



1



Beyond the Symptoms: The Root Cause Behind 10 Critical Failures



Bennett Fitch
President, Noria Corporation



2



Do Your Critical Failures Have a Common Thread?



3



Top 10... Survey Says...



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4

1. Overgreasing

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



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2. Contamination

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



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3. Wrong Lubricant

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



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4. Imbalance

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

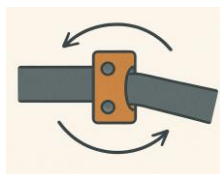


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6

5. Misalignment

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



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6. Seal Failure

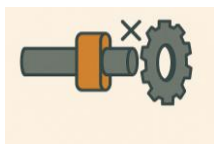
Leakage of Lubricant or Fluid
Contaminant Ingress
Increases Wear
Heat Generated
Shaft Scoring
Premature Bearing Failure




7

7. Incorrect Install

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

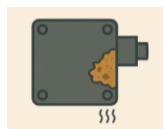


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8. Corrosion

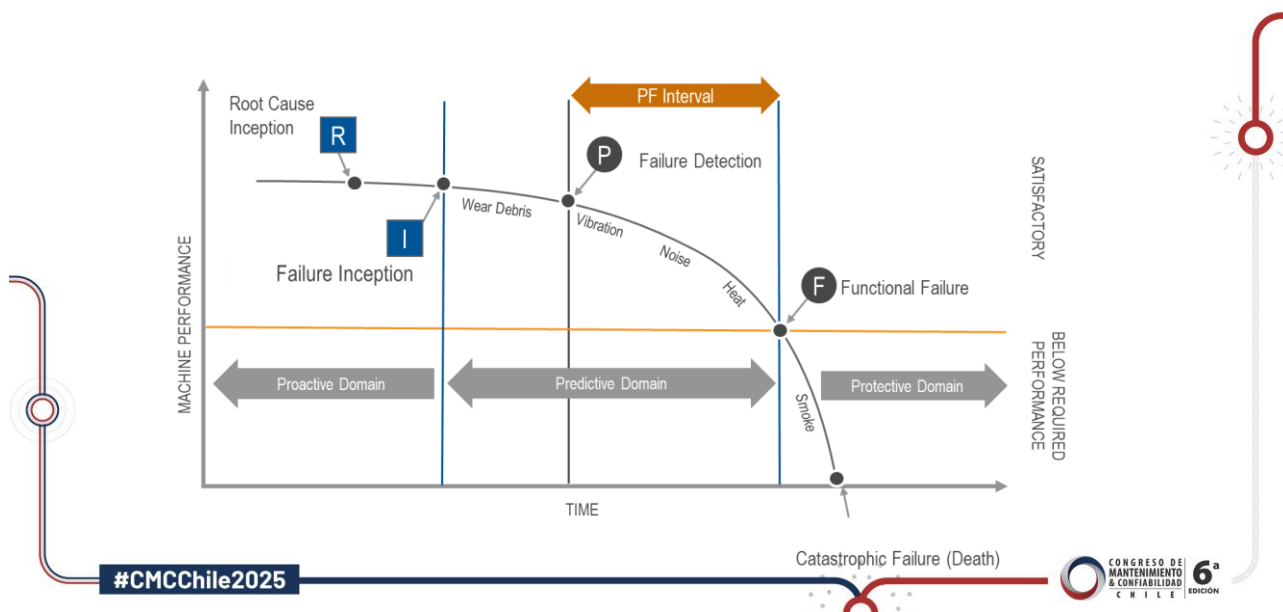
9. Overloading

10. Electrical Fault




8

If you kept asking the repetitive why...



9



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

10

“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

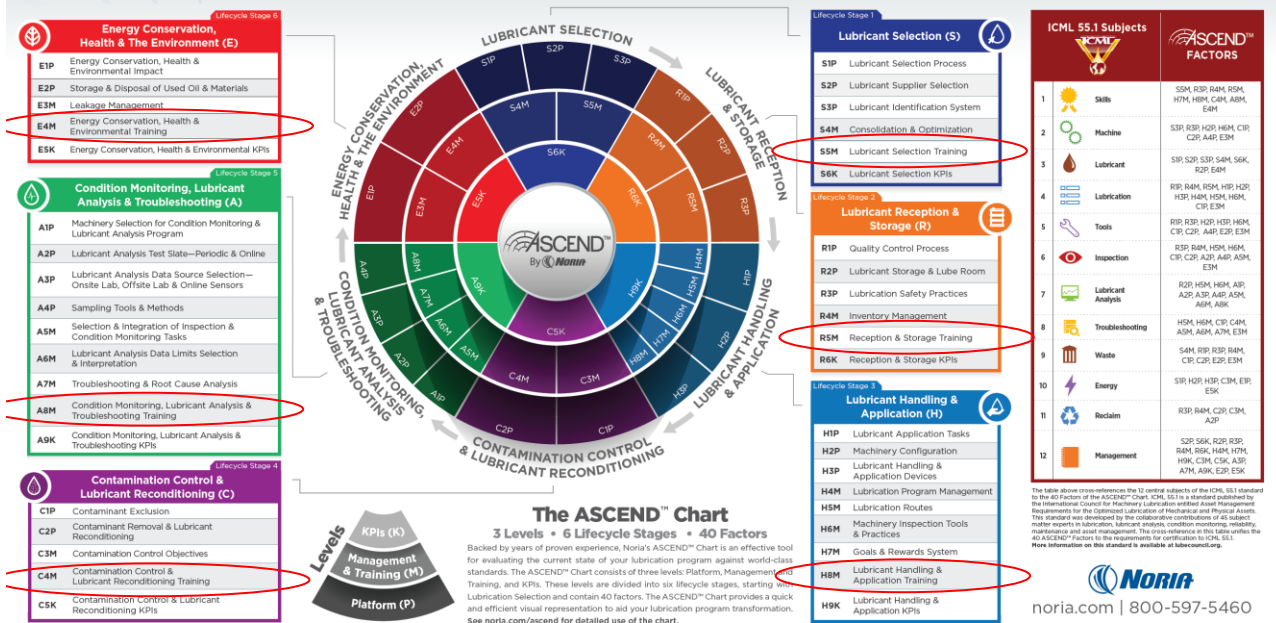


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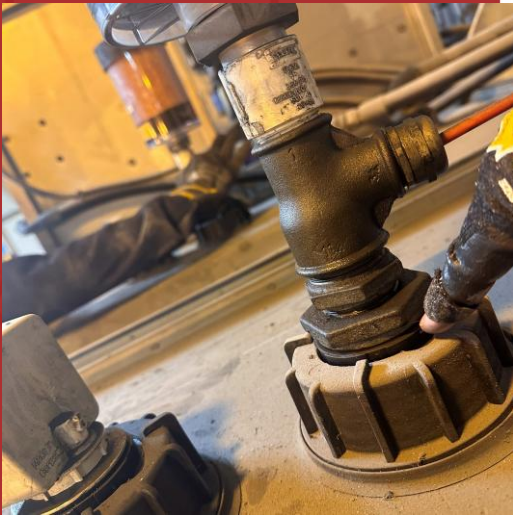
Cost of Cure

11

The Guide to Lubrication Excellence



12



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

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?



Locker Inspection (intentions vs execution)

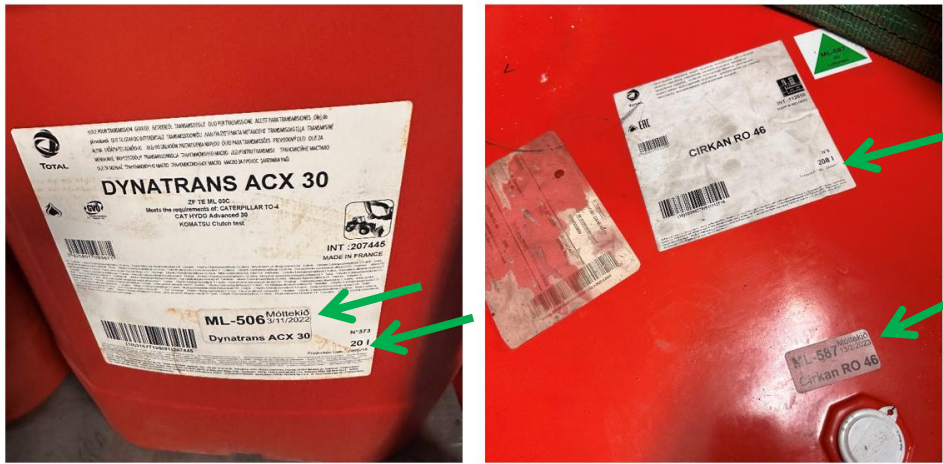


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Production Date vs Delivery Date



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

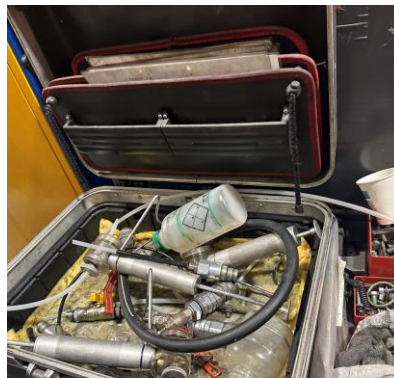
	Factor ID	Factor Name
	H1P	Lubricant Application Tasks
	H2P	Machinery Configuration
	H3P	Lubricant Handling and Application Devices
	H4M	Lubrication Program Management
	H5M	Lubrication Routes
	H6M	Machinery Inspection Tools and Practices
	H7M	Goals and Rewards System
	H8M	Lubrication Handling and Application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



#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

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.

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19

Procedure Details

WORK ORDER 94024198 Printed 08/06/2024 Copy 3 Page 3

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.

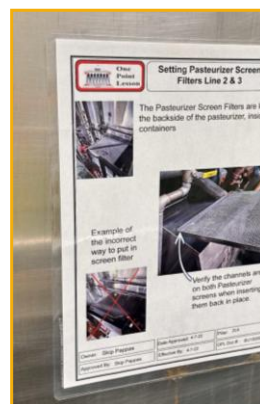
E. Lubricate feed screw exit bearing with 2 pumps of RED grease, refer to MNT001B.

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

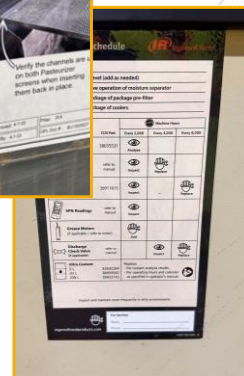
G. Lubricate feed screw top-chain chain tensioner sprocket with 2 pumps of RED grease, refer to MNT001B.

H. Lubricate feed screw bottom-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



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20

Case Examples... What's Missing?



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21

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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22

Case Examples...



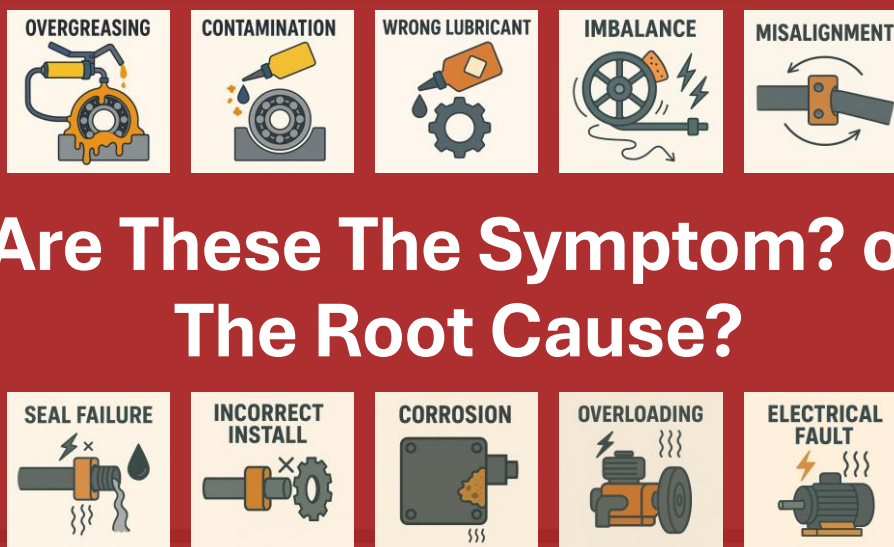
- Is this effective? What is wrong?
- Where will the air flow in and out?
- Is this a training issue?

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

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Are These The Symptom? or The Root Cause?

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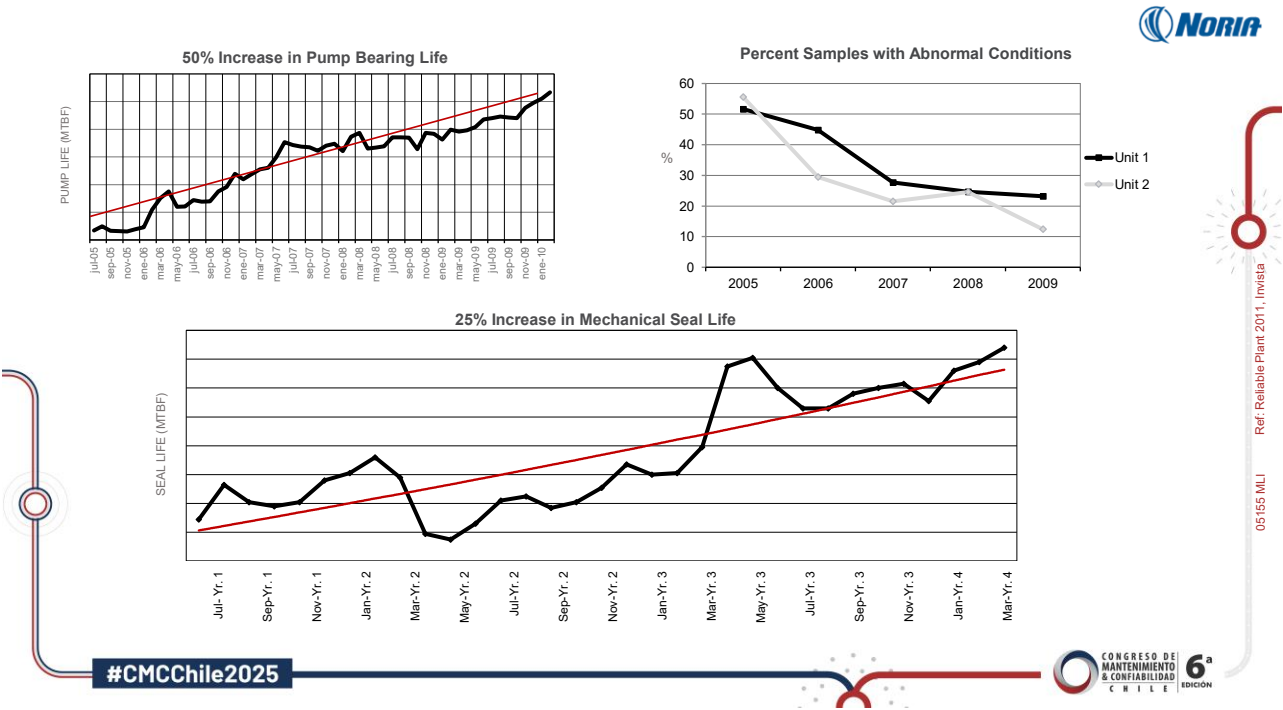
24

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

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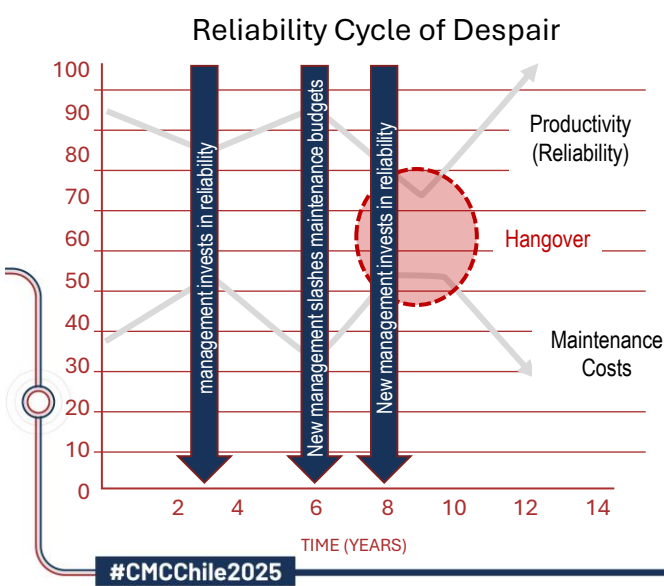
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26



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

Ref: JCF, IDCON, Greaslin

01216 MLE



27



iGracias!

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28