MASTERING LUBRICATION TECHNOLOGY

(MLA I / MLT I)

- **Learn from the world's leading experts**
- **Learn how to implement Best Practices**
- **Achieve peer recognition**
- **Raise your lubrication management to World Class standards.**

2019 UK Course dates

- 12 - 14 February (Tue - Thur)
  - ICML Exam - 15 February (Fri)
- 11 - 13 June (Tue - Thur)
  - ICML Exam - 14 June (Fri)
- 12 - 14 November (Tue - Thur)
  - ICML Exam - 15 November (Fri)

Venue

- The National Waterways Museum, Ellesmere Port, Cheshire, UK.

An ICML MLAI/MLTI certification course to help you:

- ☑ **understand the fundamentals of lubrication and oil analysis**
- ☑ **get more out of your lubrication strategy**
- ☑ **improve your oil analysis success**
- ☑ **increase reliability**
- ☑ **increase profits and turnover**
- ☑ **improve your quality goals**
- ☑ **improve your health & safety success**
- ☑ **reduce your environmental impact**
- ☑ **ensure compliance with ISO9001/ISO55000**
- ☑ **design your own 'Best Practice' lubrication programme.**

KEW Engineering

Reliability through Lubrication

KEW Engineering Ltd is pleased to bring you this course with a reliability focus, "*Mastering Lubrication Technology", in line with the ICML certification structure*.

This course, based on our experience, is targeted at helping your company's reliability drive in the areas of lubrication, oil analysis and contamination control.

The course not only covers the fundamentals, but provides best practice solutions to ensure your plant achieves world class levels in lubrication management.

The course is designed to be interactive, and attendees will be encouraged to participate with questions and discussion. Worked examples and Case Studies will be a key part in this training.

The content covers the body of knowledge as laid out by the International Council for Machinery Lubrication (ICML) for Machine Lubrication Technician Level I (MLTI) and Machine Lubricant Analyst Level I (MLAI) certification. Get your staff qualified and on the road to achieving best practice and world class standards.

We look forward to having you join our course.

Who Should Attend?

- ☑ Plant Managers
- ☑ Operations Managers
- ☑ Plant Engineers
- ☑ Reliability Engineers
- ☑ Lubrication Technicians
- ☑ Oil Analysis Practitioners
- ☑ Condition Monitoring Specialists
- ☑ Plant Operators
- ☑ Maintenance Technicians

Whatever your industry, if you are involved in some way with lubricants, this course is for you!

Meet Your Expert Course Leader

Martin Williamson is a graduate Mechanical Engineer from the University of Cape Town and began his maintenance career working in the mining industry. This experience included condition monitoring with a focus on oil analysis and Tribology. In 1994, Martin joined Pall Filtration and provided technical support on their contamination monitoring instruments to clients in a variety of industries. He later joined Entek IRD to work in product management of their oil analysis tools, as well as providing a technical support role including training on oil analysis to international clients. For the last 10 years, he has been presenting training classes and undertaking consulting projects on an international level on behalf of Noria Corp and other key clients such as BP, Dow Corning, Marathon Oil and Cargill. He attained his CMRP (Certified Maintenance & Reliability Professional) status with SMRP (Society for Maintenance & Reliability Professionals) and has been involved with ICML (International Council for Machinery Lubrication), as well as working on various related ISO working groups. Martin is currently managing director of KEW Engineering Ltd.

Course Content

Maintenance Strategies

- Why machines fail
- The impact of poor maintenance on company profits
- The role of effective lubrication in failure avoidance
- Lube routes and scheduling
- Oil analysis and technologies to assure lubrication effectiveness.
- Equipment tagging and identification.

Lubrication Theory/Fundamentals

- Fundamentals of tribology
- Functions of a lubricant
- Hydrodynamic lubrication (sliding friction)
- Elasto-hydrodynamic lubrication (rolling friction)
- Mixed-film lubrication
- Base-oils
- Additives and their functions
- Oil lubricant physical, chemical and performance properties and classifications.
- Grease lubrication
  - How grease is made
  - Thickener types
  - Thickener compatibility
  - Grease lubricant physical, chemical and performance properties and classifications.

Lubricant Selection

- Viscosity selection
- Base-oil type selection
- Additive system selection
- Machine specific lubricant requirements
  - Hydraulic systems
  - Rolling element bearings
  - Journal bearings
  - Reciprocating engines
  - Gearing and gearboxes
- Application and environment related adjustments.

Lubricant Application

- Basic calculations for determining required lubricant volume.
- Basic calculations to determine re-lube and change frequencies.
- 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.

Lube Storage and Management

- Lubricant receiving procedures.
- Proper storage and inventory management.
- Lube storage containers
- Proper storage of grease-guns and other lube application devices.
- Maintenance of automatic grease systems.
- Health and safety assurance.

Lube Condition Control

- Filtration and separation technologies.
- Filter rating.
- Filtration system design and filter selection.

Oil Sampling

- Objectives for lube oil sampling
- Sampling methods
- Managing interference
  - Bottle cleanliness and management
  - Flushing
  - Machine conditions appropriate for sampling

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
- Fluid properties test methods and measurement units - applications and 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

Wear Debris Monitoring and Analysis

- Common machine wear mechanisms

Get Qualified by the International Council for Machinery Lubrication

Transfer your skills to new career opportunities.

A qualification from ICML will aid compliance with your company's ISO 9001:2000 *Quality management systems - Requirements for training and qualification of personnel.*

The International Council for Machinery Lubrication, offering examinations which comply with the latest international standard ISO 18436-4:2008 *Condition monitoring and diagnostics of machines -- Requirements for qualification and assessment of personnel -- Part 4: Field lubricant analysis.*

Register online at for your MLT I or MLA I examination at:
www.lubecouncil.org
Or call +1 918 259 2950

Course Information

Our English language courses are taught exclusively by Martin Williamson.

- Please enquire for non-certification courses which can be modified to meet your specific needs and presented on-site.

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Costs

- £950.00 per person exc. VAT
- Group discounts available.
- ICML Exam fee - US$275.00

Note. The ICML is optional and at additional cost

What past attendees thought:

"An excellent, informative presentation. Very well explained, with easy to follow manual. Invaluable for our new mission!"
Ray Young, Reliability Technician, Petrofac.

"Very enjoyable course, found content to be very relevant & instructor very knowledgeable on course content."
Russell Parry, Reliability Eng., AV Technology

"The course was 1st class & highlighted how far we have to go before achieving a good quality lubrication programme."
Colin Sample, Reliability Supervisor, Marathon Oil

"Small details are important. I used to neglect this. Not anymore!"
Wong Ik Yeang, Operator, Sarawak Energy

"Very informative & enlightening course. Well presented and well experienced presenter."
Noel P. Macatangay, Mech. Eng., ADGAS

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Our courses can be offered in English language in most countries. Please contact us to find out how our partners can offer local language courses in Japan, China and Malaysia