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10

Steps to Lubrication Reliability

To enhance Plant & Equipment Reliability and to achieve World Class Maintenance

A How to guide for Maintenance & Reliability Professionals

Lubrication Reliability Best Practice INTRODUCTION

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- Company : Lubretec bvba
- Goal : World Class Maintenance
- Strategy : Lubrication Reliability
- Tools : Lubrication Best Practices

BEST Practice

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WHY ?

BAD
Practice

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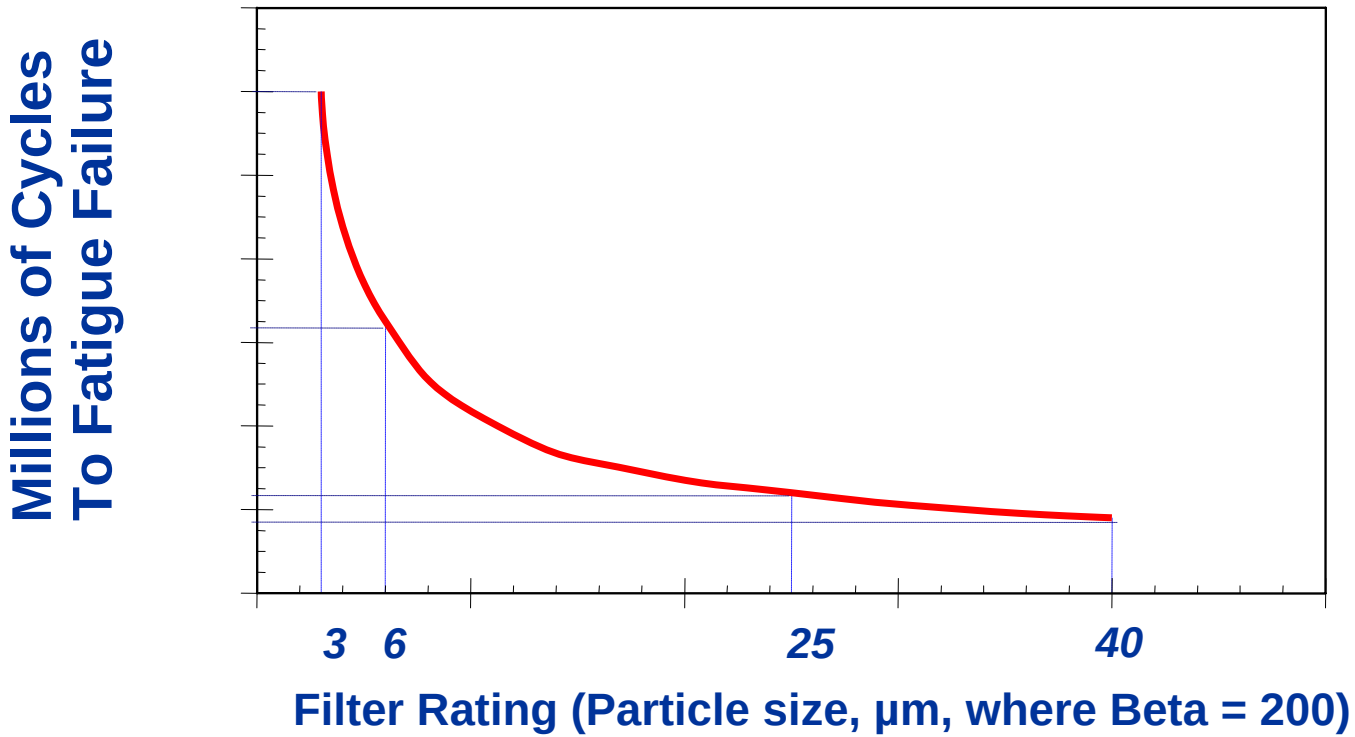
WHY ? : Bearing life is function of lubricant Cleanliness



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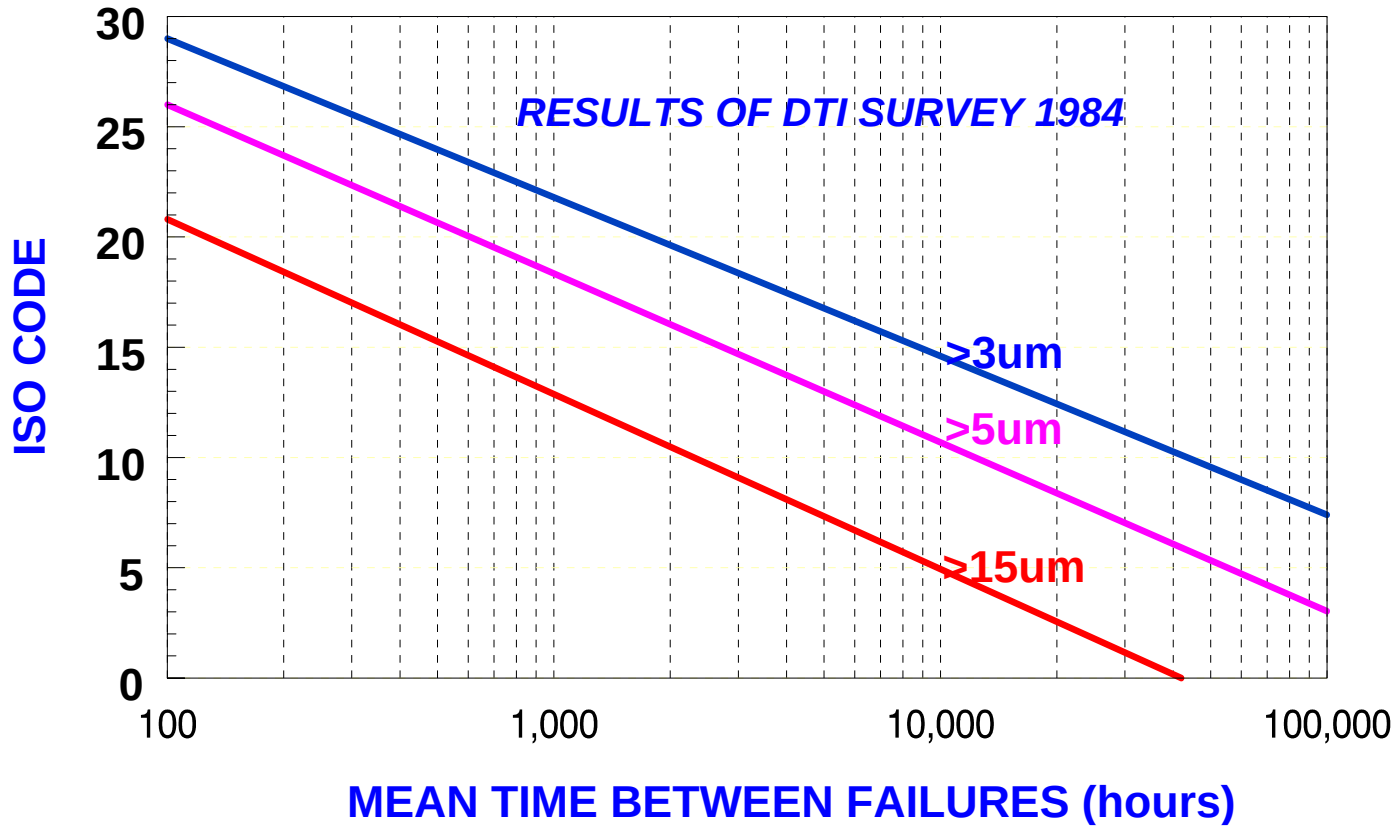
WHY ? Failure is related to ISO4406 Code



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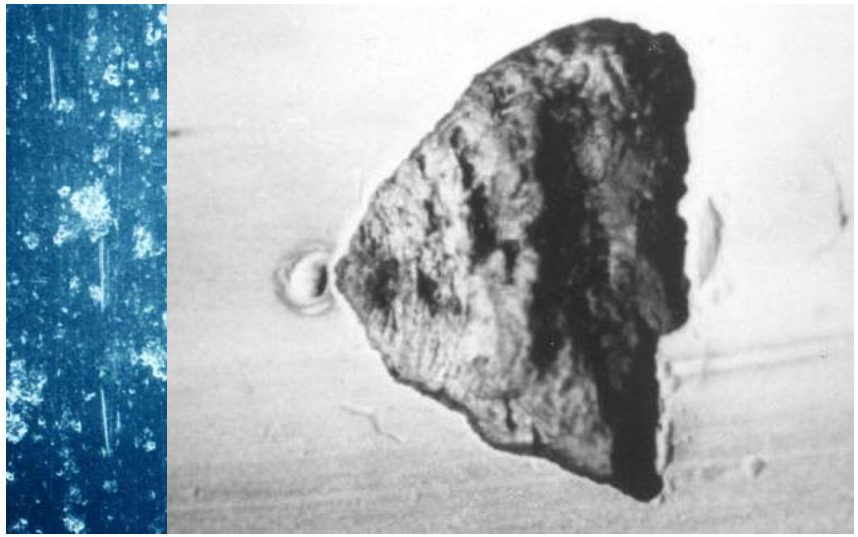
WHY ? Mechanisms of component wear



Result ? Component Failure

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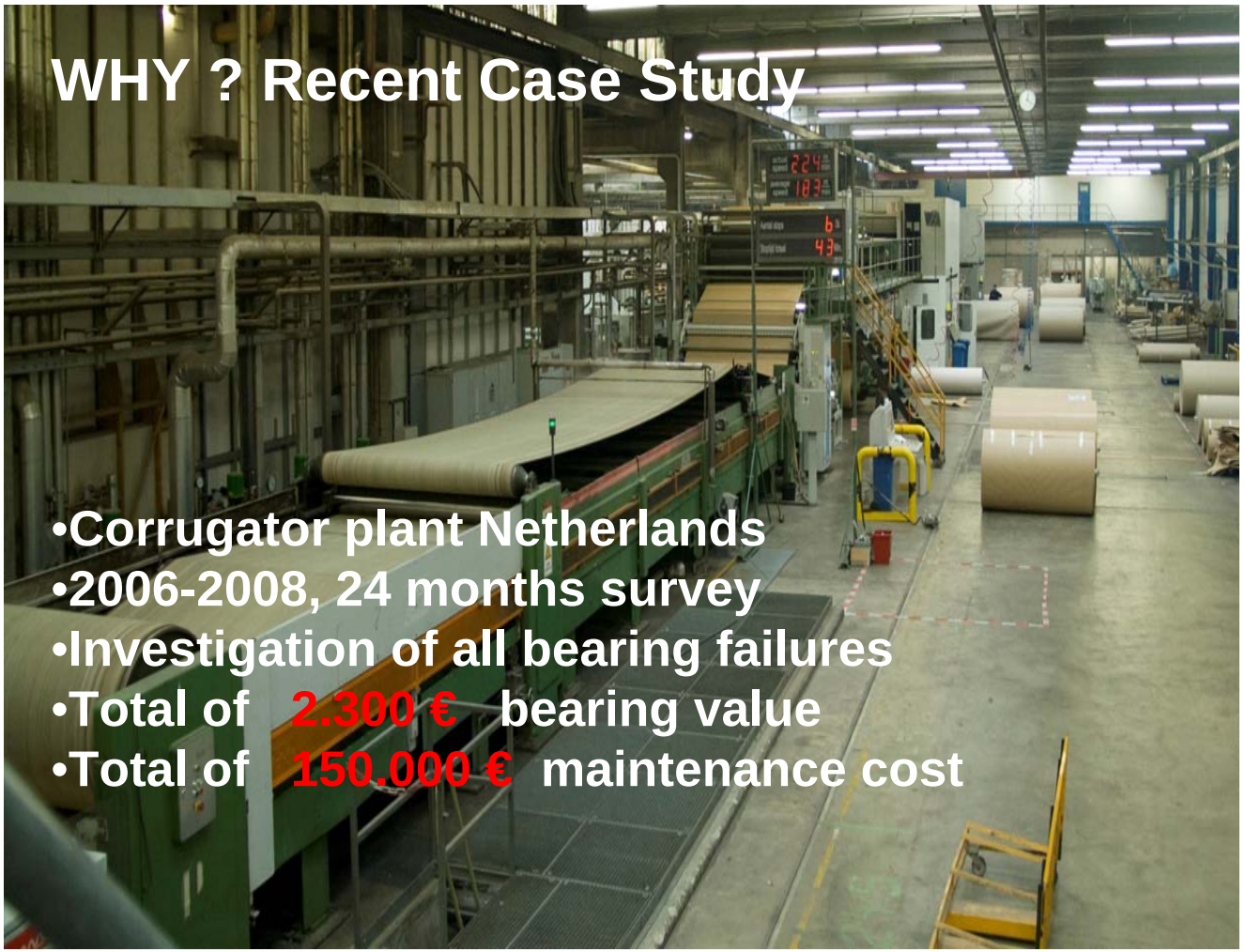

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WHY ? Recent Case Study

- **60% bearing failures = lubrication related : wrong lubricant, over & under lubrication, contaminated lubricants**

- **15% bearings failures = incorrect fitting & adjustment, bad mounting, damaged during fitting**

- **5% bearings failures = ignorance & mistakes wrong bearing type, wrong clearance or seals**

- **20% bearings = no problem, no failures : no need for change as they were in good condition**

10 Steps to Lubrication Reliability

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1 Lubrication Assessment
2 Organisation & Planning
3 Identification & Inspection
4 Cleanliness Control
5 Lubricant dispensing
6 Grease Lubrication
7 Contamination Control
8 Oil Monitoring
9 Environmental Control
10 Lubrication Training

Step 1: Assessment & Benchmarking

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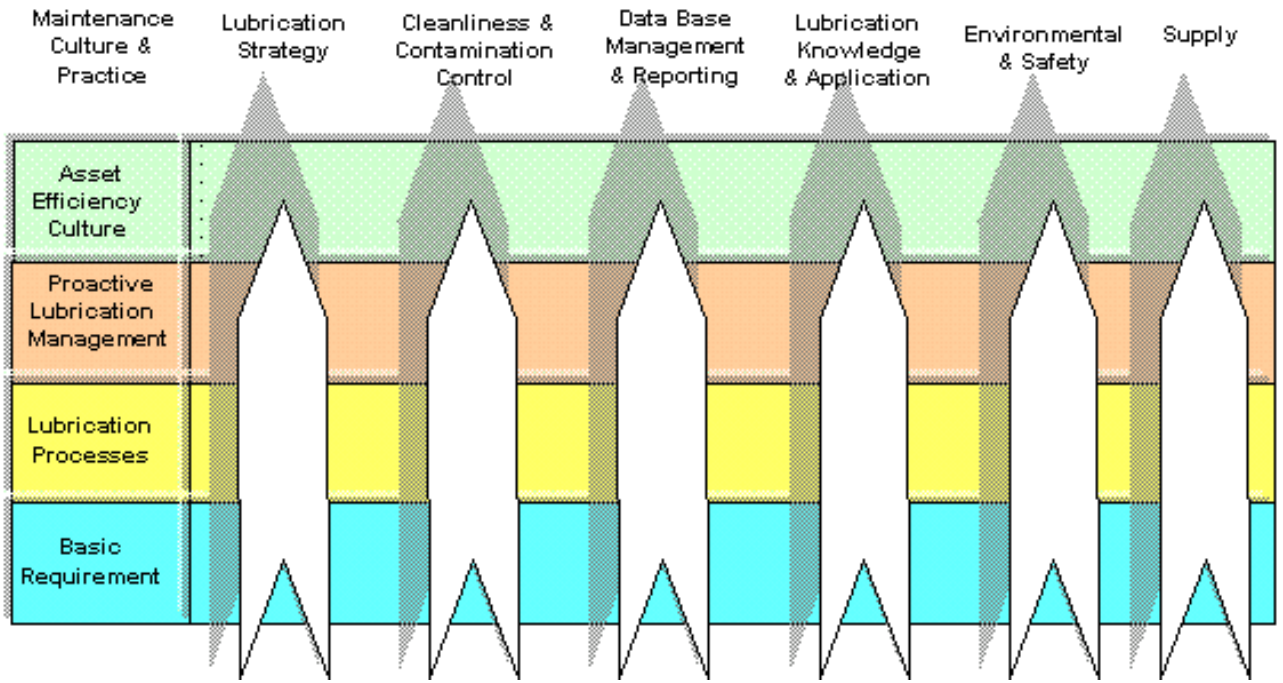
- Where are we now ?
- What do we do wrong ?
- What do we need to improve ?



Best Practice Solution : LubeAssess™

Step 2: Organisation & Planning

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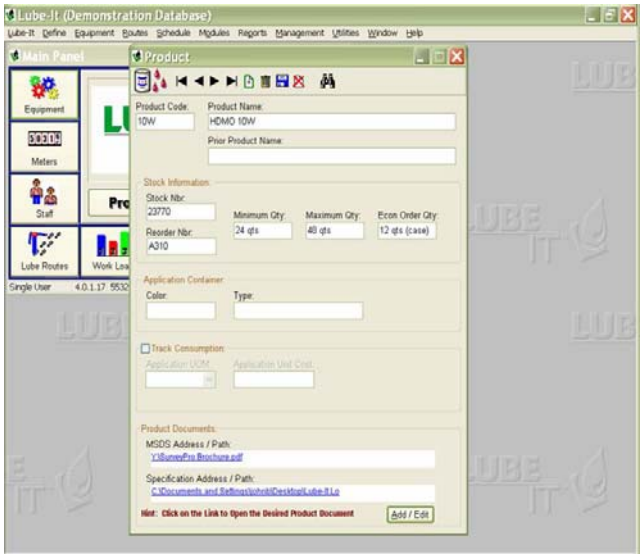
- Lubrication Planning
- Lubrication Management
- Lubrication Management tools



Best Practice Solution : Lube-IT® software

Step 3: Identification & Inspection

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- Multiple types lubricants ,avoiding errors
- Complex Chemistry & Compatibility
- TPM, ISO22000, OSHA-EU, IFS, 5S
- Easy inspection & monitoring

Best Practice Solution : Label Safe™, 3-D level

Step 4: Cleanliness Control

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- Contamination is a major source of failure
- Clean lubricants in operation
- Lubricant Cleanliness Control Centres
- Safe & Clean storage-conditionning-transfer

Best Practice Solution : Lubristation®

Step 5: Lubricant Dispensing

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- Safe & Clean tools
- Efficient & user friendly
- Adapted to application
- Multi colored identification
- Contamination free

Best Practice Solution : Oil Safe®

Step 6: Grease Lubrication

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- Best practice tools
- Efficient & practical
- Color-coded, metered
- Automatic

Best Practice Solution : Grease Safe™, Mobilube, Elcolube

Step 7: Contamination Control

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- ISO4406 check
- On line /Off line filtering
- Lubricant protection

Best Practice Solution : Air Sentry®, Decolube

Step 8: Oil Monitoring

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- ISO 4406 monitoring
- Lubricant life extention (chemistry)
- Cleanliness management

Best Practice Solution : Sampling , CheckFluid

Step 9: Environmental Control

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- Maintenance strategies : 5S
- World Class Manufacturing
- Environmental protection
- Efficiency tools

Best Practice Solution : Absorbents, Spill Control

Step 10: Knowledge Management

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- Reliability Lubrication training
- Reliability Technician
- Lubrication training all aspects

Best Practice Solution : Lubrication Training

Lubrication Reliability **Conclusion**

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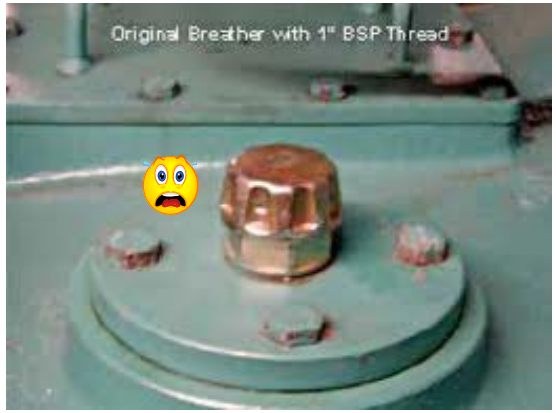
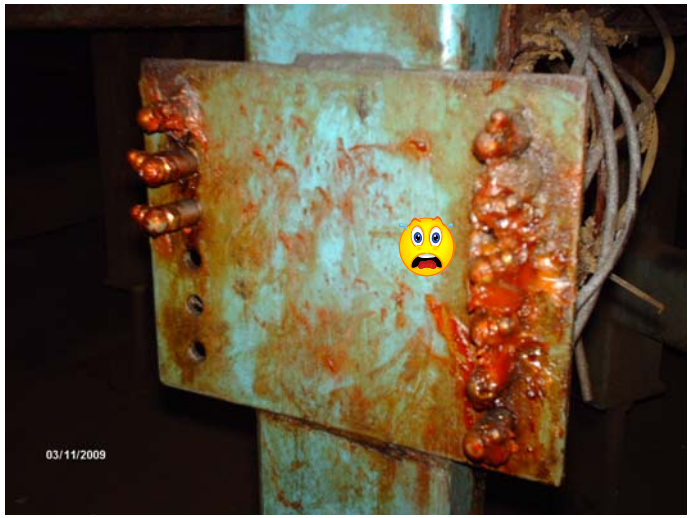
BAD
Practice





Lubrication Reliability **Conclusion**

BEST Practice

Lubrication Reliability : Check List

- Consolidation of packaging (centralized storage)
  - ✓ Unique type of packaging (200 l)
  - ✓ Larger type
- Consolidation of lubricant types (less is more)
- Reception control
  - ✓ Type check & date
  - ✓ Damaged packaging
  - ✓ ISO4406 contamination level
- Proper identification
  - ✓ Color coding (refer to dispensing, avoiding mistakes)
  - ✓ Type – brand – internal order code
  - ✓ Viscosity
  - ✓ Application
  - ✓ Date of reception & of first use

Lubrication Reliability : Check List

- Pre-filtering of new oil to required ISO4406 level
  - ✓ While transfer to new storage tanks
  - ✓ Kidney loop on drum or tank
  - ✓ Correct filter rate in function of application
- Storage in proper environment
  - ✓ Clean dedicated lube room, not outside
  - ✓ Constant temperature & humidity
  - ✓ Organized, safe & efficient
  - ✓ Away from dirt causing production environment
  - ✓ Use of proper absorbents (no pellets, no sawdust)
  - ✓ Use of regulatory spill-retention equipment

Lubrication Reliability : Check List

- Storage in proper recipients
  - ✓ Lube supplier drums, containers (horizontal/vertical)
  - ✓ New plastic tanks - containers (rust free, translucent)
  - ✓ New steel coated tanks (with oil level)
  - ✓ New SS tanks (oil level)
- Protection
  - ✓ Protect lubes from humidity & dirt with breather-dryers
  - ✓ Fully closed containers/tanks, pump-tank connection.
  - ✓ Protect grease nipples, quick disconnects with caps & plugs.
- Transfer and dispensing
  - ✓ Closed loop tank-dispensing equipment preferred
  - ✓ Use of fully sealable dispensing equipment (chain of cleanliness)
  - ✓ Filtering during transfer and dispensing

Lubrication Reliability : Check List

- Continuous Lubrication Inspection
  - ✓ Oil Levels on machines (min-max level)
  - ✓ Oil quality on machines (Oil analysis)
  - ✓ Lubricant and/or grease leakage
  - ✓ Storage inspection (open drums, dirty connectors, lost protect caps)
  - ✓ Grease level in automatic lubricators
  - ✓ Blocked grease lines
  - ✓ Filter Saturation indicators
  - ✓ Filter content inspection, pictures, samples (FMEA)
  - ✓ Breather-dryer inspection for saturation

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Steps to Lubrication Reliability

THANK YOU !

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