Haward Technology Middle East

COURSE OVERVIEW RE0617-4D
Certified Machine Lubricant Analyst (MLA) Level I
ISO 18436-4/ICML Certification

Course Title
Certified Machine Lubricant Analyst (MLA) Level I:
ISO 18436-4/ICML Certification

Course Date/Venue
November 11-14, 2024/Online Virtual Training

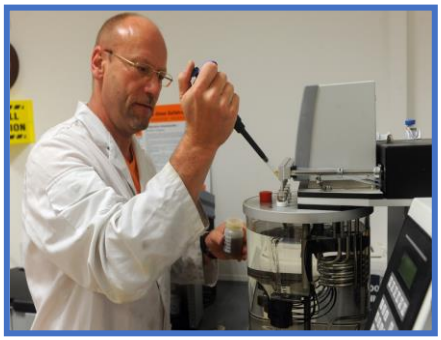
Course Reference
RE0617-4D

2.4 CEUs (24 PDHs) AWARD

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs

Online Exam Window
As per ICML Schedule

Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

In the severe weather of the Middle East, lubrication is a major challenge to every maintenance department. High operating costs, downtime, and wear-out of equipment make the life of every maintenance professional in the Middle East very difficult. Bearing in mind that the process plant is usually losing approximately 7% of its entire maintenance budget simply due to poor lubrication practices, it is vital that the maintenance practices become more optimized and proper lubricant analysis be implemented.

Using lubricant analysis to monitor condition and diagnose faults in machinery is a key activity in predictive maintenance programmes for most industries. Other non-intrusive technologies including thermography, vibration analysis, acoustic emission and motor current analysis are used as complementary condition analysis tools. Those in the process industry who have diligently and consistently applied these techniques have experienced a return on investment far exceeding their expectations. However, the effectiveness of these programmes depends on the capabilities of individuals who perform the measurements and analyse the data.

This course is desigend to provide participants with a detailed and up-to-date overview of Certified Machine Lubricant Analyst (MLA) Level I. It covers the maintenance strategies, machine failure and the impact of poor maintenance on company profits; the role of effective lubrication in failure avoidance; the lube routes and scheduling, oil analysis and technologies to assure lubrication effectiveness; the equipment tagging and identification; the lubrication theory/fundamentals covering tribology, functions of a lubricant, hydrodynamic lubrication, etc; the lubricant selection comprising of viscosity selection, base-oil type selection, additive system selection, machine specific lubricant requirements and application and environment related adjustments; and the lubricant application and basic calculations for determining required lubricant volume, re-lube and change frequencies.

During this interactive course, participants will learn the selection of oil and grease; the effective use of manual delivery techniques and automatic delivery systems; deciding when to employ automated lubricators and maintain automated lubrication systems in a professional manner; the lube storage and management, lubricant receiving procedures and proper storage and inventory management using lube storage containers; the proper storage of grease-guns and other lube application devices including the maintenance of automatic grease system and health and safety assurance; the lube condition control, oil sampling and lubricant health monitoring; the wear debris monitoring and analysis; and the common machine wear mechanisms.

Course Objectives

Upon the completion of this course, each successful participant will be able to:-

- Get certified as a *"Machine Lubricant Analyst (MLA) Level - I"* from the International Council for Machinery Lubrication (ICML) in accordance with the ISO 18436-4 standard
- Carryout maintenance strategies and discuss machine failure and the impact of poor maintenance on company profits
- Identify the role of effective lubrication in failure avoidance as well as apply lube routes and scheduling, oil analysis and technologies to assure lubrication effectiveness and equipment tagging and identification
- Explain lubrication theory/fundamentals covering tribology, functions of a lubricant, hydrodynamic lubrication and etc.
- Apply lubricant selection comprising of viscosity selection, base-oil type selection, additive system selection, machine specific lubricant requirements and application and environment related adjustments
- Employ lubricant application including the basic calculations for determining required lubricant volume and basic calculations to determine re-lube and change frequencies
- Select oil and grease and recognize the effective use of manual delivery techniques and automatic delivery systems
- Decide when to employ automated lubricators and maintain automated lubrication systems in a professional manner
- Implement lube storage and management, lubricant receiving procedures and proper storage and inventory management using lube storage containers
- Carryout proper storage of grease-guns and other lube application devices including the maintenance of automatic grease system and health and safety assurance
- Apply lube condition control, oil sampling and lubricant health monitoring
- Perform wear debris monitoring and analysis and identify the common machine wear mechanisms

Who Should Attend

This course provides a wide understanding and deeper appreciation of machine lubrication analysis in accordance with the international standards. This includes all maintenance and reliability professionals who are seeking ICML certification. Further, maintenance engineers, reliability engineers, lubricant analysts, lubrication technicians, craftsmen and millwrights, equipment operators, maintenance supervisors, predictive maintenance technicians, lubricant industry professionals and laboratory analysts will also benefit from this course.

Exam Eligibility & Structure

Exam candidates shall have the following minimum pre-requisites:

- **Education and/or Experience** - Candidates must have at least 12 months experience in the field of lubricant-analysis-based machinery condition monitoring (based on 16 hours minimum per month of experience).
- **Training** - Candidate must have received 24 hours of documented formal training as outlined in the Body of Knowledge of the MLA I. For online or recorded training, exercises, lab tasks, practice exams, and review exercises may be included in the training time total but shall not exceed four hours of the required course time. Candidate shall be able to provide a record of this training to ICML that shall include the candidate's name, the name and signature of the instructor, the dates of the training, and the number of hours spent in the training.
- **Examination** - Each candidate must successfully pass a 100 question, multiple-choice examination that evaluates the candidate's knowledge of the topic. Candidates have three hours to complete the closed-book examination. A score of 70% is required to pass the examination and achieve certification.

Virtual Training (If Applicable)

If this course is delivered online as a Virtual Training, the following limitations will be applicable:-

Certificates	Only soft copy certificates will be issued to participants through Haward's Portal. This includes Wallet Card Certificates if applicable
Training Materials	Only soft copy Training Materials (PDF format) will be issued to participant through the Virtual Training Platform
Training Methodology	80% of the program will be theory and 20% will be practical sessions, exercises, case studies, simulators or videos
Training Program	The training will be for 7 hours per day starting at 0730 and ending at 1430
H-STK Smart Training Kit	Not Applicable
Hands-on Practical Workshops	Not Applicable
Site Visit	Not Applicable
Simulators	Only software simulators will be used in the virtual courses. Hardware simulators are not applicable and will not be used in Virtual Training

Course Certificate(s)

(1) ICML certificates will be issued to participants who have successfully completed the course and passed the exam. Successful candidate will be certified as a *"Machine Lubricant Analyst (MLA) Level - I"*.

International Council for Machinery Lubrication

John Doe

has satisfactorily fulfilled the requirements established by the Council for professional attainment in

Machinery Lubricant Analysis

and, is therefore designated by the Council as a:

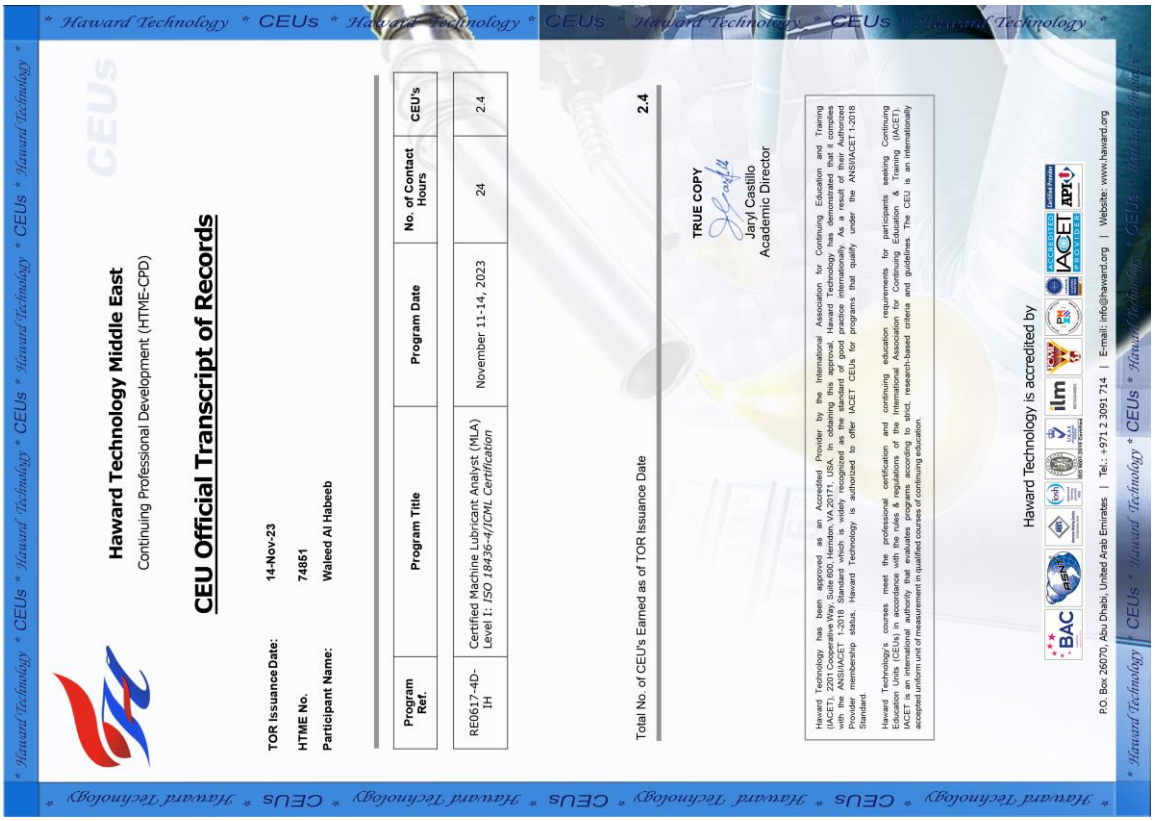
Certified Level I Machinery Lubricant Analyst
ISO Equivalency: ISO 18436-4, Category I

Certification Number:MLA I-000000
Certification Date:0/0/2013
Re-certify By:0/0/2016

Director of Certification

By issuing this certificate, ICML attests to the qualification of the holder as defined in ISO 18436-4, Category I but does not give any authority to perform machinery lubricant sampling or analysis

(2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.



Haward Technology Middle East
Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-23
HTME No. 74851
Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
RE0617-4D-1H	Certified Machine Lubricant Analyst (MLA) Level I: *ISO 18436-4/ICML Certification*	November 11-14, 2023	24	2.4

Total No. of CEU's Earned as of TOR Issuance Date 2.4

TRUE COPY
Jaryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2018 Standard.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking Continuing Education Units (CEUs) in accordance with the rules & regulations of the International Association for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- International Council for Machinery Lubrication (ICML)

  This Machine Lubricant Analyst Certification course complies with the **ICML** (**International Council for Machinery Lubrication**) regulation and is designed to certify successful participant as a Machine Lubricant Analyst (MLA) Level-I.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Rahman Al-Mamoun, MBA, BSc, CMA, CMRP, ARP-I, MLE, VCAT II, CLS, MLA-III, MLT-II, is a **Senior Maintenance & Reliability Engineer** with extensive industrial experience in the areas of **Machinery Lubrication**, **Lubricant** Selection & Application, **Lubricant** Storage & Management, **Vibration Condition Monitoring**, **Vibration & Oil** Analysis, **Infra-red Thermography**, **Preventive & Predictive** Maintenance, **Vibration** Diagnostics, **Maintenance & Reliability** Management, Reliability, Availability & Maintainability (**RAM**), Root Cause Analysis (**RCA**), **Reliability-Centered Maintenance** (**RCM**), **Reliability Engineering** Analysis (**RE**), Computerized Maintenance Management Systems (**CMMS**), **Shutdown & Turnaround** Management, Optimizing Equipment Maintenance & Replacement Decisions, **Maintenance Management** & Cost Control, **Spare Parts & Materials** Management, **Mechanical & Rotating Equipment** Troubleshooting & Maintenance, **Laser Alignment**, **Gearboxes**, **Shaft Alignment** and **Rotating Equipment**.

During his career life, Mr. Rahman has gained his practical and field experience through his various significant positions and dedication as the **Regional Manager**, **Energy Sector Manager**, **Supply Chain & Technical Manager**, **Lubricating Oil Blending Plant** (**LOBP**) **Manager**, **Senior Executive**, **Technical Service Engineer**, **Technical Support Engineer**, **Lecturer** and **Instructor/Trainer** from the various institutions and organizations such as the ExxonMobil, SABIC, PETRONAS and PETROMIN.

Mr. Rahman has a **Master's** degree in **Business Administration** (**MBA**) and a **Bachelor's** degree in **Mechanical Engineering**. Further, he is a **Certified Machinery Lubrication Engineer** (**MLE**), a **Certified Machinery Lubricant Analyst Level III** (**MLA-III**) and a **Certified** Machinery Lubricant Technician (**MLT-II**) from the International Council for Machinery Lubrication (**ICML**), **USA**; a **Certified Lubrication Specialist** (**CLS**) from the Society of Tribologists and Lubrication Engineers (**STLE**), **USA**; a **Certified Lubrication Engineer** (**CLE**) from the South African Institute of Tribology (**SAIT**); a **Certified Asset Reliability Practitioner I** (**ARP-I**) and a **Certified Vibration Analyst** (**CAT-II**) from **Mobius Institute**, **Australia**; a **Certified Maintenance & Reliability Professional** (**CMRP**) from the Society for Maintenance & Reliability Professionals (**SMRP**); a **Certified Management Accountant** (**CMA**) from the Institute of Management Accountants, **USA** and a **Certified Instructor/Trainer**. He has further delivered numerous trainings, courses, workshops, seminars and conferences internationally.

Course Fee

US$ 3,000 per Delegate.

Exam Fee

US$ 320 per Delegate + **VAT**.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday, 11th of November 2024

0730 – 0800	*Registration & Coffee*
0800 - 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Maintenance Strategies*** *Why Machines Fail • The Impact of Poor Maintenance on Company Profits • The Role of Effective Lubrication in Failure Avoidance*
0930 – 0945	*Break*
0945 – 1215	***Maintenance Strategies (cont'd)*** *Lube Routes & Scheduling • Oil Analysis & Technologies to Assure Lubrication Effectiveness • Equipment Tagging & Identification*
1215 - 1230	*Break*
1230 – 1330	***Lubrication Theory / Fundamentals*** *Fundamentals of Tribology • Functions of a Lubricant • Hydrodynamic Lubrication (Sliding Friction) • Elasto-Hydrodynamic Lubrication (Rolling Friction) • Mixed-Film Lubrication*
1330 - 1420	***Lubrication Theory / Fundamentals (cont'd)*** *Base-Oils • Additives & their Functions • Oil Lubricant Physical, Chemical & Performance Properties & Classifications • Grease Lubrication (How Grease is Made; Thickener Types; Thickener Compatibility; Grease Lubricant Physical, Chemical and Performance Properties and Classifications)*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s)will Brief Participants about the Topics that were Discussed Today and Advice Them of the Topics to be Discussed Tomorrow*
1430	*End of Day One*

Day 2: Tuesday, 12th of November 2024

0730 – 0930	***Lubricant Selection*** *Viscosity Selection • Base-Oil Type Selection • Additive System Selection*
0930 – 0945	*Break*
0945 – 1100	***Lubricant Selection (cont'd)*** *Machine Specific Lubricant Requirements (Hydraulic Systems; Rolling Element Bearings; Journal Bearings; Reciprocating Engines; Gearing and Gearboxes) • Application & Environment Related Adjustments*
1100 – 1230	***Lubricant Application*** *Basic Calculations for Determining Required Lubricant Volume • Basic Calculations to Determine Re-Lube & Change Frequencies*

1230 – 1245	*Break*
1245 – 1420	***Lubricant Application (cont'd)*** *When to Select Oil; When to Select Grease ● Effective Use of Manual Delivery Techniques ● Automatic Delivery Systems (Automated Deliver Options [Automated Grease Systems; Oil Mist Systems; Drip and Wick Lubricators]; Deciding When to Employ Automated Lubricators; Maintenance of Automated Lubrication Systems)*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s)will Brief Participants about the Topics that were Discussed Today and Advice Them of the Topics to be Discussed Tomorrow*
1430	*End of Day Two*

Day 3: Wednesday, 13th of November 2024

0730 – 0930	***Lube Storage & Management*** *Lubricant Receiving Procedures ● Proper Storage & Inventory Management ● Lube Storage Containers*
0930 – 0945	*Break*
0945 – 1100	***Lube Storage & Management (cont'd)*** *Proper Storage of Grease-Guns & Other Lube Application Devices ● Maintenance of Automatic Grease Systems ● Health & Safety Assurance*
1100 – 1230	***Lube Condition Control*** *Filtration & Separation Technologies ● Filter Rating*
1230 – 1245	*Break*
1245 – 1420	***Lube Condition Control (cont'd)*** *Filtration System Design & Filter Selection*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s)will Brief Participants about the Topics that were Discussed Today and Advice Them of the Topics to be Discussed Tomorrow*
1430	*End of Day Three*

Day 4: Thursday, 14th of November 2024

0730 – 0930	***Oil Sampling*** *Objectives for Lube Oil Sampling ● Sampling Methods ● Managing Interference (Bottle Cleanliness and Management; Flushing; Machine Conditions Appropriate for Sampling)*
0930 – 0945	*Break*
0945 – 1015	***Lubricant Health Monitoring*** *Lubricant Failure Mechanisms (Oxidative Degradation [The Oxidation Process; Causes of Oxidation; Effects of Oxidative Degradation]; Thermal Degradation [The Thermal Failure Process; Causes of Thermal Failure; Effects of Thermal Degradation]; Additive Depletion/Degradation [Additive Depletion Mechanisms; Additives at Risk for Depletion/Degradation by the Various Mechanisms]) ● Testing for Wrong or Mixed Lubricants (Baselining Physical and Chemical Properties Tests; Additive Discrepancies)*

1015 – 1215	***Lubricant Health Monitoring (cont'd)*** *Fluid Properties Test Methods & Measurement Units – Applications & Limitations (Kinematic Viscosity (ASTM D445); Absolute (Dynamic) Viscosity (ASTM D2893); Viscosity Index (ASTM D2270); Acid Number (ASTM D974 et al); Base Number (ASTM D974 et al); Fourier Transform Infrared (FTIR) Analysis; Rotating Pressure Vessel Oxidation Test (ASTMD2272); Atomic Emission Spectroscopy)*
1215 - 1230	*Break*
1300 – 1400	***Wear Debris Monitoring & Analysis*** *Common Machine Wear Mechanisms*
1400 – 1415	***Course Conclusion***
1415 – 1430	***POST-TEST***
1430	*End of Course*

MOCK Exam

Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward's Portal. Each participant will be given a username and password to log in Haward's Portal for the MOCK Exam during the 30 days following the course completion. Each participant has only one trial for the MOCK exam within this 30-day examination window. Hence, you have to prepare yourself very well before starting your MOCK exam as this exam is a simulation to the one of the Certification Body.

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org