



How to Establish the Right Fluid Analysis Program

Dr. Barbara Monse

LubeControl GmbH – Who we are

- Young company but long-term experience in Oil Condition Monitoring (OCM)
- Founded in Feb 2022
- Located in Freyburg (Unstrut), the heart of Germany, and home of the famous German sparkling wine Rotkäppchen
- Continuation of Bureau Veritas OCM program in Germany and other European countries
- Founder: Dr. Barbara Monse
 - > 15 years experience in lubricants and OCM
 - Sales development for ALcontrol, SYNLAB & Bureau Veritas
- Visit us at Booth 444

Why Fluid Analysis Programs and Which Fluids



OEM requirements and warranty



Check if correct lubricant is used



Monitor performance of assets



Prolongation of life-time of

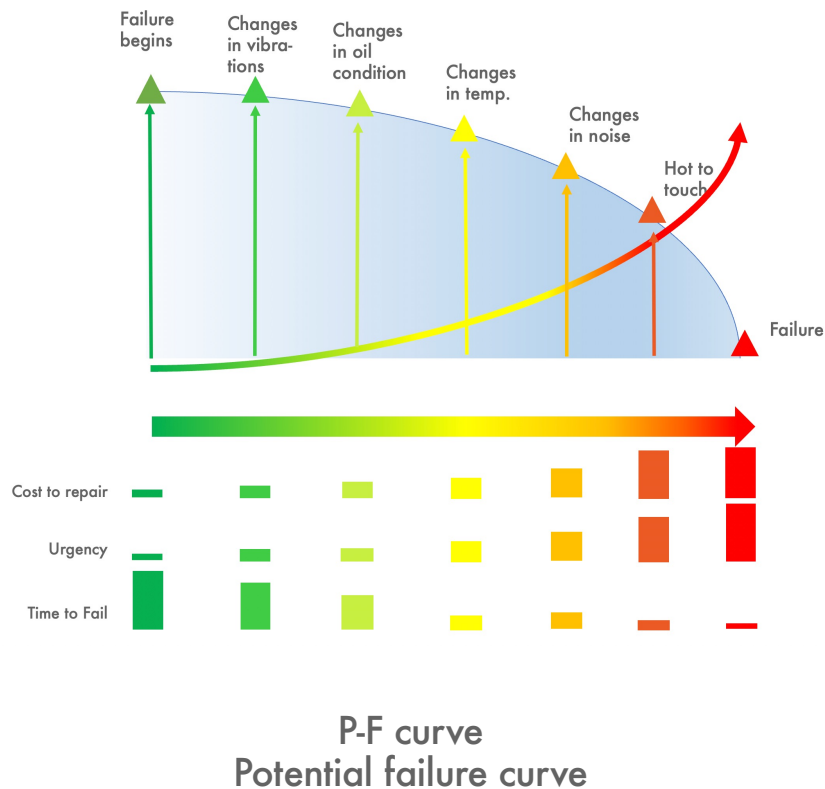
- Lubricants
- Machines and spare parts



Benefits:

- Less (or no) un-scheduled shut-downs
- Predictable maintenance measures
- Savings, sustainability
- Improved CO₂ footprint

Why Fluid Analysis Programs and Which Fluids



Why Fluid Analysis Programs and Which Fluids

- Lubricants
 - Mineral and PAO-lube oils
 - Hydraulics, gear oils, turbine oils, compressor oils
 - Engine oils
 - Transformer oils etc.
 - Ester-based lube oils
- Greases
- Coolants
 - w/o antifreeze (EG, PG)
- Transformer Oils
- Fuels
 - Diesel (EN590)
 - Domestic fuels
 - Marine fuels



6 Steps



DEFINE YOUR
OBJECTIVES



CHOOSE THE BEST
SERVICE PROVIDER



GOOD PLANING



UNDERSTAND
REPORTS



PROVIDE
FEEDBACK



MEASURE COST
EFFECTIVENESS



1. Define Your Objectives

Utilization

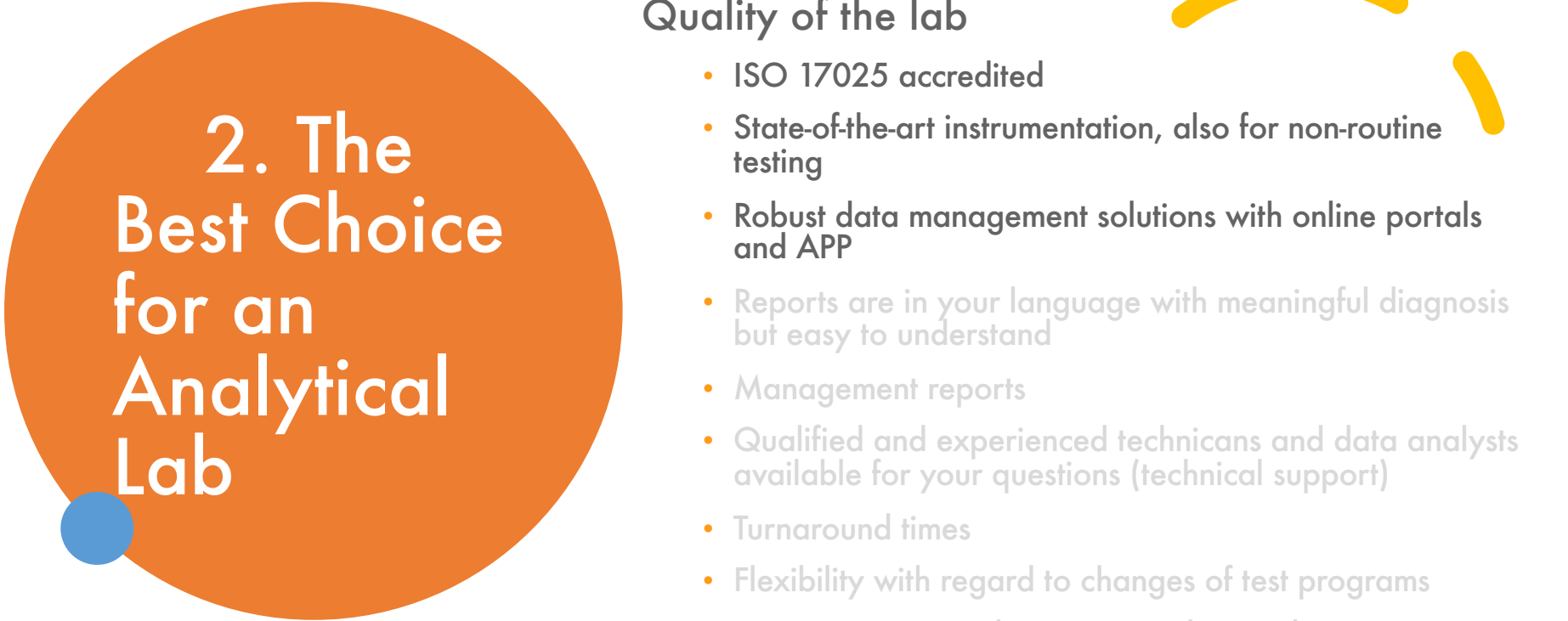
- Decrease unscheduled downtime
- Increase overall component lifespan
- Control fluid consumption and disposal costs
- Assist in product selection, comparison and verification

Maintenance

- Identify, measure fluid contamination, component wear – target corrective actions
- Reduce in-service failures and field repairs
- Establish proper fluid service intervals

Management

- Improve reliability, product quality and productivity
- Improve cost control for equipment, labor and materials
- Eliminate needless inspections or repairs
- Control spare parts inventory and replacement costs



2. The Best Choice for an Analytical Lab

Quality of the lab

- ISO 17025 accredited
- State-of-the-art instrumentation, also for non-routine testing
- Robust data management solutions with online portals and APP
- Reports are in your language with meaningful diagnosis but easy to understand
- Management reports
- Qualified and experienced technicians and data analysts available for your questions (technical support)
- Turnaround times
- Flexibility with regard to changes of test programs
- Test programs can be customized according to your requirements

2. The Best Choice for an Analytical Lab

A Partnership in Data Analysis

- e.g. TESSWEB by BUREAU VERITAS
- State-of-the-art technology with continuous improvements
- Equipment and sample report management
- Trending, online access anywhere at any time
- Diagnostic reports
- Pre-registration of samples online or by APP
- Download of data or reports
- Data transfer to your data base
- Import of historical data





2. The Best Choice for an Analytical Lab

Quality of the lab

- ISO 17025 accredited
- State-of-the-art instrumentation, also for non-routine testing
- Robust data management solutions with online portals and APP
- **Reports are in your language with meaningful diagnosis but easy to understand**
- Management reports
- Qualified and experienced technicians and data analysts available for your questions (technical support)
- Turnaround times
- Flexibility with regard to changes of test programs
- Test programs can be customized according to your requirements

agnosis

- [illegible]

Ref: 15643-2019-14199492

UNTERSUCHUNGSBERICHT

KLINIK(E)

UNIVERSITATEA DE
MEDICINA SI
FARMACIE
BUCURESTI

KundeName
Kontakt
Strasse
PLZ Ort

MASCHINEN-INFORMATIONEN (1)

KOMPONENTEN-INFORMATION (1)

Hersteller: MIMC DUT
Modell: 102-20A V2
Baureihe: Baureihe 102
Baureihe: Baureihe 102
Baureihe: Baureihe 102

Ref.: 15643-2019-14199492
Typ: Baureihe 102
Laborauftrag: GR WILKEL 18 046 40
Hersteller: MIMC DUT
Modell: 102-20A V2
Baureihe: Baureihe 102
Baureihe: Baureihe 102

WALD 303

LETZTE DIAGNOSE

Das Öl befindet sich in einem geschlossenen Zustand, keine Anzeichen von Verunreinigungen oder abnormalem Verschleiß.
Ergänzungen: Führen Sie regelmäßige Ölungen entsprechend den Service-Richtlinien zur Überwachung durch.

ERGEBNISSE

Probekundennummer:	15643-2019-14199492	1402035	1354610	1356602
Laborkundennummer:	PRE0002476	PRE0002476	PRE0002476	PRE0002476
Materialkennzeichen:	600	7006	6704	6704
Chemikalien:	600	7006	6704	6704
Probekundennummer:	15643-2019-14199492	1402035	1354610	1356602
Laborkundennummer:	PRE0002476	PRE0002476	PRE0002476	PRE0002476
Materialkennzeichen:	600	7006	6704	6704
Chemikalien:	600	7006	6704	6704
Probekundennummer:	15643-2019-14199492	1402035	1354610	1356602
Laborkundennummer:	PRE0002476	PRE0002476	PRE0002476	PRE0002476
Materialkennzeichen:	600	7006	6704	6704
Chemikalien:	600	7006	6704	6704

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNISSE

ERGEBNIS



2. The Best Choice for an Analytical Lab

Quality of the lab

- ISO 17025 accredited
- State-of-the-art instrumentation, also for non-routine testing
- Robust data management solutions with online portals and APP
- Reports are in your language with meaningful diagnosis but easy to understand
- Management reports
- Qualified and experienced technicians and data analysts available for your questions (technical support) (CLS, OMA)
- Turnaround times
- Flexibility with regard to changes of test programs
- Test programs can be customized according to your requirements



3. Good Planning

Build a Strong Program Foundation Before Testing Begins

- Nominate a responsible manager for the oil analysis program
- Define critical units
- Define the optimum test package – the lab should help you to get the most of your investment
- Define sampling points and sampling intervals
- Obtain representative samples
- Create consistent baseline information
- Provide accurate and relevant machine information to the lab including the full oil brand names and historical analytical data if available
- Train your personnel in implementing and maintaining an oil analysis program



3. Good Planning

Critical Units

- Critical to production and to cost of repair and spare parts
- Based on operational history or known wear issues
- Relevant unit information should be recorded and communicated to the lab:
 - Internal Unit ID
 - Make and model
 - Lube type and viscosity
 - Machine age



3. Good Planning

Test Packages

- Oil condition
 - Viscosity
 - Formation of degradation products (oxidation, nitration, acid number etc.)
 - Chemical contamination (water, fuel, glycol, dirt etc.)
 - Additive
- Machine condition
 - Wear elements
 - PQ
 - Particle analysis



3. Good Planning

Examples for Test Programs

Test	Engine Oil	Hydraulic Oil
Appearance	☹	☹
Picture sample bottle	☹	☹
Viscosity @ 40, 100°C, VI	☹	☹
FT-IR spectra	☹	☹
Oxidation, nitration, soot, glycol	☹	
Water	Crackle test, FT-IR, %	Karl-Fischer, ppm
Base number	☹	
Acid number		☹
Wear metals	☹	☹
Additive metals	☹	☹
Contamination metals	☹	☹
ISO Particle Count		☹
PQ-index	☹	☹



3. Good Planning

Build a Strong Program Foundation Before Testing Begins

- Nominate a responsible manager for the oil analysis program
- Define critical units
- Define the optimum test package – the lab should help you to get the most of your investment
- Define sampling points and sampling intervals
- Obtain representative samples
- Create consistent baseline information
- Provide accurate and relevant machine information to the lab including the full oil brand names and historical analytical data if available
- Train your personnel in implementing and maintaining an oil analysis program



3. Good Planning

Sampling Intervals

Based on

- Criticality
- Manufacturer guidelines
- Client's maintenance procedures

Typical Intervals

- Stationary gas engines: 500 hrs
- Hydraulics: every 1,000 hrs or 6 months
- Gas turbines: small routine – quarterly, complete - yearly



3. Good Planning

Representative Samples

- Starting point of high reliability of the results



- Ask for sampling instructions if you are not sure how to proceed
- Suitable sample bottles and equipment (accessories)





3. Good Planning

Build a Strong Program Foundation Before Testing Begins

- Nominate a responsible manager for the oil analysis program
- Define critical units
- Define the optimum test package – the lab should help you to get the most of your investment
- Define sampling points and sampling intervals
- Obtain representative samples
- Create consistent baseline information
- Provide accurate and relevant machine information to the lab including the full oil brand names and historical analytical data if available
- Train your personnel in implementing and maintaining an oil analysis program



3. Good Planning

Consistent Baseline Information

- The more accurate information the better the diagnosis
- Very important when a sample of a sampling point is submitted the first time
- Online forms for new machines to return to the lab or submission forms

LUBECONTROL
LABORATORY FOR OIL ANALYSIS

Information on new machines
Industrial Oils

Your client's name (e.g. dealer, operator):

Contact:

Street:

Post Code:

City:

Sample name (IMPORTANT):

Machine Make:

Model:

Application (Please select the relevant one): Other (please specify below):

Oil brand name:

Oil volume (L):

Operator:

Site of machine:

E-Mail 1 (for reports):

E-Mail 2:

E-Mail 3:

more E-Mail:

please return to:
info@lubecontrol or Fax: +49 34466 665 609



3. Good Planning

Consistent Baseline Information

- Unit ID
- Unit Make & Model
- Component (engine, hydraulic, gear etc.)
- Time since New or Last Overhaul
- Time Since Last Oil Change
- Oil Type & Viscosity
- Oil Consumption or Top-Up

LUBECONTROL KitRef PRE010xxxx

Please retain for your reference

Sample Sub Sheet

Previous sample number: _____ Date sent to lab: _____
 Serial N°: _____ Model: _____ Make: _____
 If courier used, courier name: _____ Tracking number: _____

LUBECONTROL KitRef PRE010xxxx

Please send this section to the lab with your sample for analysis

Customer Details (return address for report)

Company: _____ Contact: _____
 Address: _____
 Phone: _____
 Post Code: _____ Email: _____
 Country: _____

Equipment details (for first sample complete all details)

Previous sample number: _____ Unit age: _____ (PRE010000)
 Sample name (Serial N°): _____ Model: _____
 Make: _____ Oil capacity of unit: _____ (LUB)
 Please note

Oil details (for first sample or new oil complete all details)

Oil Brand: _____ Viscosity: _____ (LUBREC-100)
 Oil change at sampling: ☐ Yes ☐ No last oil change: ____ / ____ / 20____
 Oil age: _____ (PRE010000) Top-up volume: _____ (LUB)
 Please note

Sample information

Sampling date: _____ Job-Number: _____
 Operator: _____ Location of the plant: _____
 Reason for sampling if not routine: _____

Routine - requires 100 ml bottle

☐ Diesel engine (P02)	☐ Gasoline engine (P02)	☐ Gas engine:
☐ Axle drives (P03)	☐ Basic Gas turbine (P03)	☐ Landfill gas (P24)
☐ Hydraulic (P03)	☐ Basic Steam turbine (P03)	☐ Sewage gas (P24)
☐ Industrial gears (P03)	☐ Basic Compressor (P03)	☐ Natural gas (P24)
☐ Wind turbine gear (P03)	☐ Grease (Q05)	☐ Biogas (P24)
☐ Wind turbine hydraulic (P03)	☐ Coolant Advanced (Q04)	☐ Dual fuel (Q05)

© 2019 LUBECONTROL GmbH

LubeControl GmbH
 Öl- und Kraftstoffanalytik
 Marienstraße 4
 D-06632 Freyburg (Unstrut)
 Deutschland

© 2019 LUBECONTROL GmbH

Kit Ref
 PRE010000



3. Good Planning



Staff Training

- Taking representative samples
- Recording consistent, complete & accurate oil and component information for sample processing
- Sending samples to the lab as soon as they are collected
- Using online data management tools or APPs provided by the lab for optimal equipment management



4. Understand Reports

Read and Understand Data Interpretation & Maintenance Recommendations

- Traffic light principle:
 - **Green** = Normal
 - **Yellow** = Cautious
 - **Red** = Serious
- Request clarification of test results or data analysis if you don't understand them
- Familiarize yourself with the lab's severity classification so that you know which units you can continue and which units need immediate maintenance action
- Establish alarm limits specific to your equipment needs, if necessary
- Review test reports and act on maintenance recommendations in a timely manner



5. Provide Feedback

Extremely helpful when included on the sample information form:

- Suspect abnormal lubricant or component conditions
- Findings of any inspection performed as a result of oil analysis program recommendations
- Discovery of abnormal machine conditions that were not previously indicated by oil analysis
- Notification of servicing and/or maintenance performed
- Information concerning operating environment or equipment application changes
 - New important spare parts
 - Correct oil brand when been changed or mix of oil brands



6. Measure Cost Effectiveness

Define KPIs for management reports to measure

- Parts and labor expenses for component repair, overhaul or replacement
- Losses in revenue during downtime
- Reductions in consumables items like lubricants or fuels
- Increases in productivity levels

SUMMARY: 6 Steps



DEFINE YOUR
OBJECTIVES



CHOOSE THE BEST
SERVICE PROVIDER



GOOD PLANING



UNDERSTAND
REPORTS



PROVIDE
FEEDBACK



MEASURE COST
EFFECTIVENESS



Questions?





Visit us at Booth 444

Dr. Barbara Monse