



Noria Skills Training

Practical OIL ANALYSIS

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

Oil Analysis Offers Far Superior Early Warning Signals Than Other Maintenance Tools - Even Vibration Analysis.

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



Enroll Today! Visit Noria.com or call 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 this presentation. 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.

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

What are all these numbers I see on my oil analysis report?

What steps can I take to ensure that I get a good oil sample each time?



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

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?

5

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

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?

Oil Analysis Blunders

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.
- A company that had been using oil analysis for several years wondered why it was never able to detect pending bearing failures. After a bearing failure shut down production for more than a day, it discovered that the oil analysis tests being conducted were not capable of detecting impending failure. Instead, the tests were designed to identify wrong or degraded lubricants only.

Who Should Attend?

- All Maintenance Professionals
- Laboratory Analysts
- Vibration Instrument Specialists
- Craftsman 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?

- Process Manufacturing
- Primary Metals
- Automotive Manufacturing
- General Manufacturing
- Municipal Utilities
- Power Generation
- Aerospace
- Pulp and Paper
- Earthmoving
- Petrochemical
- Transportation

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



An Arsenal of Knowledge for Your Oil Analysis Program



Develop Rapid-Fire Trouble Shooting 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 is 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 lynch pin 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.

This course throws useless trivia out the window, and gets 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.



Presentation Slides are Full-color and High-quality, Making the Information Easy to Comprehend and Remember.

Satisfied Customers Say It Best...

“For any program looking to start a fluid sampling program, this is the place to start.”

*Justin Youtz, Hydraulics IPT Lead,
General Dynamics Amphibious Systems*

“Excellent combination of introductory and advanced material.”

*Ben Staats, Reliability Maintenance Engineer,
Cariboo Pulp & Paper*

“As a vibration analyst, I have a new prospective on how oil analysis detects potential problems long before vibration analysis would identify it.”

Scott Pitre, U.S. Navy

“Excellent learning forum. Provided substantial information that will be immediately useful in improving an existing oil analysis program.”

Steve Fox, Maintenance Engineer, Aera Energy

“I learned more in a few days than I have in the past year. This training has opened up some issues I have in my plant that I would have never thought of.”

Burt Jimenez, Maintenance Planner, Inland Steel

“This course produced instantly usable knowledge which will definitely result in changes in the way we handle lubricants and lubrication systems.”

Joe Kelly, Maintenance Engineer, Akzo Nobel

“Easy to understand, very informative and delivered in a professional way.”

*Terry Craswell, Maintenance Technician,
Alberta Pacific Forest Inc.*

“This class is a true pathway into world-class maintenance.”

*Gary Stamper, Maintenance Superintendent,
Meadwestvaco*

**“Vendor-neutral
Makes A Difference!”**

*Alfredo Romaro,
Maintenance Technician,
Kawneer Company*





Join This List Of World-class Companies That Have Benefited From Noria Training

- | | |
|----------------------|------------------------|
| 3M | Harley-Davidson |
| Air Products | HB Zachry |
| Akzo Nobel | Holcim |
| Alabama Power | Intel |
| Alcoa | Houston Metro Transit |
| Ameren | International Paper |
| Arco | John Deere |
| BHP Copper | Kinder Morgan |
| BP Amoco | Koch Industries |
| Bristol Myers | LaFarge Canada |
| Boeing | Lockheed Martin |
| Boise Cascade | Lukens Steel |
| Borg Warner | M&M Mars |
| Cargill | MillerCoors |
| Castrol | Michelin |
| Caterpillar | Nova Chemicals |
| Centralia Mining | Owens Corning |
| Chevron | Oxy Chemical |
| Citgo | Pacific Gas & Electric |
| Clopay | Peabody Energy |
| ConocoPhillips | PPG Industries |
| Destec Energy | Procter & Gamble |
| Detroit Edison | Reliant Energy |
| Dow Chemical | Rio Tinto |
| Dow Corning | Seattle Times |
| Duke Power | Seminole Electric |
| DuPont | Shell Oil |
| Eastman Kodak | Southern Companies |
| Eli Lilly | Sun Company |
| Entergy | Temple-Inland |
| ExxonMobil | Texaco |
| First Energy | Texas Instruments |
| Florida Power | Texas Utilities |
| Ford Motor Co. | U.S. Army |
| Formosa Plastics | U.S. Navy |
| General Electric | U.S. Postal Service |
| General Motors | Via Rail Canada |
| Geneva Steel | Westinghouse |
| Georgia Pacific | Weyerhaeuser |
| Georgia Power | Whirlpool |
| Goodyear | Wyeth |
| Great Lakes Chemical | |

Why Do You Need This Training?

The Oil Analysis Knowledge Base Is Exploding.

More is known about oil analysis than ever before. The once-accepted practices and old methods have been replaced with new, highly-effective procedures and strategies.

Oil Analysis Has Never Been More Important.

Today's industrial environment demands increased equipment availability, lower maintenance costs and less downtime. To stay competitive and profitable, successful companies must employ results-driven oil analysis programs.

Maintenance Programs Become More Effective.

When combined with the predictive and root cause revealing capabilities of oil analysis, the effectiveness of vibration analysis, thermography and other maintenance tools skyrockets.

Our Approach

We go to great efforts not to overcomplicate the course material. You will leave with the feeling "this isn't so hard. I can do it". We won't overwhelm you or try to impress you with our 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.





Course Outline

World-class Maintenance Philosophies

- Five prevailing features of world-class maintenance programs
- The 80:20 rule for maintenance
- Three successful elements of a CBM program

Introduction to Machinery Lubrication

- Oil formulation and its importance in effective machinery lubrication
- Six key functions of lubricating oils
- Three primary lubrication regimes
- Introduction to base oils and additives
- Choosing the correct base-stock
- Conditions that dictate use of synthetic oils
- Antioxidant additives and their role in oil life
- Dispersants and detergents - the key to controlling soot
- Controlling wear with additive chemistry

Oil Analysis Fundamentals

- Interpreting the language your oil is speaking
- Prevailing myths about oil analysis
- Common applications for sampling and analysis
- Three categories of oil analysis

Oil Sampling – The Very Best Practices

- 11 elements of a successful oil analysis program
- How clean should sample bottles be?
- How to find the best sampling locations
- Sampling valves and hardware recommendations
- A quick method for optimizing sampling intervals
- The importance of primary and secondary sampling points
- How to properly sample circulating systems
- Safe, effective high-pressure sampling from hydraulic systems
- Best practices for sampling splash-, collar-, and ring-lubricated systems

Fluid Properties Analysis

- Four common root causes of oil degradation
- Recognizing and controlling oil oxidation
- Monitoring lubricant degradation using acid number
- Monitoring lubricant health using FTIR
- Determining oil life using RPVOT
- Recognizing and controlling thermal failure
- How to recognize additive depletion or degradation
- Using paper chromatography (blotter spot test) to detect additive and base oil degradation
- Four ways to detect the addition of wrong oil

Contamination Control and Proactive Maintenance

- Seven common contaminants
- Oil cleanliness and oil life extension benefits
- Using the ISO Solid Contamination Code
- Proactive maintenance in three easy steps
- Case studies for proactive maintenance
- Oil filter and breather recommendations
- Portable filtration carts - three ways to use them
- Setting targets for oil cleanliness
- Detecting and controlling moisture contamination
- Selecting moisture removal/filtration methods
- The effects of heat on lubricants
- Controlling air entrainment and foam
- Glycol contamination
- Dealing with soot
- Understanding fuel contamination

Fault Detection and Wear Particle Analysis

- How wear metals are measured using RDE and ICP spectrometers
- Measuring larger particles with Rotrode Filter spectroscopy

- Using ferrous density to determine the severity of a wear problem
- Using analytical ferrography for advanced fault detection
- Using ferrography for root cause analysis
- Four primary sources of friction in lubricated machinery
- The 10 wear mechanisms that reduce machine life
- The most common wear modes in plain, rolling element, and thrust bearings
- Understanding gear wear
- Understanding wear in hydraulic systems
- Instrument Free On-site Tests
- How to inspect vents and breathers
- Tips for effective sight glass inspection
- Getting valuable information from used filters
- Inspecting reservoirs for clues about lube trouble
- Scenting lubricants to find problems
- Getting visual clues from the oil sample before mailing it out
- Getting into particle analysis for under \$100
- Turn your kitchen blender into a test for demulsibility and foam tendency
- Screening for water with a simple hot plate
- How an unwanted business card can reveal oil degradation

Interactive Case Studies Workshop

- Individual and group participation in problem-solving exercises
- Exercises in how to read an oil analysis report

"I learned enough on the first day to pay for the entire class."

John Durham, Reliability Engineer, 3M



Get Certified!

Why Certify?

The International Council for Machinery Lubrication (ICML will be conducting Level II Machine Lubricant Analyst testing the morning following the training course in the same hotel.



Please contact the ICML at 918-259-2950 or visit them online at www.lubecouncil.org to register for testing.

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.

On-Site Training

ON-SITE TRAINING We can customize Practical Oil Analysis – or any of our other courses – to meet your unique needs. We'll provide expert instruction at a time and place most convenient for your group. Want to know more? Call 800-597-5460. Whether you have 5 or 500 people to train, Noria is the answer.

Trainers



Jim Fitch

Jim Fitch, a founder and president of Noria Corporation, is a highly sought-after consultant and trainer described by his clients as “insightful, dynamic and thorough.” He has built an oil analysis laboratory from scratch, patented numerous oil analysis instruments, served as advisor to condition monitoring organizations and set up effective oil analysis programs at numerous companies.



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 gets top scores from audiences. You'll reap the benefits from his 25+ years of experience with lubricants, lubrication and oil analysis and come away from the training with solid, practical skills.



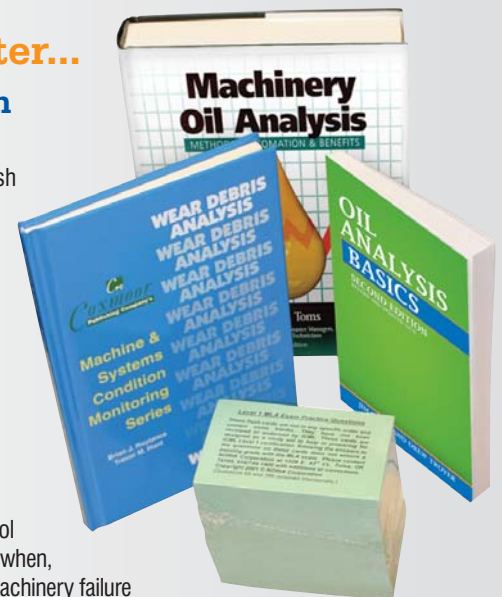
Matt Spurlock

Matt Spurlock, a Noria senior instructor, has more than 20 years of practical experience in industrial lubrication and oil analysis. He is a knowledgeable and skilled presenter who has many real-life experiences that can be applied to his classes.

From Our Resource Center...

The Level 1I 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** is our #1 best-selling book. It makes oil analysis for machinery condition monitoring easy to understand.
- **Wear Debris Analysis** consists of more than 70 illustrations, figures and tables, gives a practical look at wear debris, and wear particle analysis in many forms.
- **Machinery Oil Analysis** uniquely presents 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.



Retail Price: ~~\$378.95~~

Your Price: \$310
Plus \$12 for shipping in the U.S.




Practical Oil Analysis Registration Form


YES! Please register me for the three-day *Practical Oil Analysis* training course for only \$1,195 per person.

4 Ways To Register

 **Online**
www.noria.com

 **Call toll-free!**
800-597-5460 Or 918-749-1400

 **Mail the registration form!**

 **Fax your registration!**
918-746-0925

1 Training Course

Course City: _____

2 Who Will Be Attending

Mr./Ms.: _____

Job Title: _____

E-mail: _____

(Please list additional registrations on a separate sheet and attach)

3 Company Information

Organization: _____

Address: _____

Mail Stop: _____

City: _____ State/Province: _____

Country: _____ Zip/Postal Code: _____

Phone: _____ Fax: _____

E-mail: _____

4 Industry Information

- | | | |
|---|---|--|
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> General Manufacturing or Other | <input type="checkbox"/> Pulp & Paper, Lumber |
| <input type="checkbox"/> Automotive Manufacturing | <input type="checkbox"/> Government/Military | <input type="checkbox"/> Textiles & Apparel |
| <input type="checkbox"/> Aviation, Rail, Maritime, Trucking | <input type="checkbox"/> Laboratory | <input type="checkbox"/> Tire/Rubber |
| <input type="checkbox"/> Chemicals & Allied Products | <input type="checkbox"/> Mining/Metals | <input type="checkbox"/> Tobacco |
| <input type="checkbox"/> Construction & Allied Products | <input type="checkbox"/> Petroleum Products & Refining | <input type="checkbox"/> Utilities (Electric, Water, Gas, Waste) |
| <input type="checkbox"/> Consulting/Services/Training | <input type="checkbox"/> Pharmaceutical | <input type="checkbox"/> Other |
| <input type="checkbox"/> Food Process Manufacturing | <input type="checkbox"/> Plastics & Allied Products | |

5 Certification Study Packet

The Level I MLT/MLA Certification Study Packet - \$310 Quantity _____

\$14 for shipping will be added to all study packet orders.




6 Method Of Payment

Payment is due before the course

Check enclosed payable to:
Noria Corporation

Mail to:
Noria Corporation
ATTN: Training
1328 East 43rd Court
Tulsa, OK 74105

Charge to:

   Cards 

Card Number: _____

Expiration Date: _____

Name on Card: _____

Signature: _____

Our Purchase Order is attached.
P.O.# _____

Note: If you've already registered by phone, fax or online, please do not return this form.

Locations And Dates

The phone numbers below are for booking hotel reservations only. To register for the course call 800-597-5460.

Houston, TX
May 22-24, 2012
Doubletree
15747 John F. Kennedy Blvd.
Houston, TX 77032
281-848-4000

Las Vegas, NV
October 23-25, 2012
Embassy Suites Convention Center
3600 Paradise Road
Las Vegas, NV 89169
702-893-8000

Milwaukee, WI
July 10-12, 2012
Hilton Milwaukee River
4700 North Port Washington Rd.
Milwaukee, WI 53212
414-962-6040

Check Noria.com for more dates and locations

Registration Information

Check-in: Tuesday, 7:30 a.m. – 8:00 a.m.
Program: Tuesday – Thursday, 8:00 a.m. – 4:00 p.m.

The fee for Practical Oil Analysis is \$1,195 per person. For fast registration, call 800-597-5460 toll-free between 8 a.m. and 5 p.m. central time Monday through Friday. Or, fax your registration form to 918-746-0925 at any time. The fax line is open 24 hours a day, seven days a week. We will send a confirmation of your registration via e-mail. If your confirmation does not arrive within 48 hours, please contact us to process your registration immediately. In lieu of cash, check and credit cards are preferred when paying at the training site.

What's Included

Your fee provides you the best training around, a comprehensive manual, a free package of training materials, continental breakfast, lunch each day and refreshments. Certification exam fees are not included.

Cancellations And Substitutions

You may cancel your registration prior to the course date or send a substitute. If you cancel prior to the course date, we will refund your entire payment, cancel your invoice or, if you prefer, apply your payment to another Noria program of your choice scheduled within 12 months of your original event. Please note that if you do not cancel and do not attend, you are still responsible for payment.

Certification Exams

Certification testing is offered by the ICML the morning following this training course at the same hotel. Please contact the ICML to register for the certification exam or register online at their web site:

International Council for Machinery Lubrication
Phone: 918-259-2950 • Fax: 918-259-0177
E-mail: info@lubecouncil.org • Online: lubecouncil.org