

LUBRICATION PROGRAM DEVELOPMENT



Powered by Ascend™



PREVENT MECHANICAL FAILURE —

Train Personnel — Maximize Efficiency... All In One Comprehensive Program



Why a Lubrication Program?

Mechanical wear and corrosion (chemical degradation) make up approximately 70% of industrial machine failures, costing companies millions of dollars each year. Unfortunately, many companies don't realize their mechanical problems can be traced back to poor lubrication practices, even though lubrication represents one of the easiest cost categories to streamline and control. Both wear and corrosion can be mitigated or prevented by proper lubrication practices.

Most organizations conduct maintenance that includes lubrication, but few recognize the extraordinary potential of comprehensive analysis, training and implementation of excellent lubrication practices – particularly those that are proactive.

Noria can provide your organization an individualized lubrication program, personnel training on best practices and continued access to a network of industry experts – all in one comprehensive program.



... Without Noria, to get where we are now, it would take us years. We implemented so much so fast, and the continued support has helped us stay on track ... It wouldn't have been possible for us to get through it as quickly or as efficiently without Noria."

**– Matt King, Mechanical Maintenance Lead,
Ingredion Winston-Salem**



Lubrication Program Development

Achieving lubrication excellence translates into major benefits for your company, but it can be an overwhelming endeavor for busy plants that need effective, sustainable solutions you can use immediately. With Noria's Lubrication Program Development (LPD), we deliver just that.

Real change requires specialists who understand how a lubrication program should function. Our LPD services begin with framing the need, the transformation plan and the priorities to get started. During the **Ascend Assessment** phase, we bring an experienced professional to your facility to define a practical path forward to transform your lubrication program.

Combining decades of proven expertise and specialized applications, we then lay out a sound lubrication program during the **Engineering Design** phase, using Noria's methodology to optimize the fundamental lubrication requirements for each oil- and grease-lubricated rotating component within your plant.

To transform a lubrication program into a world-class operation, it is vital to take the procedures, guidelines and practices developed in the Ascend Assessment and Engineering Design phases and integrate them into your lubrication program. With the **Program Implementation** phase, we help execute and optimize every step of the way. Simply put, we give our customers the confidence to pursue an effective path forward, then we help them make that happen.

**Ascend™
Assessment**

**Engineering
Design**

**Program
Implementation**

Program Results

Significant Cost Savings: Decreased operational costs, fewer necessary repairs, less downtime, more profit

Greater Efficiency: Achieve ROI ahead of schedule, increase life and functionality of plant machinery

More Knowledgeable Staff: More skilled maintenance staff, more organized lubrication tasks, personnel able to handle lubrication issues in-house, major cultural shift to better performance

The “Rights of Lubrication”

Right Lubricant

Right viscosity, additives, type, grade, thickener, for every machine

Right Place

Every lube point – don't miss any

Right Amount

Precise calculated volume for greases and oils

Right Time

Precise calculated interval and condition-based

Right Tools

Inspection, sampling, contamination control, procedures, etc.

Right People

Background, skills, training, ownership



Ascend™ Assessment

Getting your lubrication program off to the right start has never been easier. The Ascend Assessment phase of Noria's Lubrication Program Development (LPD) will help you achieve best practice while avoiding pitfalls and wasted resources. As part of this onsite lubrication assessment, you'll receive a customized roadmap in line with your priorities and budget, which is designed to rapidly deliver value and "quick wins" with each phase. The Ascend Assessment phase includes:

524-point Onsite Assessment - Based on the Ascend methodology (noria.com/ascend), this onsite assessment is an important step in evaluating the health of your lubrication program. A Noria expert spends a full day assessing your current lubrication practices. The assessment serves as a baseline to measure program improvements.

SWOT Analysis - Once the current lubrication program's strengths, weaknesses, opportunities and threats are identified, an accurate map for the future is created. You will gain an understanding of what you are doing well, where you can improve and where there might be low-hanging fruit that you can take advantage of immediately.

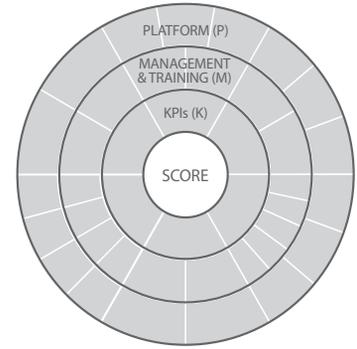
Analysis of 40 Program Factors - There are 40 critical factors to a successful lubrication program. A score is assigned to each of these factors, comparing your program's current state to best practice. The result is a clearly defined overview of your program's strengths and areas of opportunity.

28 Priority Next Steps - The 40 critical factors are weighted and prioritized to determine which actions should be performed first to maximize your investments and make the biggest reliability and Return on Investment (ROI) impacts. These 28 priorities provide a roadmap for the way forward.

Financial Cost Justification - It is inevitable that improving your lubrication practices will require a financial investment. To help maintenance and plant management understand the financial benefits, the costs of the plant's current lubrication practices will be evaluated. Based on the plant size and program maturity, the investment can be accurately calculated. Comparing the opportunity costs versus the investment provides the payback and the Internal Rate of Return (IRR) of a 5-year net present value (NPV).

Audit and Review Recommendations - To keep a lubrication excellence program operating at a high level, the 40 program factors must be reviewed and monitored regularly. Noria supplies the information you need to perform periodic audits and review each of these factors so your program will remain on track.

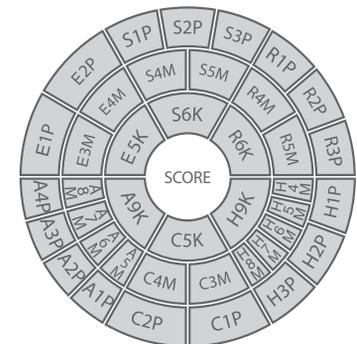
Metrics and KPI Recommendations - Measuring progress and compliance with your program goals will be critical to program success, as what gets measured gets done. Key Performance Indicator (KPI) recommendations will be provided for everything from lubricant storage and handling to contamination control.



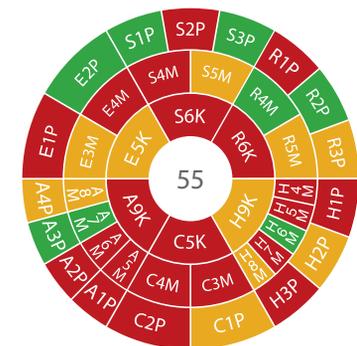
3 Management Levels



6 Lifecycle Stages



40 Factors



Sample Ascend Chart

Ascend Assessment Deliverables

Formal Presentation and Report

A Noria expert will make a formal presentation to plant leadership and management that discusses the customized roadmap to achieve lubrication excellence. This presentation and report will include the 524-point onsite assessment, SWOT analysis of 40 program factors, 28 priority next steps, financial cost justification, audit and review recommendations, and metrics and KPI recommendations.

Lubrication Awareness Training

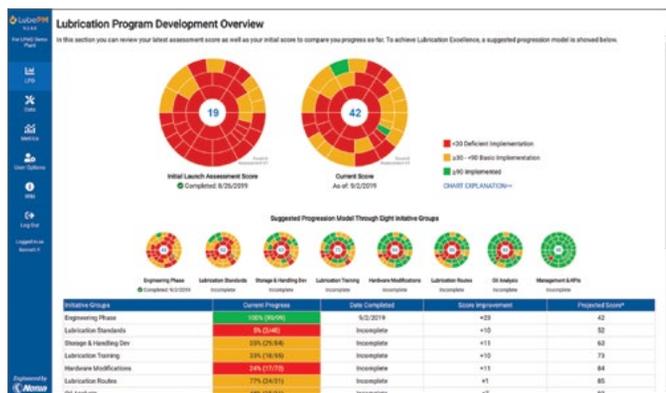
The process of transforming a lubrication program to best practice requires a high level of communication. This online Computer-based Training (CBT) ensures those involved in the program are aware of their roles and responsibilities as well as management's expectations for deployment. In addition, it focuses on the importance of lubrication excellence and contamination control to help get your team on the same page.

LubePM (Lubrication Program Manager)

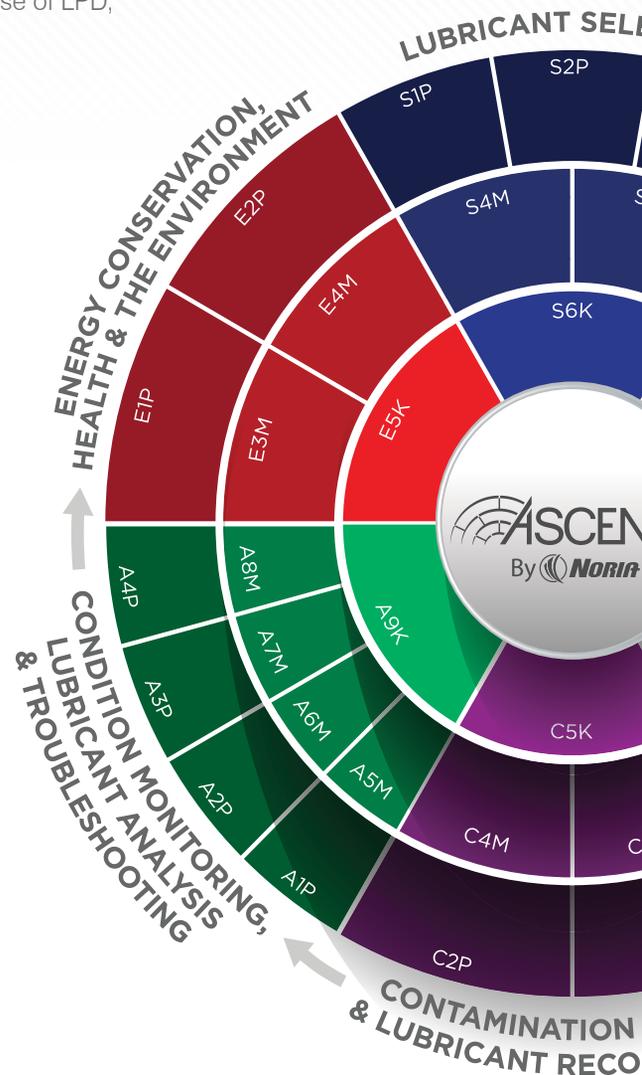
Planning and tracking progress is key to a successful lubrication program transformation. This cloud-based application will support you throughout your journey, providing plant and corporate-level planning boards and priority next steps.

Engineering Design Proposal

We will present a formal proposal for moving into the Engineering Design phase of LPD, which will optimize the fundamental lubrication requirements for each oil- and grease-lubricated component within your plant.



LubePM - LPD Overview



Engineering Design

During the Engineering Design phase, a team of Noria experts will survey all your lubricated assets onsite to collect information needed to engineer an optimized lubrication program. From this data, we strategically build each procedure from a proactive maintenance mindset, seeking to eliminate the common root causes of machine failure and create consistency in quality best practices.

All procedures are organized and managed within LubePM (lubepm.com) along with the full hierarchy of all your lubricated assets and data. Each procedure contains step-by-step instructions to guide the technician in how to perform each lubrication task quickly and efficiently. LubePM dynamically manages the procedures assigned along with all recommendations to lubricants and hardware modifications for each maintenance point. This ensures that all procedures and asset data are always up to date automatically. The tools within LubePM help empower employees to achieve lubrication excellence.

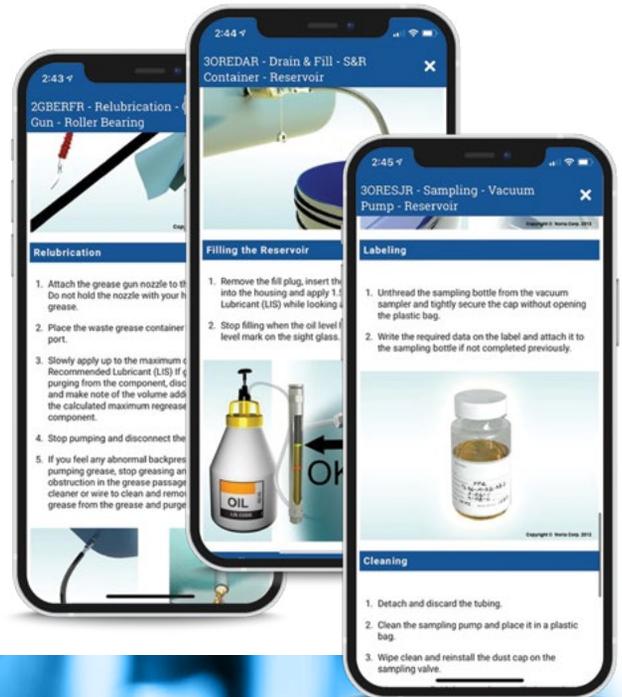
Importance of Procedures

Work Scope - Procedures clearly scope the work an individual is expected to perform. Specific lubrication tasks should be detailed to exact specifications for lubrication excellence.

Standardization - Documented procedures bring uniformity into the lubrication task while keeping everyone on the same page.

Best Practices - A procedure creates the framework for standardizing best practice. It serves as the container in which to pour the experience of employees, consultants, vendors and others into a single document.

Training - One of the most important aspects of procedures is that they form the basis for training lubrication personnel. A good set of procedures serves as a natural curriculum for task-based training and evaluating an individual's ability to carry out the assigned tasks.



Engineering Design Deliverables

LubePM (Lubrication Program Manager)

This cloud-based application is the central delivery platform for all procedures, data, recommendations and more during the LPD process. The following is a summary of the Engineering Design phase deliverables provided within LubePM. More information is available at lubepm.com.

- Data Manager

Data collected will be organized based on the location and asset hierarchal structure within the plant, down to all lubricated components and maintenance points. This includes all asset images collected.

- Lubricant Recommendations

Each maintenance point will be reviewed for the optimized lubricant based on operating, environmental and OEM requirements. The final lubricant recommendation will be determined with further consideration of plantwide lubricant consolidation objectives and current lubricant usage.

- Machine Hardware Modification Recommendations

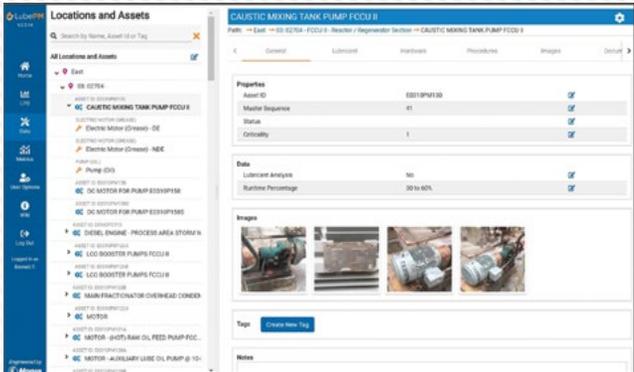
Each maintenance point will be reviewed for modification recommendations to optimize lubrication best practice and achieve reliability objectives. This includes modifications for inspections, condition monitoring, contamination control, lubricant application and lubricant sampling.

- Dynamic Procedures

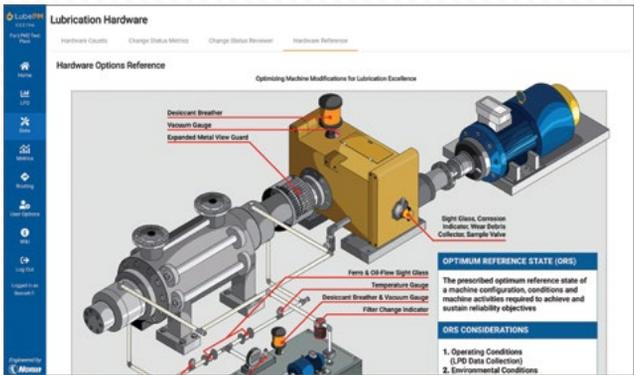
After all procedures are created based on the Optimum Reference State (ORS) and assigned to each maintenance point, these are dynamically influenced by changes to lubricants, hardware and other conditions changed on machines. This helps ensure that all procedures are always kept up to date during the Program Implementation. Procedures include inspections, relubrication, top-ups, lubricant sampling, lubricant changeouts, modification instructions, filtration and more.

- Implementation Management and Metrics

Implementation of best practices does not occur overnight. LubePM provides several tools to help manage the lubricant changes in machines and hardware modifications performed over the Program Implementation phase. This includes approval processes for multiple users and numerous change status metric pages to monitor this progress over time.



Locations and Assets



Hardware Reference

Request a demo of LubePM
www.lubepm.com



Program Implementation

The Program Implementation phase uses the knowledge gathered in your Ascend Assessment and Engineering Design phases to outfit your machine assets with the exact products and equipment they need.

At the same time, new procedures, management practices and KPIs are integrated into daily lubrication activities. All this data is accessible to you in LubePM, where changes can be managed and implemented with dynamic updates to procedures and inspections, keeping your program on track as it evolves.

Product Selection with RelaWorks

Purchasing the right products from quality suppliers can be a major project of its own. To streamline and simplify this process, we will identify specifications for products like sight glasses, breathers and other lubrication-related hardware to offer simplified purchasing options through our RelaWorks e-commerce platform.

Avoid Time-Consuming Purchasing Tasks

Saves time and costs relating to supplier registration, ordering, logistics, tracking, invoicing and management that can be a roadblock in program implementation.

Leverage Noria's Supplier Relationships

We can offer volume-buying power, arrange evaluation samples and potentially provide discounts from list prices.

Ongoing Support from a Procurement Specialist

We help you manage ordering, logistics and delivery, as well as implementation support with our technical team.

LubePM Approvals

Up-to-date parts lists are generated from the approvals within LubePM as well as certain storage and handling products derived from the engineering data.

LubePM Routing Manager

LubePM Routing Manager is a powerful add-on that allows you to build and manage lubrication routes and assign work orders to technicians through the LubePM mobile app (available on iPhone, iPad and Android™).

Best of all, tasks and routes automatically adapt to hardware changes, lubricant changes, task history, inspection data and more — keeping everything updated without the need for endless spreadsheets and manual changes.

Includes:

- Walk-through inspections with images
- Quick access to asset data and images
- Lubricant task compliance tracking
- Tasks automatically created and triggered from inspection data

For more information about LubePM Routing Manager and pricing, go to lubepm.com or contact a Noria representative.



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Case Studies from Customers

Lubrication Program Enables **Simmons Feed** to Cut Downtime by 50%

The Simmons Feed Ingredients plant in Southwest City, Missouri, brought in Noria consultants to develop a road map for lubrication excellence. After implementing Noria's Lubrication Program Development and training, the facility was able to achieve cleaner oil, prevent machine failures, avoid lost production and save up to \$1 million a year.



Lubrication Training Leads to Success at **Kimberly-Clark** Mill in Fullerton, California

Noria's machinery lubrication training enabled Kimberly-Clark's Fullerton Mill to achieve significant increases in machine reliability. With Noria's help, the mill's lubricant consumption has been reduced dramatically, and oil losses have dropped by 30%. Machine delays have also decreased, and the mill now experiences fewer equipment breakdowns.

Proactive Maintenance Approach at **Sinclair** Impacts Bottom Line

Noria's onsite training and Lubrication Program Development helped transform the Sinclair Wyoming Refinery into an industry leader for machinery lubrication. With guidance from Noria, the refinery was able to shift to a proactive maintenance approach and adopt best practices, significantly impacting its operations and bottom line.



For More Case Studies Visit noria.com/serv/customers/

Training Matters

Training is vitally important to the success of your facility's Lubrication Program Development journey. To help prepare you – and your team – for the journey, we offer a variety of training courses on the topics of machinery lubrication, contamination control and oil analysis.

CERTIFICATION SERIES

Machinery Lubrication I

Machinery Lubrication II

Machinery Lubrication Engineering

Oil Analysis II

Oil Analysis III

WORKFORCE DEVELOPMENT

Industrial Lubrication Fundamentals

Task-Based Training Online Series

**Custom Onsite Field Coaching and Training
(Lubrication Program Partnership)**

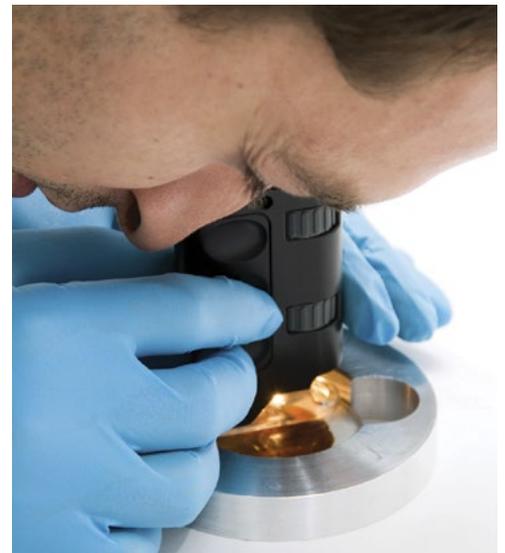
Lubrication Awareness

SPECIAL TOPICS FOR PROFESSIONAL DEVELOPMENT

Oil Analysis Report Interpretation Workshop

Food Processing Equipment Lubrication

Noria Workforce Solutions is a short-term solution that provides a combination of onsite and offsite support for various projects. Noria technicians are deployed at your site, providing laser focus to critical tasks and the unceasing perseverance needed to prevent costly machine repairs and downtime. Whether your facility needs help with routes, onboarding and/or verification of best practices, tasks and procedures, we can help.



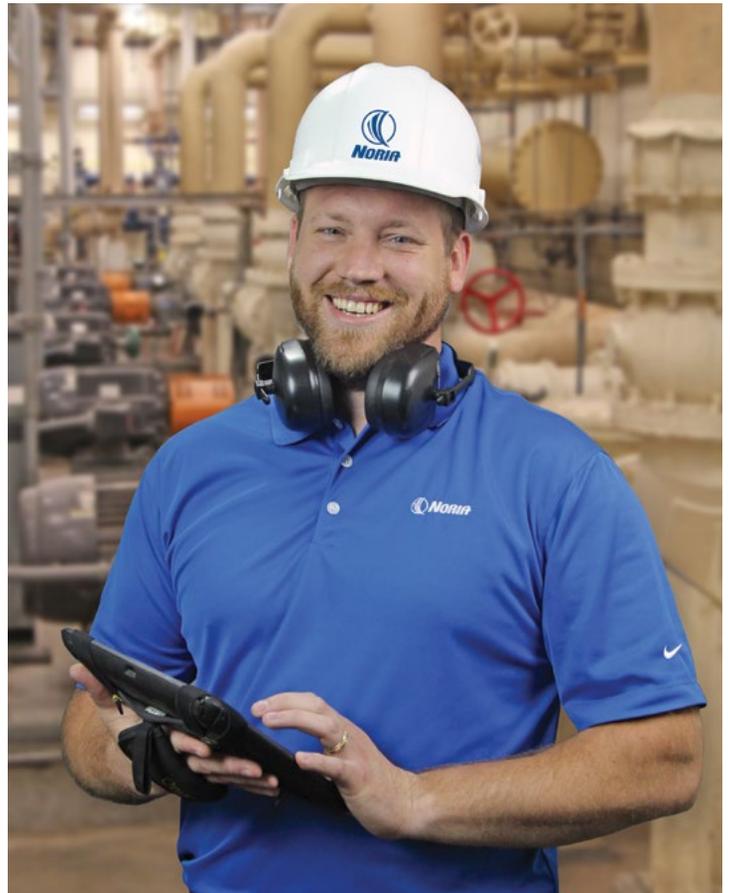


About Noria

Since 1997, Noria has been delivering world-class lubrication programs for a wide variety of customers and industries, including power generation, food and beverage, paper and pulp, heavy manufacturing, and mining. Major lubricant manufacturers turn to Noria to train their teams, design world-class lubrication programs and solve lubrication problems.

As a trusted advisor to the world's leading organizations, Noria has a staff of technical specialists dedicated to consulting, training and publishing in the core competencies of tribology, lubrication, oil analysis, contamination control and machine reliability. Our services are disseminated through top-quality training courses, consulting services, publications, webinars, videos and books.

Our mission is to inspire change through education by providing tools, resources and expertise so the industrial world can realize the tremendous potential that lubrication excellence has to offer.



Customer List

Many of Noria's customers view our services as a competitive advantage, so we can't provide a complete list of everyone with whom we've worked. Here's a small sample of the companies we've helped, which include several winners of the John R. Battle Award:



John R. Battle Award winners



www.noria.com/lpd