

COURSE OVERVIEW RE0628
Certified Machinery Lubrication Technician (MLT) Level -I
ICML-MLT Certification

Course Title

Certified Machinery Lubrication Technician (MLT)
 Level -I: ICML-MLT Certification

Course Date/Venue

September 23-27, 2024/Al Dhafra Meeting Room,
 Royal Rose Hotel, Abu Dhabi, UAE

Online Exam Window

As per ICML Schedule



Course Reference

RE0628

Course Duration/Credits

Five days/3.0 CEUs/30 PDHS

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 lubrication program be implemented.



This course will introduce and establish the role of precision lubrication and analysis for improving machine reliability. It will provide an overview of lubricant construction and the general principles involved in lubricant selection for common plant machinery. Handling and application practices for both oils and gases will be reviewed.

The course will introduce contamination control strategies as a way to improve machine performance. It will provide a thorough introduction to the principles of lubricant analysis and introduce appropriate methods to collect samples as the first step in lubricant based machine condition assessment.

Course Objectives

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

- Get certified as a “Machinery Lubrication Technician (MLT) Level - I” from the International Council for Machinery Lubrication (ICML)
- Carryout maintenance strategy as well as discuss the lubrication theory covering tribology fundamentals, functions of a lubricant, hydrodynamic lubrication, elasto-hydrodynamic lubrication and mixed-film lubrication
- Describe lubricants comprising of base-oils, additives and their functions, physical, chemical, performance properties and classifications of oil lubricant and grease lubricant, grease lubrication, thickener types and thickener compatibility
- Employ lubricant selection, lubricant application, preventive and predictive maintenance
- Apply lube condition control for filtration and separation technologies, filter rating, filtration system design and filter selection
- Perform lube storage and management and implement lubricant receiving procedures, proper storage, inventory management, lube storage containers, proper storage of grease-guns and other lube application devices, maintenance of automatic grease systems as well as health and safety assurance

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of machine lubrication for all maintenance and reliability professionals including maintenance engineers, reliability engineers, lubricant analysts, lubrication technicians, craftsmen and millwrights, equipment operators, maintenance supervisors, predictive maintenance technicians, lubricant industry professionals and laboratory analysts.

Exam Eligibility & Structure

Exam candidates shall have the following minimum pre-requisites:

- Education and/or Experience - Candidates must have at least two years education (post-secondary) or on-the-job training in one or more of the following fields: machine lubrication, engineering, mechanical maintenance and/or maintenance trades.
- Training - Candidate must have received 16 hours of documented formal training in machinery lubrication as outlined in the Body of Knowledge of the MLT I. For online or recorded training, exercises, practice exams, and review exercises may be included in the training time total but shall not exceed three 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.

Course Certificate(s)

- (1) Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.
- (2) ICML certificates will be issued to participants who have successfully completed the course and passed the exam at the end of the course. Successful candidate will be certified as a “Machinery Lubrication Technician (MLT) Level - I”.





- (3) 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.

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Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEUs

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CEU Official Transcript of Records

TOR Issuance Date: 20-Sep-18

HTME No. PAR10425

Participant Name: Nezar Al Hassan

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
RE0628-4D	Certified Machine Lubricant Technician (MLT) Level -I: ISO 18436-4/ICML Certification	September 17-20, 2018	26	2.6
Total No. of CEU's Earned as of TOR Issuance Date				2.6

TRUE COPY



Maricel De Guzman
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 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 1-2013 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 | Fax: +971 2 3091 716 | E-mail: info@haward.org | Website: www.haward.org

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Certificate Accreditations

Haward Technology is accredited by the following international accreditation

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International Council for Machinery Lubrication (ICML)


This Machinery Lubrication Technician Certification course complies with the **ICML (International Council for Machinery Lubrication)** regulation and is designed to certify successful participant as a Machinery Lubrication Technician (MLT).
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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 **3.0 CEUs** (Continuing Education Units) or **30 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.

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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.

Training Fee

US\$ 7,000 per Delegate + **VAT** This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Exam Fee

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

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

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. Vivek Opal, PhD (on going), MSc, BSc, ICML, MLA III, is an **International ICML Authorized Instructor & Consultant** with almost **20** years of practical experience within the **Oil & Gas** and **Petrochemical** industry. His wide expertise covers in the area of **Machinery Lubrication, Condition Monitoring, Vibration & Oil Analysis, Contamination Monitoring, Tribology, Reliability Engineering and Scheduling Design, Oil & Petroleum Analysis, Lube & Transformer Asset Management, Machinery Lubrication, Greasing & Oil Sampling, Croud Analysis, Calibration & Troubleshooting** of all Equipment and QC Procedures, Laboratory Automation, **Quality Assurance & Quality Control**. He is currently the **Laboratory Commissioning, Lab Management, Quality & HSE Management, Project Management, Manpower Management, Customer Relationships, Bids & Tenders, CAPEX and PNL Management, Process & Method Developments, Process Enhancements & Innovation, Cross Functional Coordination, Asset Management (Automobile, Industrial & Power Sector), Expert in Oil Condition Monitoring (LO & TO) and Conducting Events & Seminars.**

During his career life, Mr. Vivek has gained his practical and field experience through his various significant positions and dedication as the **Laboratory Manager, Technical & Quality Manager, QA/QC Laboratory Supervisor, Team Leader (O&P) & Lead Lubricant Diagnostician, Senior Petroleum Chemist & OCM Diagnostician, Senior QA/QC Executive, Senior Quality R&D Chemist, Assistant Manager and Senior Instructor/Trainer** for Intertek Caleb Brett, Bureau Veritas Commodities Division, AVT McCORMICK Ingredients PVT LTD, Gulf Petromin Lubricants and J&J Biotech & Speciality Chemicals (P) LTD.

Mr. Vivek has **Master's** and **Bachelor's** degree in **Chemistry**. Further, he is a **Certified ICML - MLA III** (Machinery Lubricant Analyst), an **Associate Member** of the **Board** of the **ICML**, an **Internal Auditor** of ISO/IEC 17025:2017, ISO/IEC 17020:2012, ISO 9001:2015, ISO 14001:2015 and ISO 45001: 2018. He is also a **Certified Instructor/Trainer** and delivered numerous trainings, seminars, courses, workshops and conferences internationally

AND,



Mr. Andrew Ladwig is a **Senior Process & Mechanical Engineer** with over **25 years** of extensive experience within the **Oil & Gas, Refinery, Petrochemical & Power** industries. His expertise widely covers in the areas of **Ammonia Manufacturing & Process Troubleshooting, Distillation Towers, Crude Oil Distillation, Fundamentals of Distillation** for Engineers, **Distillation Operation and Troubleshooting, Advanced Distillation Troubleshooting, Distillation Technology, Vacuum Distillation, Ammonia Storage & Loading Systems, Ammonia Plant Operation, Troubleshooting & Optimization, Ammonia Recovery, Ammonia Plant Safety, Hazard of Ammonia Handling, Storage & Shipping, Operational Excellence in Ammonia Plants, Fertilizer Storage Management (Ammonia & Urea), Fertilizer Manufacturing Process Technology, Sulphur Recovery, Phenol Recovery & Extraction, Wax Sweating & Blending, Petrochemical & Fertilizer Plants, Nitrogen Fertilizer Production, Petroleum Industry Process Engineering, Refining Process & Petroleum Products, Refinery Planning & Economics, Safe Refinery Operations, Hydrotreating & Hydro-processing, Separators in Oil & Gas Industry, Gas Testing & Energy Isolations, Gas Liquor Separation, Industrial Liquid Mixing, Wax Bleachers, Extractors, Fractionation, Operation & Control of Distillation, Process of Crude ATM & Vacuum Distillation Unit, Water Purification, Water Transport & Distribution, Steam & Electricity, Flame Arrestors, Coal Processing, Environmental Emission Control, R&D of Wax Blending, Wax Molding/Slabbing, Industrial Drying, Principles, Selection & Design, Certified Process Plant Operations, Control & Troubleshooting, Operator Responsibilities, Storage Tanks Operations & Measurements, Process Plant Troubleshooting & Engineering Problem Solving, Process Plant Performance, Efficiency & Optimization, Continuous Improvement & Benchmarking, Process Troubleshooting Techniques, Oil & Gas Operation/Introduction to Surface Facilities, Pressure Vessel Operation, Process Equipment Performance & Troubleshooting, Plant Startup & Shutdown, Startup & Shutdown the Plant While Handling Abnormal Conditions, Flare & Relief System, Process Gas Plant Start-up, Commissioning & Problem Solving, Process Liquid and Process Handling & Measuring Equipment. Further, he is also well-versed in **Compressors & Turbines Operation, Maintenance & Troubleshooting, Heat Exchanger Overhaul & Testing Techniques, Balancing of Rotating Machinery (BRM), Pipe Stress Analysis, Valves & Actuators Technology, Inspect & Maintain Safeguarding Vent & Relief System, Certified Inspectors for Vehicle & Equipment, Optimizing Equipment Maintenance & Replacement Decisions, Certified Maintenance Planner (CMP), Certified Planning and Scheduling Professional (AACE-PSP), Tank Design, Construction, Inspection & Maintenance, Material Cataloguing, Specifications, Handling & Storage, Steam Trap Design, Operation, Maintenance & Troubleshooting, Steam Trapping & Control, Column, Pump & Exchangers, Troubleshooting & Design, Rotating Equipment Operation & Troubleshooting, Control & ESD System, Detailed Engineering Drawings, Codes & Standards, Budget Preparation, Allocation & Cost Control, Root Cause Analysis (RCA), Production Optimization, Permit to Work (PTW), Project Engineering, Data Analysis, Process Hazard Analysis (PHA), HAZOP Study, Sampling & Analysis, Training Analysis, Job Analysis Techniques, Storage & Handling of Toxic Chemicals & Hazardous Materials, Hazardous Material Classification & Storage/Disposal, Dangerous Goods, Environmental Management System (EMS), Supply Chain, Purchasing, Procurement, Logistics Management & Transport & Warehousing & Inventory, Risk Monitoring Authorized Gas Tester (AGT), Confined Space Entry (CSE), Personal Protective Equipment (PPE), Fire & Gas, First Aid and Occupational Health & Safety.****

During his career life, Mr. Ladwig has gained his practical experience through his various significant positions and dedication as the **Mechanical Engineer, Project Engineer, Reliability & Maintenance Engineer, Maintenance Support Engineer, Process Engineer, HSE Supervisor, Warehouse Manager, Quality Manager, Business Analyst, Senior Process Controller, Process Controller, Safety Officer, Mechanical Technician, Senior Lecturer and Senior Consultant/Trainer** for various companies such as the Sasol Ltd., Sasol Wax, Sasol Synfuels, just to name a few.

Mr. Ladwig has a **Bachelor's degree in Chemical Engineering** and a **Diploma in Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer, a Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)** and has delivered various trainings, workshops, seminars, courses and conferences internationally

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

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, 23rd of September 2024

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Maintenance Strategy Why Machines Fail • The Impact of Poor Maintenance on Company Profits
0930 – 0945	Break
0945 – 1015	Maintenance Strategy (cont'd) The Role of Effective Lubrication in Failure Avoidance
1015 – 1130	Lubrication Theory Fundamentals of Tribology • Functions of a Lubricant
1130 – 1230	Lubrication Theory (cont'd) Hydrodynamic Lubrication (Sliding Friction) • Elasto-Hydrodynamic Lubrication (Rolling Friction)
1230 – 1245	Break
1245 – 1330	Lubrication Theory (cont'd) Mixed-Film Lubrication
1330 – 1420	Lubricants Base-Oils • Additives & their Functions
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Tuesday, 24th of September 2024

0730 – 0930	Lubricants (cont'd) Oil Lubricant Physical, Chemical & Performance Properties & Classifications
0930 – 0945	Break
0945 – 1130	Lubricants (cont'd) Grease Lubrication (How Grease is Made?, Thickener Types, Thickener Compatibility, Grease Lubricant Physical, Chemical & Performance Properties & Classifications)

1130 - 1230	Lubricant Selection Viscosity Selection • Base-Oil Type Selection
1230 - 1245	Break
1245 - 1420	Lubricant Selection (cont'd) Additive System Selection • Machine Specific Lubricant Requirements (Hydraulic Systems, Rolling Element Bearings, Journal Bearings, Reciprocating Engines, Gearing & Gearboxes)
1420 - 1430	Recap
1430	Lunch & End of Day Two

Day 3: Wednesday, 25th of September 2024

0730 - 0930	Lubricant Selection (cont'd) Application & Environment Related Adjustments
0930 - 0945	Break
0945 - 1130	Lubricant Application Basic Calculations for Determining Required Lubricant Volume
1130 - 1230	Lubricant Application (cont'd) 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?
1420 - 1430	Recap
1430	Lunch & End of Day Three

Day 4: Thursday, 26th of September 2024

0730 - 0930	Lubricant Application (cont'd) Effective Use of Manual Delivery Techniques
0930 - 0945	Break
0945 - 1100	Lubricant Application (cont'd) Automatic Delivery Systems (Automated Deliver Options: Automated Grease Systems, Oil Mist Systems, Drip & Wick Lubricators; Deciding When to Employ Automated Lubricators; Maintenance of Automated Lubrication Systems)
1100 - 1230	Preventive & Predictive Maintenance Lube Routes & Scheduling • Oil Analysis & Technologies to Assure Lubrication Effectiveness
1230 - 1245	Break
1245 - 1420	Preventive & Predictive Maintenance (cont'd) Equipment Tagging & Identification
1420 - 1430	Recap
1430	Lunch & End of Course

Day 5: Friday, 27th of September 2024

0730 - 0930	Lube Condition Control Filtration & Separation Technologies • Filter Rating
0930 - 0945	Break
0945 - 1100	Lube Condition Control (cont'd) Filtration System Design & Filter Selection

1100 - 1230	Lube Storage & Management Lubricant Receiving Procedures • Proper Storage & Inventory Management • Lube Storage Containers
1230 - 1245	Break
1245 - 1330	Lube Storage & Management (cont'd) Proper Storage of Grease-Guns & Other Lube Application Devices • Maintenance of Automatic Grease Systems • Health & Safety Assurance
1330 - 1400	Course Conclusion Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1400 - 1415	POST-TEST
1415 - 1430	Presentation of Course Certificates
1430	Lunch & 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 7 days following the course completion. Each participant has only one trial for the MOCK exam within this 7-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