CMC COLOMBIA 2025

Sesión BRÚJULA

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BRÚJULA

Beyond the Symptoms: The Root Cause Behind 10 Critical Failures

NORIA

Bennett Fitch
President, Noria Corporation

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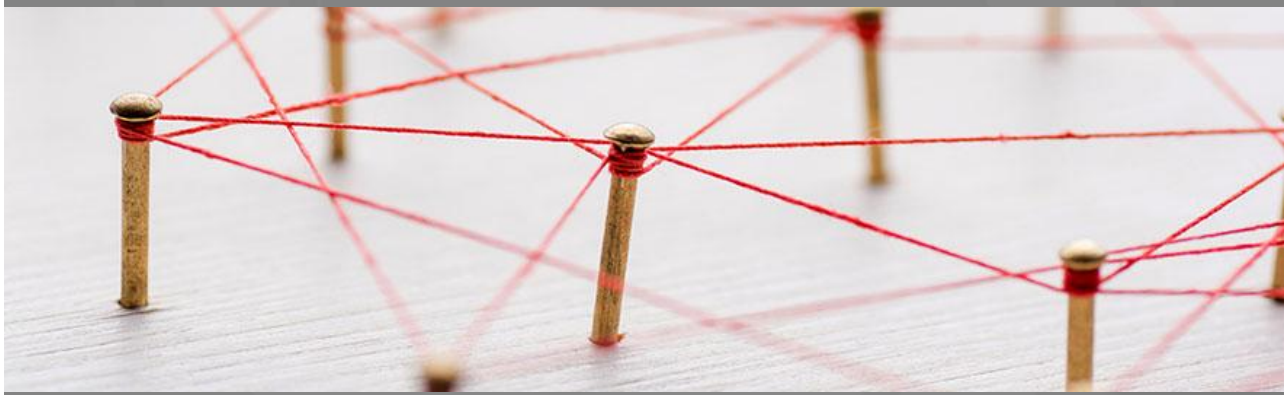
Do Your Critical Failures Have a Common Thread?



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Top 10… Survey Says…

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1. Overgreasing

- Causes excessive heat
- Forces seals to fail
- Leads to contamination
- Causes lubricant starvation
- Increases energy consumption
- Shortens bearing life
- Waste of material

2. Contamination

- Introduces wear particles
- Causes lubricant degradation
- Leads to corrosion
- Destroys bearing surfaces
- Damages seals
- Shortens equipment life
- Often preventable

3. Wrong Lubricant

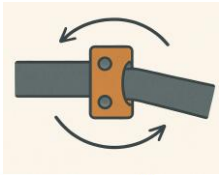
- Incorrect Viscosity
- Wrong Base Oil Type
- Additive Mismatch
- Incompatible with Seals
- Thermal Instability
- Induces Contamination
- Short Lubricant Life

4. Imbalance

- Generates Excessive Vibration
- Leads to Fatigue Failure
- Accelerates Bearing Wear
- Causes Shaft Deflection
- Triggers Looseness
- Amplifies Other Failure Modes

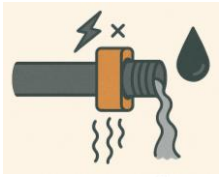
5. Misalignment

- Creates Excessive Vibration
- Accelerates Wear
- Increases Energy Consumption
- Causes Coupling Failure
- Leads to Shaft Fatigue
- Leads to Looseness



6. Seal Failure

- Leakage of Lubricant or Fluid
- Contaminant Ingress
- Increases Wear
- Heat Generated
- Shaft Scoring
- Premature Bearing Failure



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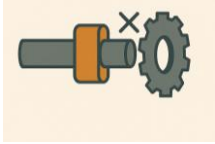
7. Incorrect Install

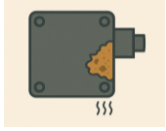
- Misalignment from the start
- Improper torque / tightness
- Contamination during assembly
- Damage to critical surfaces
- Missed clearances and fit
- No verifications / checks

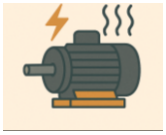


8. Corrosion

9. Overloading

10. Electrical Fault





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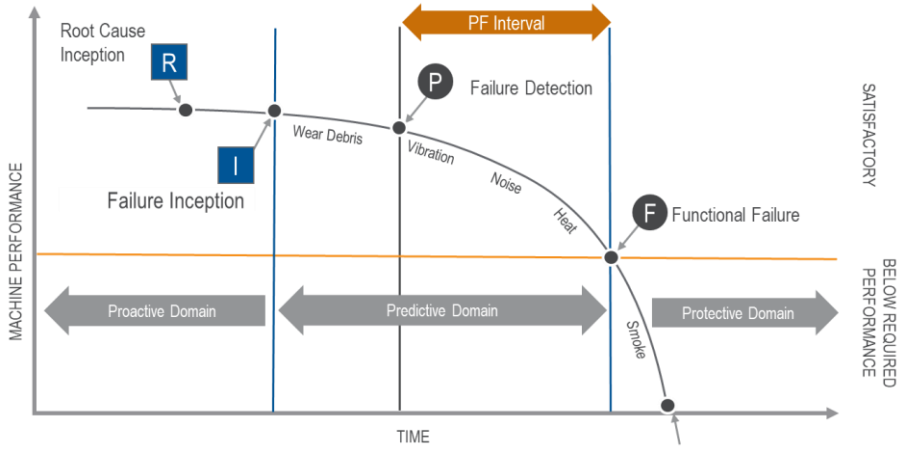
If you kept asking the repetitive why...



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Noria was founded on the premise that...

- Maintenance is the No. 1 most controllable expenditure in a plant
- Every plant has a hidden plant that must be found
- Lubrication is the No. 1 cause of machine wear and failure
- There is no greater influence on the state of lubrication than training and human behavior
- All progress depends on change and change must be enabled

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“70% of Production Losses are due to Human Error”

When people do bad work, they feel bad about themselves and their job.

When people do good work, they feel good about themselves and their job.

Training and empowerment enable good work.

The Economics of Education

- When it comes to education, a penny saved is not a penny earned, but rather hundreds of dollars forfeited, all for the quest of a penny
- Teach an ounce of prevention

Cost of Prevention

Cost of Cure

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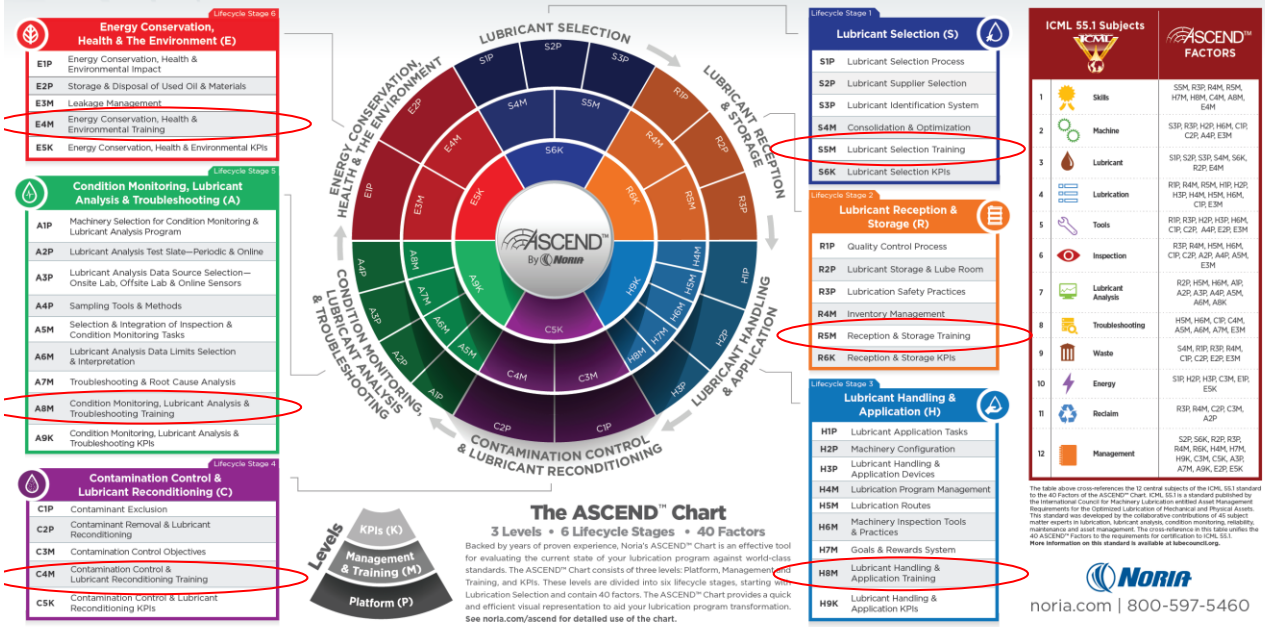
The Guide to Lubrication Excellence



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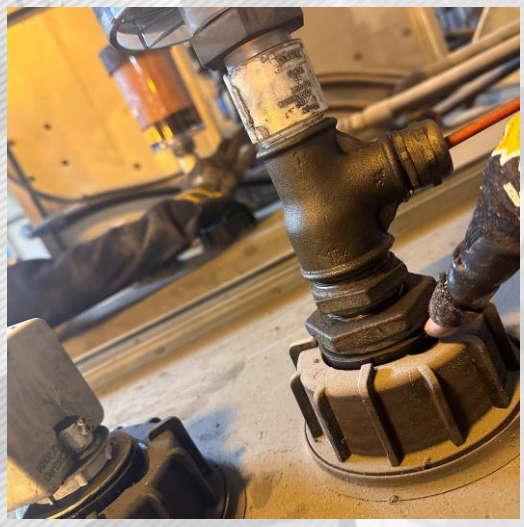

C1P - Contamination Control

Factor ID	Factor Name
C1P	Contaminant Exclusion
C2P	Contaminant Removal and Lubricant Reconditioning
C3M	Contamination Control Objectives
C4M	Contamination Control and Lubricant Reconditioning Training
C5K	Contamination Control and Lubricant Reconditioning KPIs

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- Some Good. Some Bad. Some Ugly
- What does this mean about the headspace if breathers are not getting saturated?
- Is the objective understood?
- Is this a training issue?

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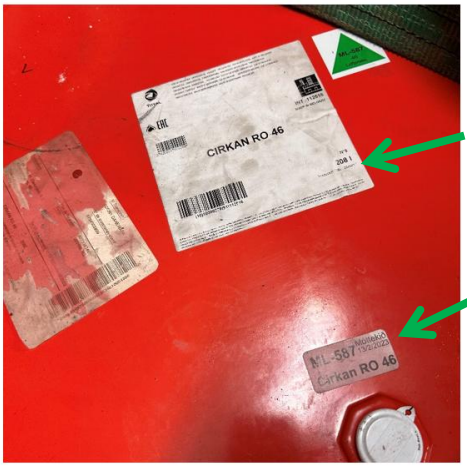
Locker Inspection (intentions vs execution)

Production Date vs Delivery Date



H2P - Machine Configuration for Lubrication Best Practices and Lubrication Inspection Routes

Factor ID	Factor Name
H1P	Lubricant Application Tasks
H2P	Machinery Configuration
H3P	Lubricant Handling and Application Devices
H4M	Lubrication Program Management
H5M	Lubrication Routes
H6M	Machinery Inspection Tools and Practices
H7M	Goals and Rewards System
H8M	Lubrication Handling and Application Training
H9K	Lubrication Handling and Application KPIs

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#5 – H4M - Lubrication Task Management and Routes

Factor ID	Factor Name
H1P	Lubricant Application Tasks
H2P	Machinery Configuration
H3P	Lubricant Handling and Application Devices
H4M	Lubrication Program Management
H5M	Lubrication Routes
H6M	Machinery Inspection Tools and Practices
H7M	Goals and Rewards System
H8M	Lubrication Handling and Application Training
H9K	Lubrication Handling and Application KPIs

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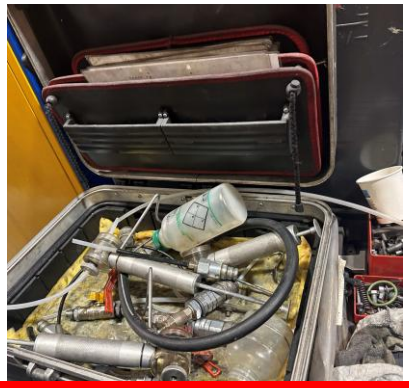
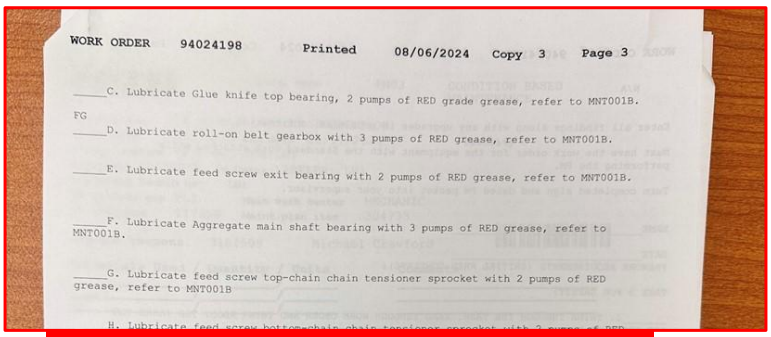
Oil Sampling (Good Data Coming In?)



Oil Analysis starts with good sampling practices.

Good sampling hardware, good sample valves, good procedures, but…
Not good execution in sampling procedures. Data is compromised before it's even tested.

Procedure Details



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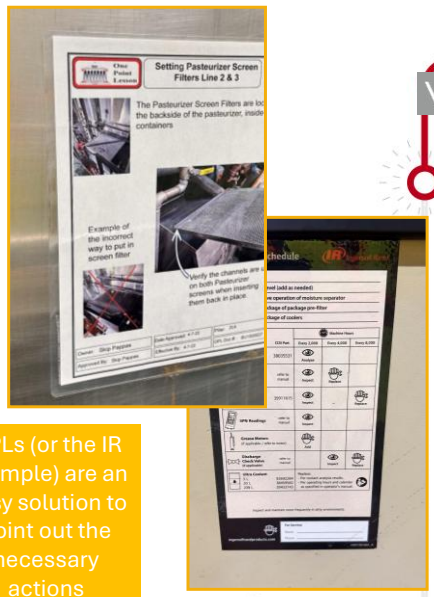
_____C. Lubricate Glue knife top bearing, 2 pumps of RED grade grease, refer to MNT001B.
FG
_____D. Lubricate roll-on belt gearbox with 3 pumps of RED grease, refer to MNT001B.

_____E. Lubricate feed screw exit bearing with 2 pumps of RED grease, refer to MNT001B.

_____F. Lubricate Aggregate main shaft bearing with 3 pumps of RED grease, refer to MNT001B.

_____G. Lubricate feed screw top-chain chain tensioner sprocket with 2 pumps of RED grease, refer to MNT001B

"Procedure" provides very little data based on a basic template and not managed in a centralized system to track faults, task compliance, consumables, etc. Also, it lacks condition-based approaches and very little on steps to follow.



OPLs (or the IR example) are an easy solution to point out the necessary actions

Case Examples… What's Missing?

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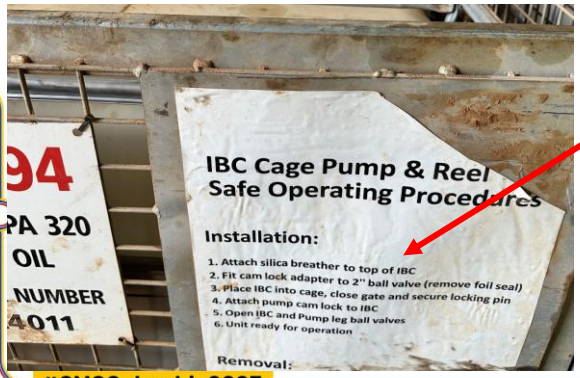
Case Examples… What's Missing?



- Is this a resource issue?
- Is this a personnel/availability issue?
- Is this a training issue?

Lubrication excellence starts with the lube room.

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Case Examples…

- Is this effective? What is wrong?
- Where will the air flow in and out?
  - Is this a training issue?

This is evidence that effort to do the right thing is there, but no quality control in place.

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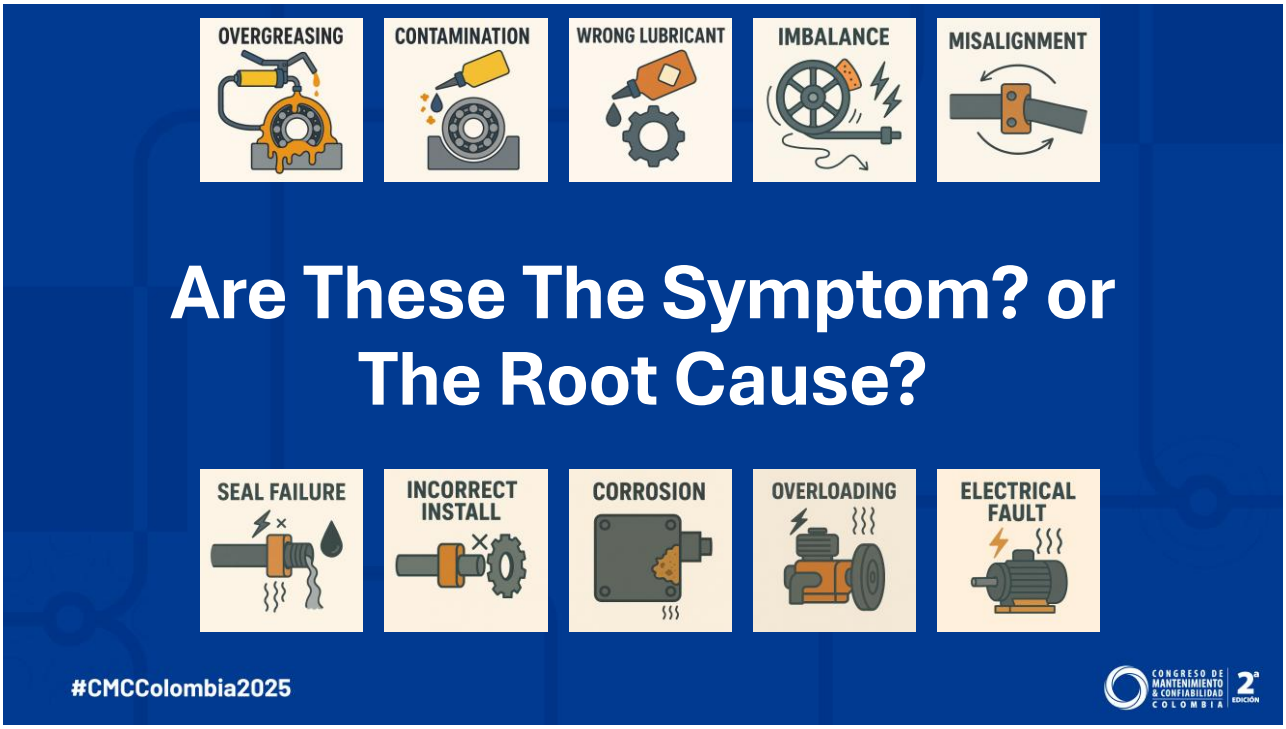

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Someone Once Said Reliability was about 80% Culture and 20% Everything Else

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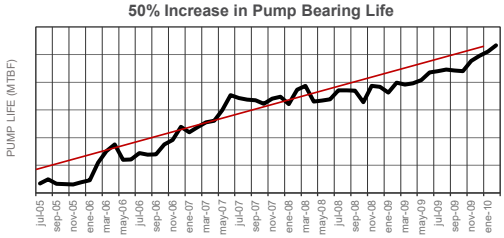

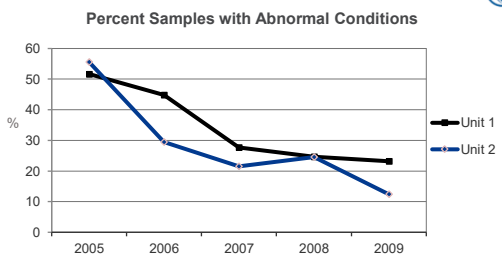

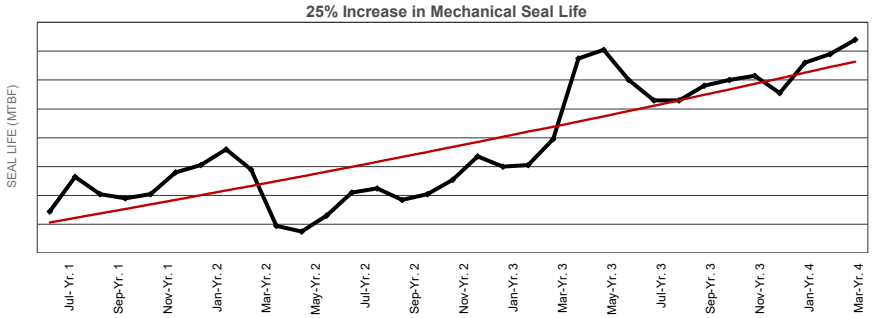

Ref: Reliable Plant 2011, Invista

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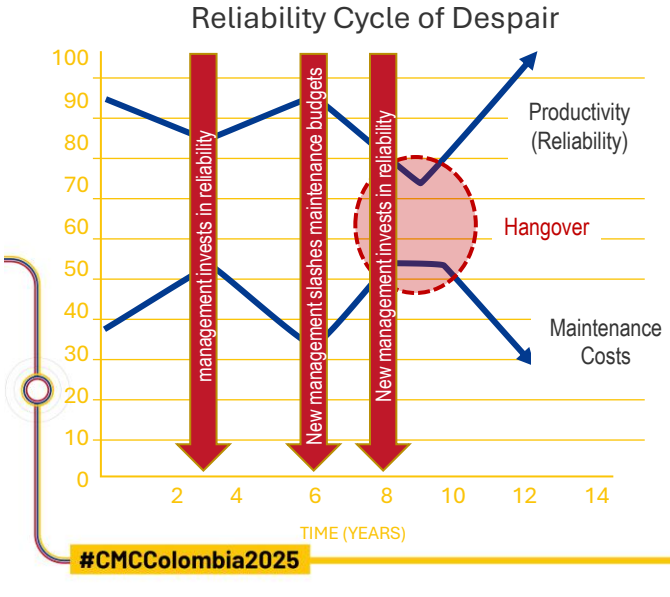
Sustained Reliability – Necessity for Corporate Memory



"Any successful maintenance program will eventually fail under budgetary and operational tempo pressures unless a corporate memory for maintenance is created to remember the cause-and-effect consequences on maintenance costs across multiple fiscal periods and multiple personnel and leadership changes"

David Greaslin

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¡Gracias!

Bennett Fitch

bfitch@noria.com

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