Reliable Process Solutions

It Can Operate Forever

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Presents

Developing an Effective Lubrication Program
Terry Harris, CMRP
Examine Director, SMRPCO
Certified RCM Facilitator
Predictive/Proactive Maintenance Training
Lubrication Audits
Lubrication Excellence Training Programs
Plug and Play Lube Storage rooms
Equipment Failure Modes training
Asset Criticality software, assessment, training
Environmental, Health, & Safety software/assessment
Maintenance Audits
Project Management Services
RCM, TPM, and PM Training
Development Considerations

No matter what industry you are in we need to understand that we will need some form of Lubrication Excellence program.

Developing your program will involve understanding issues and needs in your plant environment.
Why Do We Need It?

If you consider the fact that over 50% of the rotating equipment failures at your facility are lubrication related.

Why would you not consider developing a lubrication program.
Success Stories

Plant in Chicago reduced bearing failures on a hot coating machine from 6 months to 4 years without a failure.

Plant on Ohio took three 150 HP grinders from 18 month failures to 4.5 years.
Development Considerations

It’s a good idea to be familiar with the plant operation and what contaminants may be present in the lube storage areas.

What forms of foreign material are present?

What is the ambient or plant generated moisture issues?

What is the average temperature and extremes throughout the year?
Failure Mode Areas

5 Major Lubricant FM Areas:

- Temperature Failure Modes
- Moisture Failure Modes
- Foreign Material/Particles
- Viscosity Failures
- Contamination
## Program Failures

- No program
- Incomplete program
- No documentation
- *No procedures for ordering, receiving, storing*
- No RCM decision process for lube PM’s
- Improper sampling procedures
- No oil analysis program
- No wear particle analysis program
- Improper/No on line filtration
- *Improper/No off line filtration*
- Improper equipment oil drain procedures
- Additive package depletion
- Wrong additive package for application
- *Additive package separation*
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<td>➢ <em>No Best Practice Lube Storage Rooms</em></td>
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<td>➢ Not following Oil analysis reports</td>
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<td>➢ No automatic lubricators</td>
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<td>➢ <em>No filtration training</em></td>
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<td>➢ <em>No moisture reduction program</em></td>
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<td>➢ Lack of knowledge on grease processes</td>
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Foreign Material/Particles

- Ambient conditions
- Contaminated new oil
- Oil lube practices
- Component wear particles
- Greasing practices
- Improper filtration of new lubes
- Improper filtration of process equipment lube
- No filtration practices
- Combustion
- Improper external vent filtration
- No vent breather filter
- Particles in new grease
- Poor lube storage methods
- Poor lube equipment storage
Moisture Failure Modes

- Ambient conditions/humidity/rain
- Wash down practices
- Hot operation with shutdown/ cool down
- Improper seals on equipment
- Additive depletion
- Lubrication storage methods
- Lube equipment storage methods
- Improper vent/breather device
- Lack of or depleted desiccant
- No vent/breather device
- Start/Stop operations
- Leaking cooling system
- Dipsticks, (replace with sight glasses)
Lube Storage Failure Mode

Many of the failures of lubricants in our plants starts when the Lube products are received and stored at the plant. Moisture, FM, contaminants are in and around the lube containers and lube equipment.

*New lubes are not clean!*
Lube Storage
Precision Lubrication???
Effective Lube Storage

**Why do we need it:**
- Lube products protected from environment
- Plant dirt/FM/moisture/sunlight
- Filtering plant lubes
- New lubes or lubes as you use them
- Storage of lube application equipment
- Containers/funnels/grease guns/filters
- Separation from other plant chemical/products
- Designated area with products labeled
Effective Lube Storage

Why do we need it:

Products stored in controlled temperature

Grease separation, oxidation

Products stored in controlled humidity

Products labeled and visible

Clean area to fill lube equipment

Products can be re-circulated to mix additives

Better inventory control

Use the oldest lubes first
How Big is a Micron?
## Hydraulic Systems Life Extension with Cleaner Lube Oils

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## Bearing Life Extension with Cleaner Lubes

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This is an internal building installed for lube storage
Using the Proper Equipment
Lube Storage
JM Smuckers Memphis Food Grade Lube Storage Room
40 Ft unit with Office, Barrel Storage, and multiple Pumps/Filters
Development Considerations

Step 1 - Consolidate lubricants to a manageable level
Step 2 - Get all lubricants to one or two locations
Step 3 - Determine any contamination issues with current storage locations/methods
Step 4 - Determine size of containers based on monthly or annual usage
Development Considerations

Step 5- Determine storage container sizes
Step 6- Determine storage container materials
Step 7- Determine ambient control needs, AC, Heat, De-Humidifier
Step 8- Determine safety fire controls if needed
Step 9- Determine auxiliary storage, cabinets, shelves, etc.
Step 10- Determine types of pumps, electric, pneumatic
Step 11- Determine filtration levels and types
Development Considerations

What kind of training and support will your facility need.

Everyone who handles lubes or performs lube tasks should be trained.
Safety

Lubricants are a Class IIIB fluids.

Class IIIB fluids are fluids that have a vapor/flash point above 200 Deg F.

Lubricants have flash points between 465 and 525 Deg F. They are very hard to get burning and keep burning without a sustain fuel source present.

Keep lube storage clean and free of vaporous chemicals and fire protection can be minimal.
Send questions to:
tkharris10@hotmail.com
Rpslive.com

Thank You