

ASSET RELIABILITY PRACTITIONER[®] [ARP]

TRAINING AND CERTIFICATION

[ARP-A] RELIABILITY ADVOCATE

[ARP-E] RELIABILITY ENGINEER

[ARP-L] RELIABILITY PROGRAM LEADER



www.mobiusinstitute.com

ASSET RELIABILITY PRACTITIONER® [ARP] TRAINING AND CERTIFICATION

A growth path for Asset Reliability Leaders and Practitioners. The only way to gain a first-class education and achieve recognition for knowledge and experience.

A growth path for Asset Reliability Leaders and Practitioners

The only way to enjoy success in a reliability improvement initiative is to appreciate what it takes to achieve culture change and the process improvements necessary to change the current practices into those that ensure equipment is maintained and operated in a manner that achieves peak performance. Mobius Institute™ has developed a series of training courses that provide the breadth and depth of knowledge necessary to achieve success.

Everyone needs to play their role in the initiative, and we offer training, and in some cases accredited certification, on the growth path from technician to leader:

- Precision maintenance skills: alignment, balancing, fastening, and lubrication
- Condition monitoring program establishment and technology expertise: vibration, ultrasound, oil analysis, infrared, and motor current analysis
- Reliability engineering with the technical skills to implement the technical elements
- Reliability leadership with the leadership skills to make the business case, build a strategy, and develop a motivated culture
- Asset reliability strategy: the plan to ensure the initiative delivers sustained business value

A foundation built on mechanical skills

If the machine is not precision aligned and balanced, if it is not lubricated correctly, and if the fasteners are too tight or loose, the machine is destined for a short and disappointing life. It will be another asset that does not deliver its true value, it will interrupt operations, add to your maintenance costs, at worst, result in injury or environmental harm.

You can solve that problem with specific skills training, and you will learn all about it in the Asset Reliability Practitioner [ARP] courses.

See the future with condition monitoring

Condition monitoring is a key ingredient in any successful reliability improvement initiative, but while it can drastically reduce costs and improve plant reliability and dependability, it does not necessarily contribute to improved equipment reliability.

You can take specific training on the technologies according to ISO standards, or you can learn how to design and lead the condition monitoring program in the Asset Reliability Practitioner [ARP] courses.

Asset Reliability Practitioner [ARP] training and certification

To enjoy a truly successful reliability improvement initiative, you need both depth and breadth of knowledge.

The leader of the initiative must have a clear view of the entire scope of the initiative, with a detailed understanding of the business proposition, the culture change process, and the individual steps required to implement the strategy. The reliability engineer must have a depth of knowledge in reliability analysis, maintenance strategy, and best practice, plus condition monitoring (and other topics). And they both must be surrounded by a workforce of people who are engaged and enthusiastic about the initiative.

The Asset Reliability Practitioner [ARP] training and accredited certification program provides the knowledge, qualifications, and growth path to enable a program to be run successfully.





ARP-A RELIABILITY ADVOCATE

Everyone must start somewhere. Whether you are new to reliability improvement and need a way to get up to speed, or if you wish to understand the complete holistic view of reliability and performance improvement because you are considering beginning a program, the ARP-A “Reliability Advocate” course is the perfect place to start.



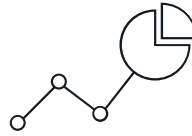
ARP-E RELIABILITY ENGINEER

This course is perfect for the technical reliability engineer. If you are the person who needs to understand how to implement the technical elements of reliability improvement and perform the analysis that will drive the key decisions, this is the ideal course for you.



ARP-L RELIABILITY PROGRAM LEADER

If the responsibility for running a successful reliability and performance improvement initiative rests on your shoulders (or you wish it did), this is the course for you. The emphasis on this course is how to generate business value, develop and implement a strategy, and create the right culture, although we do summarize the technical elements.



ASSET RELIABILITY TRANSFORMATION® [ART]: THE PRACTICAL AND DETAILED STRATEGY

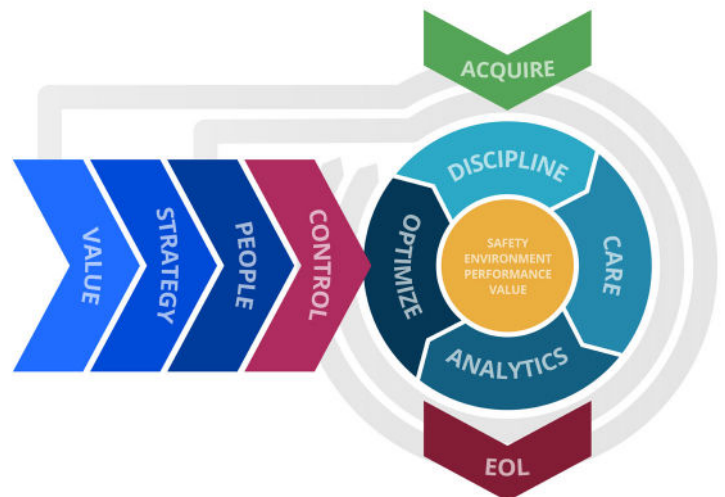
One of the keys to success: a practical, detailed strategy

You must have a strategy to be successful. Improving reliability and achieving target levels of performance is not easy. Many have tried and many have failed. The most common reason for failure is a lack of strategy: a plan that avoids the bear traps and keeps everyone motivated and aligned.

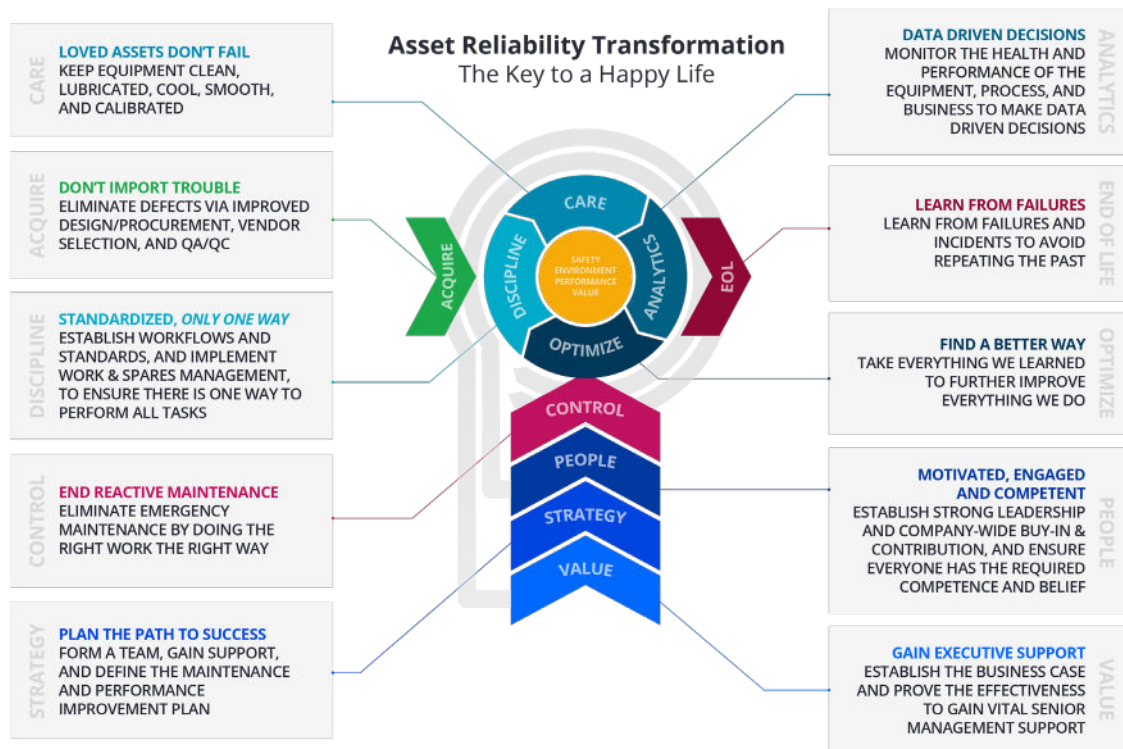
We have built the Asset Reliability Transformation [ART] process that will guide you, step-by-step through the initiative:

- 10 phases, 64 steps, and 365 documented recommended practices - no stone left unturned
- We help you ask the right questions at the right time so you make the right moves
- VALUE, PEOPLE, and STRATEGY: Build a solid foundation
- CONTROL: Overcome reactive maintenance
- ACQUIRE, DISCIPLINE, CARE, ANALYTICS, EOL, and OPTIMIZE: Don't create problems, make data-driven decisions, and continually improve

Regardless of your starting point, regardless of your industry, ART will enable you to run a successful reliability and performance improvement initiative.



LEARN THE MOBIUS WAY



WHY LEARN WITH MOBIUS INSTITUTE™?

There are three major reasons why over 5,000 students choose Mobius Institute every year:

- We make complex topics simple with amazing 3D animations and simulations that make you say, "Ah, now I get it!"
- We give you access to the entire course before the class begins so you are better prepared, and for six months after the course, just in case you still have questions.
- We use anonymous, stress-free polling throughout the course, so you know if you truly understand each topic, and the instructor knows not to move on to the next topic - *no student is left behind.*

There are many other reasons why asset reliability practitioners, and their managers, choose Mobius Institute.



www.mobiusinstitute.com



WITH MOBIUS INSTITUTE™, YOU CAN *LEARN YOUR WAY.*

We offer the ultimate flexibility. See the course details for more information.



PUBLIC INSTRUCTOR-LED COURSES

We have training partners in 60 countries, offering 23 languages.



VIRTUAL INSTRUCTOR-LED COURSES

Attend a virtual course - just like a live course, but you learn via GoToMeeting.



PRIVATE ON-SITE INSTRUCTOR-LED COURSES

Have the instructor come to your site to save your precious time and money (and health).



ONLINE VIDEO COURSES

Traditional eLearning courses and iLearnReliability Learning Management System (LMS) courses

ACCREDITED CERTIFICATION

Respected, accredited certification

Everyone should be recognized for their knowledge and experience, and that is certainly true for the champions of reliability improvement. There is so much to know across such a broad range of topics, that it takes a special person to be successful. The Asset Reliability Practitioner® certification program recognizes people in two ways: for their knowledge and for their experience.

Recognition for your knowledge

Following the guidelines established by international standards (IEC and ISO) and adhering to the highest standard of ISO/IEC 17024, the Asset Reliability Practitioner ARP-A “Reliability Advocate”, ARP-E “Reliability Engineer”, and ARP-L “Reliability Program Leader” recognizes your knowledge and general experience.

If you are educated, pass the examination, and can verify your experience, you will join the ranks of the international fraternity of Mobius Institute™ certified practitioners.

This is a legitimate certification.

ASSET RELIABILITY PRACTITIONER®

[ARP-E] Reliability Engineer

This course is the best way to master reliability engineering. You will learn a broad range of essential topics.

The reliability engineer must be tremendously versatile.

They must understand a broad range of technical subjects and be capable of applying them all. If you are up for the challenge, the Asset Reliability Practitioner [ARP-E] “Reliability Engineer” course is just what you need.

You will have 5 days to master everything from defect elimination, asset strategy development with RCM, PMO, and FMEA, planning and scheduling, spares and materials management, condition monitoring, precision maintenance practices, reliability data analysis, criticality and Pareto analysis, root cause analysis and FRACAS, lubrication and asset care, and other topics.

There is a lot to learn, but to be a successful reliability engineer, you must learn it all. Fortunately, the Mobius Institute™ training techniques will ensure that you will not just survive the course, you will enjoy it, understand all the topics, and feel confident in the role of a reliability engineer.

THE ARP-E RELIABILITY ENGINEER CERTIFICATION PROCESS

There are just four requirements to become certified:

1. You must attend this Mobius Institute course, or any other recognized training course that covers the same topics.
2. You must achieve a 70% score, or better, on the three-hour, 100-question, multiple-choice exam.
3. You must have a minimum of 24 months of experience in the industry involved in some way with reliability improvement.
4. Your experience must be verified by an independent person.



ARP-E FAST FACTS

Duration:

32 hours minimum: Typically delivered over 5 days

Format:

- Live public course
- On-site course
- Virtual online course
- Video distance learning online course

Compliance:

- Training: modeled on 18436-2 and ISO 18436-3, but there is no ISO standard for reliability personnel certification.
- Certification: according to ISO/IEC 17024 and modeled on ISO 18436-1
- Training: ISO 18436-3

Exam:

- Three hours
- 100 multiple-choice questions
- 70% passing grade
- Can be taken online or in-person at the course

Certification requirements:

- Training course completed
- 24-months of work experience, verified by an independent person
- Pass the exam
- Valid for 3 years

Pre-study:

- Access to the “Learning Zone” upon registration and payment
- Complete set of videos covering every topic
- An excellent way to be prepared and get the most from the course

Post-study:

- Continue to access the Learning Zone for 6-months after the course
- Continue learning, without charge, on MOBIUS CONNECT® via mobiusconnect.com

WHAT WILL I BE CAPABLE OF ONCE I COMPLETE THE COURSE?

The role of “Reliability Engineer” does not have a clear-cut definition. And different organizations utilize reliability engineers differently. However, after our course, you will have a solid understanding of a wide range of topics that will enable you to perform the tasks that are commonly performed by reliability engineers, and provide advice to people in the maintenance, engineering, and operations/production departments.

Reliability data analysis

You will have a good understanding of statistics, asset criticality ranking, Pareto analysis, Weibull analysis, and Crow-AMSAA. You will also learn about Reliability Block Diagrams (RBD) and the Monte Carlo method – and a few other topics. You will know whether you need to utilize those techniques: their benefits, the tools you will need, how you can utilize what you learned, etc.

With this information:

1. You will be able to work with other stakeholders to develop a thorough, robust criticality ranking. And with that, you can prioritize and justify a wide range of tasks
2. You will be able to extract data and perform Pareto analysis to identify your bad actors and thus prioritize your improvement activities.
3. You will understand Weibull analysis, Crow-AMSAA, reliability block diagrams, and Monte Carlo analysis so that, if you had the tools to perform that analysis, they would make perfect sense. Additional training would be required to master those techniques.

Asset strategy development: FTA, RCM, PMO, FMECA

You must follow a structured process to ensure your asset strategy (maintenance plan) manages your risks and makes the best use of available resources. We spend a lot of time on these subjects so that you understand:

1. Why it is so important to develop a maintenance plan with a clear understanding of asset criticality, the function (and context) of the asset, and the failure modes.
2. How to avoid the common traps experienced with the use/implementation of these techniques.



Now, you *can* attend week-long courses on RCM, PMO, and FMECA, so there *is* more you can learn. Having said that, many of those courses also cover topics that are covered separately on our course, for example, condition monitoring, failure patterns, precision maintenance, etc. And on those courses, you will spend time with basic exercises putting what you have learned into practice with exercises, etc.

Therefore, the ARP-E course cannot make you an expert in every area of reliability, maintenance, design, and operations but you will have a very clear picture of how to utilize these techniques, you will be able to assess whether the techniques you used to develop your maintenance plan was adequate, you will be able to assess consultants who may help you in your implementation – and it will be a foundation to learn much more.

Condition Monitoring

You will understand how a “condition-based maintenance” program should work; how to prioritize the implementation, how to select the technologies, how to select the measurement periods, and so on. You will also learn about the technologies.

With this information, you will be able to assess your existing program, or how to select contractors, and how to improve what you are already doing.

But please remember, there is a LOT to know about each technology and how to successfully run the program. You will require additional training if you want to communicate with condition monitoring experts at a technical level. The training will, however, enable you to know what “good” looks like.

We do offer additional condition monitoring training if you are interested.

Lubrication management

One of the key topics for people with rotating machinery is how to manage lubricants and hydraulic fluids.

Once again, you can spend a week learning about this subject, and there are additional courses to gain true expertise. But with the ARP-E course, you will have a very clear understanding of the importance of selecting the right lubricants and how to avoid contamination. You will feel very comfortable with this subject. You will be able to take that knowledge to improve your current practices.

Precision maintenance

Precision maintenance is certainly one of the keys to improved reliability. You will learn enough about precision fastening (electrical and mechanical), shaft and belt alignment, and rotor balancing to identify whether your current practices meet the required high standards. You will be familiar with all the key terms so that you can engage with the craftspeople, contractors, and vendors of the equipment.

We do offer additional alignment and balancing training if you are interested.

Work and spares management

Work management (planning and scheduling) is another core component of a successful reliability program: it affects the quality of work, the efficiency of the work, the safe execution of the work, and the costs of executing the work. Spares management works hand-in-hand with work management – you can't have one without the other. Spares management reduces costs, improves work efficiency, and can dramatically reduce maintenance costs.

In this course, you will learn enough to know what “good” looks like. Normally the reliability engineer does not have responsibility for work and spares management, but you will understand that it plays a very important role in reliability improvement, and you will be able to assess whether what your organization is doing is “world-class” or whether there are “opportunities for improvement”. You can then advise (with tact) the maintenance manager about changes that could be made.

Root cause failure analysis

There are lengthy courses you can take to master the various techniques (5-Why, Ishikawa, fault/causal tree, etc.), to utilize software, and more, but what you will learn on our course will set you up for success. You will understand:

3. What the techniques are and basically how to use them (5-Why, Ishikawa, KT, FTA, and others)
4. How to manage the projects
5. The human error factors
6. The human psychology side of solving problems and implementing solutions
7. How to manage the project (A3, 8D, 16J) to ensure the process has the desired outcome

But the truth is, we only get to spend approximately half-a-day on this important topic, so there is more to learn. But you will know what you know, and you will know what you need to learn so that you feel confident to perform root cause failure analysis.





Mobius Institute Board of Certification is an accredited certification body per ISO/IEC 17024 and ISO 18436-1 authorized to provide certification in accordance with ISO 18436-1 and 18436-2.

Mobius Institute Board of Certification (MIBoC) is an impartial and independent entity that is directed by scheme and technical committees to ensure that its certification meets or exceeds the requirements defined by the applicable International Organization for Standardization, ISO 18436 standards.



MOBIUS INSTITUTE is a worldwide provider of Reliability Improvement, Condition Monitoring and Precision Maintenance education to industrial plant managers, reliability engineers, and condition monitoring technicians, allowing plants to be successful in implementing Reliability Improvement programs through delivery of more easily understandable and comprehensive training of Reliability and Vibration Analysis via public, in-plant and online education programs.

For more information about additional training courses, software tools, industry terminology and definitions, accredited certification, and specific course details, visit the Mobius Institute website.

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The maintenance and reliability industry's professional network.



TOPICS COVERED – ENGINEER [ARP-E]

- Introduction
 - The reliability engineer and the reliability program leader
 - Overview of the Asset Reliability Transformation® process
 - The benefits of reliability
 - How does reliability improvement compare to other programs?
- Culture change
 - Culture change and you
 - Getting suggestions
 - The brown-paper process
 - Motivation
- Training and skills assessment
 - Why do people need to be trained?
 - Skills assessment
 - Training and certification
- Risks and consequences
 - Assessing the risks
 - Developing the consequence ranking system
- Likelihood and detectability
 - How likely is failure?
 - Will we see the failure coming?
- Reliability data analysis
 - The importance and value of data
 - The foundation of reliability engineering
 - Statistical techniques
 - Data and Weibull distribution
 - Duane model and Crow-AMSSA
 - Reliability block diagrams (RBDs)
 - Using reliability data for decision making
 - Data quality
- Asset criticality ranking
 - How should the asset criticality ranking be defined?
 - Asset criticality ranking step by step
- Pareto analysis
 - What is Pareto analysis?
 - Pareto analysis example
- Defect elimination
 - What is defect elimination?
 - Defect elimination strategy
- Minimize life cycle cost
 - Life cycle cost minimization
 - Design for reliability
 - Value-driven procurement
 - Acceptance testing

Continued...





TOPICS COVERED – ENGINEER [ARP-E] *continued*

- Operations and reliability
 - Operator-driven reliability (ODR)
 - Standard operating procedures (SOP)
 - Overall equipment effectiveness (OEE)
- Asset strategy development
 - What is an asset strategy?
 - How to develop an asset strategy
 - Typical outcomes of an asset strategy
- Master asset list and bill of materials
 - How to develop an accurate Master Asset List (MAL)
 - How to create a Bill Of Materials (BOM)
 - Change management
- Fault tree analysis (FTA)
 - What is FTA?
 - The steps of FTA
 - Example of FTA
- Failure modes, effects, and criticality analysis (FMECA)
 - What is FMECA?
 - The steps of FMECA
 - Example of FMECA
- Reliability centered maintenance (RCM)
 - What is RCM?
 - The steps of RCM
 - Example of RCM
- Preventive maintenance optimization (PMO)
 - What is PMO?
 - Prerequisites for performing PMO
 - Getting started
- Root cause (failure) analysis (RCA)
 - Why and when to perform RCA?
 - People and RCA
 - RCA techniques
 - Condition Monitoring data and RCA
- Work management
 - Goals of work management
 - Roles and responsibilities
 - Work management flow
 - Job scheduling and execution
 - Closeout and feedback
- Spares and material management
 - The importance of spares management
 - Spares database
 - The selection process and purchasing requirements
 - Caring for spares
 - The storeroom
- Precision lubrication and contamination control
 - The importance of lubrication
 - How lubrication works
 - Contamination
 - Filtration
 - Storage and dispensing
- Precision shaft alignment
 - Introduction to shaft alignment
 - What is misalignment?
 - Types of misalignment
 - Determine the alignment state

Continued...





TOPICS COVERED – ENGINEER [ARP-E] *continued*

- Rotor balancing
 - What is unbalance?
 - Causes of unbalance
 - Diagnosing unbalance
 - Why balance?
 - Balancing the rotor
- Mechanical and electrical fastening
 - Precision fastening
 - Bolt torquing (tensioning)
 - Electrical connections
 - 5S and the visual workplace
 - 5S: Lean: Six Sigma Reliability improvement
- Vibration analysis
 - Introduction to vibration analysis
 - Vibration sensors
 - Overall level readings
 - Vibration spectra, time waveform, and phase analysis
 - Rolling element bearing fault detection
 - Fluid-film bearing and rotor fault detection
 - The future of vibration analysis
 - Case studies
- Ultrasound
 - Introduction to ultrasound
 - Mechanical and electrical applications
- Oil analysis
 - New and used oil analysis
 - Analysis technologies
 - Measuring and reporting oil cleanliness
 - Wear particle analysis
- Infrared thermography
 - Introduction to infrared analysis
 - Mechanical and electrical applications
- Inspections performance and NDT
 - Visual inspections
 - Non-destructive testing (NDT) methods
- Electrical equipment
 - Power quality
 - Electrical testing
 - Partial discharge
 - Induction motor testing
 - Motor current signature analysis (MCSA)
 - Electrical signature analysis (ESA)
 - Motor circuit analysis (MCA)
- The future of condition monitoring
 - Technologies and analytics in the future
- Breaking out of reactive maintenance
 - How to break out of the reactive maintenance cycle of doom
- Continuous improvement (Kaizen)
 - Key performance indicators (KPIs)
 - Maintenance metrics
 - CM and reliability performance
 - Review program strategy



➤ IS THE ARP CERTIFICATION ACCREDITED TO ISO/IEC 17024?

As of this writing, the ARP certification scheme has passed the final audit but has not been formally accredited by the government-appointed body. The auditing body has also stated that everyone who has already been certified will automatically be enrolled in the accredited program. Therefore, for all intents and purposes, the program is accredited.

➤ WHAT IS THE DIFFERENCE BETWEEN ARP CATEGORY I, II, AND III AND ARP A, E, AND L?

When the Mobius Institute Board of Certification™ [MIBoC] Scheme Committee initially established the Asset Reliability Practitioner certification scheme, it was decided that it should follow the same naming process as the condition monitoring ISO 18436 certification program. Therefore, it was decided that each level should be Category I, II, and III.

The problem was, it caused confusion because whereas there is a definite growth path from Category I to II and III in vibration analysis, for example, and the fact that you needed to be Category II before you could apply for Category III, the same rules did not apply for ARP.

The Scheme Committee decided that a person should be able to transition directly to the highest certification level of the ARP without being required to be certified at lower levels. The reason why is described in separate FAQ questions.

The same is true for the second-highest level. The scheme committee determined that a person should be able to go directly to Category II.

To avoid confusion, the certification levels were renamed as follows:

- Category I became ARP-A “Reliability Advocate”
- Category II became ARP-E “Reliability Engineer”
- Category III became ARP-L “Reliability Program Leader”

➤ WHY DOES ARP HAVE THREE LEVELS?

Certain people in the industry, and the practitioners who formed the Mobius Institute Board of Certification Scheme Committee and Technical Committee believed that there should be more than one level of certification in recognition of the challenging task involved with improving reliability, maintenance, operational performance, and asset health monitoring. Thus, the three-level system was devised:

- ARP-A: For engineers, managers, and practitioners who need to understand the entire picture of reliability and performance improvement without getting bogged down in any of the details in any one area
- ARP-E: For reliability engineers who are focused on the technical aspects of reliability, maintenance, and asset health monitoring – the requirements go well beyond CMRP or any other certification program





- ARP L: For the reliability program leaders who must primarily understand the business case, the requirements to change the culture, the strategy, and the leadership skills necessary to make such an initiative successful – the requirements, once again, go well beyond CMRP or any other certification program

➤ **WHY DO YOU NOT REQUIRE PEOPLE TO BE CERTIFIED ARP-E BEFORE THEY CAN BE CERTIFIED ARP-L?**

Generally speaking, there are two types of people in the role of a Reliability Program Leader.

There are people who have come up through the ranks, potentially beginning in a condition monitoring role, then working in reliability engineering, and finally being promoted into a role where they lead the reliability program. That person will have the technical skills and experience but will have to develop the knowledge necessary to create the business case, change the culture, develop the strategy, and implement a successful program. And that is what ARP-L is for.

However, there are also people who come into the role because they have already demonstrated leadership skills. They understand the business case, and they know how to lead people. They are organized project managers, and therefore have the skills to implement a successful program. In many cases, those people do not wish to delve deeply into the technical side of reliability engineering. Instead, they make sure that they have competent Reliability Engineers reporting to them who are able to make the right technical decisions and provide accurate information.

Although this second group of people would benefit from having a deeper knowledge of reliability engineering, it was decided that they should not be forced to gain that knowledge. Instead, the ARP-L training provides a solid overview of the technical aspects so that they understand the terminology and main issues.

➤ **WHAT IS THE DIFFERENCE BETWEEN ARP AND CMRP?**

The SMRP CMRP certification has been around for a long time and it is generally respected in the industry. The SMRP CMRP certification program is accredited to ISO/IEC 17024 so it is fair, independent, and legitimate – just like ARP.

Certain people in the industry and the practitioners who formed the Mobius Institute Board of Certification Scheme Committee and Technical Committee believed that there should be more than one level of certification in recognition of the challenging task involved with improving reliability, maintenance, operational performance, and asset health monitoring. Thus the three-level system was devised.

The Scheme Committee and Technical Committee also believed there should be a structured training program to support the certification program and that people should be encouraged to take the training. Many people are only given the opportunity to take training if it is associated with the certification program. Unfortunately, SMRP actively discourages organizations from offering training that prepares a person for the CMRP certification, instead requesting people to read a variety of books.

While certification is important, the education gained in achieving that certification is arguably more important.





➤ **WHAT IS THE DIFFERENCE BETWEEN ARP AND CRL?**

The structure, independence, discipline, and fairness behind the Asset Reliability Practitioner training and certification are very different from those that exist for CRL. While the training associated with CRL is closely related to that covered on the ARP-A course, that is where the similarities end.

➤ **WHAT IS THE DIFFERENCE BETWEEN ARP AND CRE?**

CRE certification is highly respected in the industry. CRE is focused on reliability engineering, however, the vast majority of CRE certified personnel are focused on product reliability; ensuring that your television does not fail, and determining warranty requirements, for example.

ARP-E “Reliability Engineer” is focused on the role performed by personnel working with industrial equipment (rotating machinery, electrical equipment, mobile assets, etc.) with the goal of ensuring that equipment is available to be used when called upon, and to minimize the maintenance costs associated with those assets.

➤ **DO I NEED TO BE ARP-A CERTIFIED IN ORDER TO TAKE THE ARP-E COURSE AND EXAM?**

No. While the ARP-A course will provide a useful introduction which will make it far easier to understand the topics covered in ARP-E, the ARP-E course does not assume prior knowledge.

➤ **DO I NEED TO BE ARP-A OR ARP-E CERTIFIED IN ORDER TO TAKE THE ARP-L COURSE AND EXAM?**

No. While the ARP-A and ARP-E courses provide a useful introduction which will make it far easier to understand the topics covered in ARP-L, and while ARP-E will be tremendously valuable to the Reliability Program Leader, the ARP-L course does not assume prior knowledge.

➤ **WHAT DO I RECEIVE WHEN I AM CERTIFIED?**

You will be issued a digital certificate, personalized logo, and certification card. The certificate will acknowledge that the recipient has completed training, passed the exam, and if they have sufficient practical work experience relevant to the technology to be fully certified. This will be available to share online as needed by the candidate. Your name will also appear on the Mobius Institute website (unless you would prefer to remain anonymous).

➤ **WHAT ARE THE EXPERIENCE REQUIREMENTS FOR ARP A, E, AND L?**

(From the MIBoC guide ED161-2) The requirements are:

- ARP-A – 6 months
- ARP-E – 24 months
- ARP-L – 48 months





➤ **WHAT TYPE OF EXPERIENCE IS REQUIRED FOR ARP-A, E, AND L?**

The experience requirements exist simply to ensure that you have experienced the issues related to poor reliability: downtime, lower than desired production output, frustration with breakdowns, etc. In the case of ARP-E and ARP-L, the experience requirements also exist to ensure that you have some experience improving reliability. It is not expected that you have been a full-time reliability engineer or program leader, but it is expected that you may have been involved with some of the common activities, such as condition monitoring, the acquisition of laser alignment or other precision maintenance tools, root cause failure analysis, and so on.

➤ **HOW LONG ARE THE EXAMS?**

(From the MIBoC guide ED161-2) The requirements are:

- ARP-A: 60 questions, duration 2 hours, 70% passing grade
- ARP-E: 100 questions, duration 3 hours, 70% passing grade
- ARP-L: 100 questions, duration 3 hours, 70% passing grade

➤ **HOW ARE THE EXAM QUESTIONS DEVELOPED?**

The Mobius Institute Board of Certification (MIBoC) has established an independent Technical Committee (TC) and questions have been submitted for approval from industry experts. Questions are proposed, audited, and reviewed by the TC. MIBoC has developed a process that utilizes software developed for the task so that the exam questions are protected, and so that all changes are tracked. The TC is made up of industry experts and experienced people who work in the field from around the world.

Once a question has been used in an exam, special statistical processes, called psychometrics, are used to check if any questions are too easy, too hard, or too confusing. Those questions are then reviewed by the TC and either improved or rejected.

➤ **IS THE ASSET RELIABILITY PRACTITIONER CERTIFICATION SCHEME BASED ON AN ISO STANDARD?**

Yes and no. Unfortunately, there is not an ISO standard for the certification of reliability practitioners or anything close to it.

However, the Mobius Institute Board of Certification [MIBoC] ED-161 scheme is modeled on the ISO 18436 standards; the topics are mapped to the ISO 55000 standards; the scheme follows ISO/IEC 17024, and the core knowledge and vocabulary/terminology is based on definitions developed in a variety of ISO standards (and other international standards). The topics themselves, and the requirements, were developed over a long time by the MIBoC Scheme Committee and Technical Committee. SC and TC are made up of industry experts and experienced people who work in the field from around the world.





➤ IF MOBIUS CERTIFIES ME AT ARP A, E, OR L, DOES THAT MEAN THAT I AM QUALIFIED TO DO MY JOB AND THUS DO NOT REQUIRE ANY SUPERVISION?

No. Certification at ARP A, E, and L demonstrates that you have some experience in an industrial setting and that you understand certain facts, concepts, and principles, but it does not mean that an employer should not take responsibility for the tasks that you are assigned to perform.

Having said that, a person who has passed ARP-E should have the knowledge necessary to become an effective reliability engineer, and a person who passes ARP-L should be able to manage and lead a reliability improvement initiative.

➤ IF I HAVE ALREADY RECEIVED EQUIVALENT TRAINING, CAN I TAKE THE EXAM?

Yes. We will need to see some evidence that you have taken the training, that the training covered the required topics, but it is not necessary to retake any training.

➤ WHAT IS THE RELATIONSHIP BETWEEN MOBIUS INSTITUTE AND THE MOBIUS INSTITUTE BOARD OF CERTIFICATION (MIBOC)?

Mobius Institute is a private training, conference, and media organization. Some of the training offered by Mobius Institute has been approved by the Mobius Institute Board of Certification. At the time of this writing, there were approximately 130 organizations in 60 countries that have been approved to teach the Mobius Institute courses in 23 languages.

Mobius Institute Board of Certification (MIBoC) is a private organization, however it operates in the same way as a not-for-profit organization (except that, due to Australian taxation law, we do not have not-for-profit status because we service organizations outside Australia, therefore we pay tax on all revenue received, unlike other not-for-profit organizations.) MIBoC is governed by the MIBoC Governing Body, and all of its procedures are defined by independent Scheme Committees. All technical matters are defined by independent Technical Committees.

➤ IS THE TRAINING AND EXAM SPECIFIC TO MOBIUS INSTITUTE THEORY?

No. For many years there has been a body of knowledge associated with reliability and performance improvement, including best practices in maintenance, condition monitoring, asset strategy development, reliability engineering, and other related topics. While a Mobius Institute course may have a unique way of presenting the material, Mobius Institute courses simply teach well documented best practices.

➤ CAN I TAKE A MOBIUS INSTITUTE COURSE, AND THEN TAKE THE CMRP OR CMRT EXAM?

Yes. The topics covered in the Mobius Institute courses will prepare you for the SMRP certification exams. You will simply have to make arrangements with the organization providing that training, and SMRP, to ensure that you can take an exam after you have been trained.





➤ **IF I HAVE TAKEN THE CRL COURSE CAN I TAKE THE ARP-A EXAM?**

Yes. If you have evidence that you took the course, then you are welcome to take the ARP-A exam so that you are certified by an accredited certification body.

➤ **CAN THE ARP EXAMS BE TAKEN ONLINE?**

Yes. It will be necessary to coordinate with the Mobius Institute Board of Certification (MIBoC) as there are certain procedures that must be followed.

➤ **IS IT POSSIBLE TO TAKE THE ARP EXAMS AT THE MOBIUS CONNECT TRAINING CONFERENCES?**

Yes, many people take the ARP (and other) exams at our training conferences. Please contact the certification manager to organize the exam.

➤ **WHAT IS THE RELATIONSHIP BETWEEN THE ASSET RELIABILITY PRACTITIONER CERTIFICATIONS AND THE SMRP CMRP CERTIFICATION?**

If you have knowledge and experience in the field of reliability and performance improvement, then the ARP-A course may aid you in the preparation for the CMRP exam. However, given that the main aim of the ARP-A course is to create detailed awareness rather than detailed knowledge, you are best advised to take the longer ARP-E course to fully understand Reliability Engineering.

It should be stated that the SMRP certification scheme has been developed with the highest standards, and the CMRP scheme is accredited to ISO/IEC 17024. The Mobius Institute Board of Certification [MIBoC] processes mirror the SMRP processes, and MIBoC is accredited to the same standard.

➤ **CAN I HAVE THE TRAINING COURSE I HAVE DEVELOPED RECOGNIZED BY THE MOBIUS INSTITUTE BOARD OF CERTIFICATION AND THEN ORGANIZE FOR PEOPLE TO TAKE THE ARP EXAM AFTERWARDS?**

Yes. Your training material will need to be approved by the independent Technical Committee established by MIBoC, and the Technical Committee members to review your course are chosen to ensure there is no conflict of interest.

➤ **CAN I BE APPROVED TO TEACH THE MOBIUS INSTITUTE COURSES AND THEN OFFER THE MOBIUS INSTITUTE BOARD OF CERTIFICATION EXAM?**

Yes. We have a simple but proven method to become an Approved Training Center. We have been working with companies in 60 countries around the world to teach other Mobius Institute courses, and we would certainly like the opportunity to work with you as well. As you can imagine, we need to ensure that you are qualified in the subject areas, that you have experience teaching courses, and you have a business capable of supporting these activities. And once you are approved, you will take additional training to ensure you are confident and competent in teaching the Mobius Institute courses.





➤ WHY DOES MOBIUS INSTITUTE USE THE PHRASE “RELIABILITY AND PERFORMANCE IMPROVEMENT” RATHER THAN SIMPLY “RELIABILITY IMPROVEMENT” OR “MAINTENANCE AND RELIABILITY IMPROVEMENT”?

The reason that most organizations seek to improve reliability is to improve the performance of the organization.

Ultimately most organizations wish to improve financial performance; whether that’s increased profits, or reduced expenses in the case of a government organization, for example. Organizations must also seek to improve their safety and environmental performance. In order to achieve the company’s goals, the organization must perform better in many departments of the company, including maintenance, operations/production, procurement, materials and work management, and engineering.

While we seek to improve reliability, we are not improving reliability for reliability’s sake; we are making improvements that add value to the organization, ultimately by improving performance.

➤ CAN THE ARP COURSES BE DELIVERED AT OUR SITE?

Yes. The ARP-A “Reliability Advocate” course would be perfect for an on-site course, and it has been delivered on-site many times. We can either “simply” teach the course or we can work with you to expand the course so that you can relate the topics of the course, and the issues raised during the course, to the reality in your plant. In that case, we could team up with someone within your organization who can ask the ideal questions at the ideal time.

There are actually two versions of the ARP-A course. The standard course which is taught during conferences and public training sessions, and a course that we call the ARP-A “PLANT-WIDE AWARENESS” course. This course was developed for people who will not actually work in the role of which the primary goal is to improve reliability, who therefore need to understand how to implement the program, the challenges of culture change, the business case, and other issues. The “PLANT-WIDE AWARENESS” is perfect for people who work in the plant and simply need to know why reliability should be improved, how they will benefit, how they can contribute to the program, and to demystify all of the technologies and terminology.

It is an excellent course if you want to ensure that everyone is on the same page, pulling in the same direction.

