**	70	This Program Management Training [MT] module provides a detailed introduction to oil analysis and wear particle analysis. The module starts with an introduction to the importance of lubrication and the field of oil analysis; determining if the lubricant is fit for purpose, assess the properties, detecting particles, and detecting contamination. It then discusses wear particle analysis; detecting contaminants and look for particles that indicate that wear is occurring. A range of test methods are introduced.
MT-CM-5	**On-line and off-line electric motor testing**	50	This Program Management Training [MT] module provides a detailed introduction to motor current signature analysis (to primarily detect broken rotor bars), electrical signature analysis (using voltage and current) to detect mechanical and power supply problems; and motor circuit analysis to detect mechanical, electrical and insulation problems. The module begins with a description of how induction motors work.
MT-CM-6	**Infrared thermography**	55	This Program Management Training [MT] module provides an overview of the application of infrared (IR) thermography to the condition monitoring of rotating machinery, electrical apparatus, and plant process application. Infrared energy is briefly introduced and spot radiometers and infrared cameras are described. The module does not go into a lot of theory, but important issues such as emissivity, test conditions and optical issues are explained.
MT-PM-1	**Precision shaft alignment**	100	This Management Training [MT] module provides a detailed introduction to shaft alignment. Topics include: why is misalignment so destructive, pre-alignment checks, soft-foot testing and correction, dial indicator techniques, laser alignment techniques, thermal growth, and moving the machine.
MT-PM-2	**Field balancing**	65	This Management Training [MT] module provides a detailed introduction to field balancing. Topics include: why is unbalance so destructive, the basics of unbalance, determining if a machine is out of balance, single plane balancing, and overview of two plane balancing, tolerances and the importance of precision balancing.

MT-PM-3	**Precision lubrication (and contamination control)**	55	This Management Training [MT] module provides a detailed introduction to the key role lubrication plays in the reliability improvement process. It provides a number of demonstrations of the financial benefits of precision lubrication and then explains how the wrong lubricant and contaminated lubricant can affect bearings, gears and hydraulic systems. It also explains how a lack of grease or excessive grease can harm a bearing.

Skills Training [ST]

Skills Training on *CONDITION MONITORING* topics [ST-CM]
These Skills Training [ST] modules are written on Condition Monitoring [CM] topics. The aim is to provide the person collecting vibration readings and/or analyzing the data to know how to perform the job with confidence. Note that additional training will be required in order to meet the certification requirements per ISO 18436-2. These modules are also excellent reference modules.

Skills Training on PRECISION MAINTENANCE topics [ST-PM]
These Skills Training [ST] modules are written on Precision Maintenance [PM] topics. The aim is to provide the person who will actually balance or align the machine with the know-how to perform these tasks correctly.

Code	Title	Slides	Description
ST-CM-1	**Vibration fundamentals**	110	This Skills Training [ST] module provides a detailed introduction to the fundamentals of vibration. The focus is on frequency and amplitude, the time waveform, and the spectrum (FFT). This module is ideal for the manager who would like a more detailed understanding of vibration analysis, and the person collecting vibration readings who is just moving into vibration analysis.
ST-CM-2	**Accurate and repeatable data collection**	175	This Skills Training [ST] module provides a detailed introduction to the collection of vibration readings. It provides information on eight key steps: Safety, selecting measurement settings, selecting the measurement location, naming conventions, mounting the sensor, controlling the test conditions, recording observations, and recognizing bad data. Although some people who collect data may not have to make some of the measurement and analyzer setup choices covered in this module, it is believed that the information presented is important and useful.
ST-CM-3	**Diagnosing common faults with spectrum analysis**	100	This Skills Training [ST] module provides a detailed introduction to the spectrum and how five common fault conditions (unbalance, misalignment, looseness, resonance and rolling element bearing faults) can be detected via the spectrum. The module outlines a systematic approach that should be followed, and also provides an overview of common vibration analysis terms. This module is ideal for the manager who would like a more detailed understanding of vibration analysis, and the person who is relatively new to vibration analysis.
ST-CM-4	**Vibration analysis**	2000	This Skills Training [ST] module provides a great deal of training on vibration analysis, from the most basic topics through to diagnosing faults. This series of lessons is intended to be used by the vibration analyst; it provides all the information necessary to collect, analyze and diagnose machine faults. Formerly called iLearnVibration, this module has been used as a training tool and a handy reference system for thousands of people around the world.

ST-PM-1	**Precision shaft alignment**	950	This Skills Training [ST] module provides a great deal of training on precision shaft alignment. After a detailed overview of the entire process it covers the following topics: Determining if misalignment exists, pre-alignment checks, soft foot correction, dial indicators, alignment using the reverse dial and rim-and-face methods, laser alignment, dealing with thermal growth, and moving the machine. Regardless of how simple you may believe it is to use the modern laser alignment systems, every person who performs shaft alignment should complete this training. These lessons are from iLearnAlignment product.
ST-PM-2	**Field balancing**	600	This Skills Training [ST] module provides a great deal of training on precision field balancing. The training covers a large number of topics: understanding unbalance, causes of unbalance, understanding phase and vectors, balance theory, diagnosing unbalance, preparing for the balance job, singe plane balancing, two plane balancing, static-couple balancing, trial weight selection, slitting weights, tolerances and quality (ISO, API, Navy), and more. Regardless of how simple you may believe it is to use the balancing programs in modern vibration analyzers, every person who performs field balancing should complete this training. These lessons are from iLearnBalancing product.

Toolbox Talks [TT]

Toolbox Talks on *CONDITION MONITORING* topics [TT-CM]

These Toolbox Talks [TT] are written on Condition Monitoring [CM] topics. The aim is to provide people with a working knowledge of how the condition of rotating machinery and other assets can be determined using vibration analysis, infrared thermography and other technologies. The aim is to demystify the topics.

Toolbox Talks on *PRECISION MAINTENANCE* topics [TT-PM]

These Toolbox Talks [TT] are written on Precision Maintenance [PM] topics. The aim is to provide people with a working knowledge of how the reliability of rotating machinery and other assets can be improved by performing precision alignment and balancing, resonance elimination, precision lubrication, optimal operation, correct fastening, and other reliability improvement areas, as well as acceptance testing and root cause failure analysis. The aim is to demystify the topics.

Code	Title	Slides	Description
TT-CM-1	**Condition monitoring and reliability**	25	This Toolbox Talk [TT] provides a quick introduction to the field of condition monitoring and reliability improvement. It paints the big picture in a brief presentation.
TT-CM-2	**Vibration analysis**	25	This Toolbox Talk [TT] provides a quick introduction to vibration analysis. Using lots of animations and machine sounds, this presentation demystifies why we perform vibration and basically how it works.
TT-CM-3	**Ultrasound**	25	This Toolbox Talk [TT] provides a quick introduction to the use of ultrasound tools for condition monitoring. The aim is to demonstrate how high frequency sounds are emitted when machines are in distress, when leaks occur, and in other situations. The aim of the presentation is to demystify the application.

TT-CM-4	Thermography	30	This Toolbox Talk [TT] begins by relating high temperature to changing condition in mechanical and electrical applications, and explains how spot radiometers and infrared cameras can be used to detect the higher-than-normal temperature.
TT-CM-5	Oil analysis and wear particle analysis	15	This Toolbox Talk [TT] introduces the topic of lubrication and explains how important it is that the lubricant maintains its essential properties and remains contaminant free. It goes on to explain how tests can be performed to analyze the lubricant and check for contaminants, and how additional tests can detect wear particles that indicate that a fault condition exists.
TT-CM-6	Electric motor testing	35	This Toolbox Talk [TT] provides and introduction to the field of electric motor testing using on-line tests (voltage and/or current) and static/off-line tests. This presentation demystifies the testing techniques and reveals how important it is to detect mechanical, electrical and insulation faults before failure occurs.
TT-PM-1	The benefits of precision maintenance	35	This Toolbox Talk [TT] provides an overview to the benefits of precision maintenance, explaining that it is better to fix the machine once correctly (and operate the machine correctly), rather than having to incur unplanned downtime and risk failure that could result in injury or environmental harm.
TT-PM-3	Shaft alignment	55	This Toolbox Talk [TT] delivers a very brief introduction to precision shaft alignment using dial indicators and laser alignment systems. After explaining what misalignment is, and why it is destructive, the lesson uses animations to demonstrate how the alignment is performed.
TT-PM-6	Precision balancing	35	This Toolbox Talk [TT] delivers a brief introduction to the destructive forces associated with unbalance, and the techniques that can be used in the field (using vibration analyzers) and with balance machines to precision balance a rotor.
TT-PM-7	Precision lubrication	19	This Toolbox Talk [TT] explains how important lubrication is, and highlights critical it is that the lubricant is in a fit state with the correct viscosity and other properties and free of contaminants. The focus is rolling element bearing lubrication, and the 3D animations make it clear that contaminants damage the bearing surface and too much or too little lubrication will greatly reduce the life of the bearing.

To learn more about iLearn Reliability, Classroom or other On-Line training options, contact RELIABILITY INSTITUTE OF AUSTRALIA

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