Learn How To Unlock The Full Potential Of An Oil Analysis Program In These Intensive Three-Day Courses.

You Will Learn How To:
- Easily interpret oil analysis reports
- Squeeze maximum life from lubricants
- Pull oil samples for optimum results
- Reduce oil consumption for quick savings
- Optimize oil analysis limits

Enroll Today! Noria.com | 800-597-5460
Expand Your Oil Analysis Skills
And Get Better Results ... A Whole Lot Faster!

If yours is like many companies, you may already be winging your way around oil analysis, perhaps trying to predict failures or just basing oil drains on your oil analysis report recommendations. Either way, you probably know there’s a lot about oil analysis you haven’t mastered … and you might be wondering what you are missing. Wouldn’t you like to know ALL about what oil analysis can do for you? Now you can!

You’ll Learn More Than Just Oil Analysis
Extending oil and machine life are two of the primary goals of oil analysis, but analyzing the oil won’t make the oil or machine last any longer. That’s why Noria’s proven strategy for extending machine and lubricant life by up to 10X is the cornerstone of these courses. You will learn how making small adjustments to lubricant properties can result in huge savings and take your return-on-investment from oil analysis to new levels.

Who Should Attend?
• All Maintenance Professionals
• Laboratory Analysts
• Vibration Instrument Specialists
• Craftsmen or Millwrights
• Manufacturing and Industrial Engineers
• Lubrication Technicians and Engineers
• Maintenance Managers
• Maintenance Supervisors
• Equipment Operators
• Operations Managers
• Reliability Engineers
• Predictive Maintenance Technicians

What Industries Will Benefit?
• Aerospace
• Automotive Manufacturing
• Earthmoving
• Food and Beverage
• General Manufacturing
• Lumber and Wood
• Municipal Utilities
• Petrochemical
• Pharmaceuticals
• Power Generation
• Primary Metals
• Process Manufacturing
• Pulp and Paper
• Rubber and Plastic
• Textile
• Transportation

Get Answers to These and All Your Questions About Oil Analysis!

How often should I use oil analysis?
Where is the best place to pull an oil sample?
How do I know if I should occasionally "sweeten" my oil with additives?
What are the secrets to catching bearing faults with wear debris analysis?
What are the 5 most important things I should look for on my oil analysis report?
What are the best cost-reducing strategies using oil analysis?
Are there any good field tests for oil that don’t involve expensive instruments?
How do I determine the remaining useful life of my oil?

Don’t Let These Happen to You …
• A large steel mill wanted to make every machine ready for easy oil sampling. After installing more than 1,200 new oil sampling ports, it began getting strange data on oil analysis reports. After investigating, it found that each of the new sampling ports was installed in the wrong location.

If You Use Any Of These Machines, This Training Is A Must:
• Gearboxes
• Hydraulic Systems
• Compressors
• Final Drives
• Hydrostatic Transmissions
• Rolling Mills
• Motor Bearings
• Paper Machines
• Diesel Engines
• Blowers/Fans
• Process Pumps
• Gas Turbines
• Steam Turbines

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Develop Rapid-Fire Troubleshooting Skills!
Oil analysis provides critical early warning information to impending machine failure. Those trained in the language can “crack the code” of even the most complex problems. Knowing how to interpret changing lubricant properties involves a specific sequence of steps that can be easily learned. Get the answers.

Squeeze Maximum Life From Lubricants!
Lubricants and hydraulic fluids can have infinite life when specific operating conditions are stabilized. The rising costs of new lubricants and the disposal costs of used fluids are a directive for change. A proven action plan for extending fluid life is key. Get the answers.

Champion A Company-Wide “Clean Oil” Campaign!
High fluid cleanliness is the lynchpin of a successful proactive maintenance program. But how clean? Which filters? How much life extension can be achieved? Get the answers.

Take Aim On Reactive Maintenance!
On a global scale, maintenance organizations are undergoing a renaissance of change. Gone are the days when maintenance functions centered around corrective repairs and damage control. Today’s battle cry of “condition-based maintenance” has transformed common mechanics and repairmen into high-tech instrument operators and machine diagnosticians. Discover how oil analysis and proactive maintenance are leading the charge.

What’s Different About This Training?
Plenty. For starters, you won’t be listening to someone lecture on textbook theories. Instead, you’ll get a lot of straight-shooting advice from a seasoned professional, an authority on oil analysis and a dynamic speaker with years of experience.

These courses throw useless trivia out the window and get right to the meat of what you need to know. You’ll get the most important, up-to-date information that will be invaluable to your oil analysis program.
Our Approach

We go to great efforts not to overcomplicate the course material. You will leave with the feeling of “This isn’t so hard. I can do it.” We won’t overwhelm you or try to impress you with your own skill. We want you to be impressed with your own skill by the time you leave.

Our approach and materials are drawn from years of experience in the field. We base our training on a realistic hands-on approach to oil analysis. All of our materials are based on well-documented research and field—proven principles.

We continually improve our training courses based on trainee suggestions and feedback. Our goal is to make our courses as “user-friendly” and complete as possible.
Onsite Training

Need to train your team, but it’s always been too expensive? More and more companies are realizing the value of bringing training onsite. This flexible and cost-effective option allows you to train as many employees as desired.

The benefits of onsite training are obvious and rewarding:

> Tailored curriculum to address your company’s needs in a more personable, intimate setting
> Cost-effective return on investment – with significant savings onsite versus travel expenses and time away from the plant, downtime and schedule disruptions are minimized
> Confidential company issues and solutions may be discussed freely onsite
> Strong team-building opportunities

Lubrication is the foundation of reliability, lubrication training is the catalyst for change, and Noria is the world leader in lubrication and oil analysis education and consulting. Bring us onsite for tailored, private team training. Call us today at 800-597-5460.
Oil Analysis III
Course Outline

Base Oil Fundamentals
- How mineral base oil groups compare on nine criteria
- How synthetic oils compare to mineral oils
- Advantages and disadvantages of common synthetic lubricants
- How wear and friction control additives work
- The role of fatty acids, AW and EP lubrication films

Integrating Oil Analysis with Vibration Analysis
- Failure detection zones of oil vs. vibration analysis
- Where oil and vibration analysis overlap
- Strengths and weaknesses of oil and vibration analysis on detecting 13 machine problems
- Combining vibration with wear debris analysis for bearing failure analysis

Understanding and Analyzing Machine Wear
- 16 factors that cause changes in wear debris concentrations
- Effects of water on bearings
- 31 factors leading to abnormal engine wear
- How to enhance the detection of abnormal wear particle trends
- One simple technique to help you detect faults earlier
- Review of technologies used to analyze wear debris
- Particle size sensitivities of wear particle technologies
- Comparison of laboratory emission spectrometers
- How wear particle size influences spectrometric analysis
- How to determine the severity of a wear problem
- How to evaluate lock-step trends
- How to normalize for makeup oil
- Potential sources of metals in oil
- Best applications for elemental analysis of wear metals
- Advantages and disadvantages of analytical ferrography
- How filtergrams compare to ferrograms
- How to characterize particle composition by visual inspection
- Shape features of common wear particles
- Common machine wear mechanisms and how to identify them
- 11 sources of spherical wear particles and how to identify them
- How to recognize wear zones in gearing

Fluid Properties Analysis
- How viscosity index impacts an oil’s ability to lubricate
- Best practices for onsite viscosity analysis
- Four root causes of oxidation and why they are important
- The role of antioxidants and how they work
- Five indicators of oil oxidation
- How to measure oxidation stability
- How acid numbers trend with different types of oils
- Machine diagnostics using neutralization numbers
- Detecting base oil oxidation with FTIR
- Strengths and weaknesses of FTIR
- How sludge and varnish are formed and how to detect them
- Recommendations for a new lubricant testing plan

Additive Depletion
- 14 ways additives are depleted from oil
- How to detect depletion of 10 common additives
- How to find the additive date on an oil analysis report

Contamination Analysis
- Five ways to count and size particles
- Monitoring dust and dirt contamination by elemental analysis
- Tests for high soot load and fuel contamination
- How defoamants work and how they are depleted
- 16 water ingestion sources
- Six additives that are attacked by water contamination and results of each
- Machine effects of water-related problems
- Review of water detection technologies
- How to detect glycol in crankcase oil

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- Failure detection zones of oil vs. vibration analysis
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Grease Analysis
- Methods for sampling grease
- Common used grease tests and what they measure
- 7 grease performance concerns and how to test
- How grease properties change due to incompatible mixtures

Onsite Oil Analysis Options
- How to integrate onsite with offsite oil analysis
- How to prepare a filter patch for particle contamination assessment
- Review of onsite viscometry, FTIR and particle counter options
- Small, medium and large budgets for an onsite lab: what to buy
- Tips for designing an onsite lab space

Designing an Oil Analysis Program
- How to select candidate machines for oil analysis
- Four steps to optimizing interval-based oil changes
- Considerations for condition-based oil changes
- Factors influencing oil sampling frequencies
- Tips on working with an offsite lab
- Five applications for goal-based limits
- How aging limits signal the approaching end of useful oil life
- Four applications for rate-of-change limits
- Interpreting elemental trends using level limits

Cost — Benefit Analysis
- Seven cost-saving areas for quantifying benefits
- Estimating the value of a predictive maintenance “save”
- Estimating annual savings per machine
- Three project evaluation decision tools
- How to track your program: lubrication KPIs
Get Answers to These and All Your Questions About Oil Analysis!

• How often should I use oil analysis?
• Where is the best place to get an oil sample?
• What are the benefits and drawbacks of screening oil samples before sending them to my lab?
• How clean should I keep my oil and what type of filter should I use?
• What are all these numbers I see on my oil analysis report?
• How do I know which oil analysis lab is right for me?
• How do I set caution and critical alarms for wear metals and additives?
• What steps can I take to ensure that I get a good sample each time?
• How do I determine the remaining useful life of my oil?
• How do I know if I should occasionally “sweeten” my oil with additives?
• What is the best temperature for trending viscosity?
• What are the secrets to catching bearing faults with wear debris analysis?
• Are there any good field tests for oil that don’t involve expensive instruments?
• What are the five most important things I should look for on my oil analysis report?
• What are the best cost-reducing strategies using oil analysis?

Trainers

Jim Fitch
Jim Fitch, a founder and CEO of Noria Corporation, is a highly sought-after consultant and trainer described by his clients as “insightful, dynamic and thorough.” He has advised hundreds of companies on developing their lubrication and oil analysis programs and has taught more than 400 training courses in more than 20 countries.

Wes Cash
Wes Cash, a Noria senior technical consultant, is an enthusiastic, relatable speaker who connects comfortably with his audience. Wes’ style and easy-to-understand approach to the curriculum creates an interactive forum for learning. He is certified by the International Council for Machinery Lubrication as a level II Machinery Lubrication Technician and a level II Machine Lubricant Analyst.

Bennett Fitch
Bennett Fitch, a Noria senior technical consultant, is product manager for Lubrication Program Development, Noria’s flagship service. He received his bachelor’s degree in mechanical engineering from Georgia Institute of Technology with a concentration in applied tribology. Bennett holds Level II Machine Lubrication Technician and Level III Machine Lubricant Analyst certifications through the International Council for Machinery Lubrication.

Loren Green
Loren Green, a Noria senior technical consultant, is product manager for Training and Education services. He has nearly 30 years of experience in rotating equipment and lubrication, including gauge calibration, electro-pneumatic boiler controls systems, pump repairs and installation, and laser alignment. For Noria, he provides public and private training seminars, as well as specialized lubrication program development.

Alejandro Meza
Noria’s Alejandro Meza offers more than 20 years of experience in the lubricant industry, technical services, quality assurance, training, consulting and development in Brazil, Mexico, the United States and the Americas region. He has represented Noria in Brazil, developing and delivering training programs along with field and consulting services, and has also delivered Noria services in Australia, Argentina and Surinam.

Jerry Putt
During a 38-year tenure with Goodyear, Jerry Putt held numerous corporate positions, including managing the mechanical facilities, process engineering and plant engineering departments. In addition to having been an executive member of the Society for Maintenance and Reliability Professionals (SMRP), Jerry has been on the advisory board for the International Council for Machinery Lubrication (ICML) since 2001 and is currently serving as chairman.

Bob Scott
Bob Scott brings to his courses a wealth of “in the trenches” experience. His practical “how to” advice and engaging teaching style consistently receive top scores from audiences. You’ll reap the benefits from his 25 plus years of experience with lubricants, lubrication and oil analysis and come away from the training with solid, practical skills.
From Our Resource Center

The Level II MLA Certification Study Packet

Level II MLA Flash Cards — More than 440 flash cards give you a head—start for preparing for the ICML Level II MLA certification exam.

Oil Analysis Basics — Our No.1 best-selling book makes oil analysis for machinery condition monitoring easy to understand.

Wear Debris Analysis — Consisting of more than 70 illustrations, figures and tables, this book gives a practical look at wear debris and wear particle analysis in many forms.

Machinery Oil Analysis — Uniquely presenting the entire practice of oil analysis as a condition monitoring tool for machines this in-depth analysis describes the what, when, where and how-to for machinery lubrication concepts, machinery failure and maintenance concepts, machinery failure modes, oil sampling and testing plus statistical analysis and data interpretation.

Your Price: $310
Retail Price: $378.95 Plus $14 for shipping in the U.S.

Get Certified!
Certification testing will be held on the Friday following the training by the International Council for Machinery Lubrication

How To Certify

Which Certifications?
These courses are designed to help you prepare for the following

ICML certification exams:
• Level II Machine Lubricant Analyst (MLA)
• Level III Machine Lubrication Analysis (MLA)

Find out more about these ICML certification exams at the ICML website: www.LubeCouncil.org.

What Is ICML?
The International Council for Machinery Lubrication (ICML) is a vendor-neutral, not-for-profit organization founded to facilitate growth and development of machine lubrication as a technical field of endeavor. Among its various activities, ICML offers skill certification testing for individuals in the fields of machine condition monitoring, lubrication and oil analysis.

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What are the 5 most important things I should look for on my oil analysis report?

What are the best cost-reducing strategies using oil analysis?

1. Develop Rapid-Fire Troubleshooting Skills!
2. Squeeze Maximum Life From Lubricants!
3. Champion A Company-Wide “Clean Oil” Campaign!
4. Take Aim On Reactive Maintenance!

How clean should I keep my oil and what kind of filter should I use?