

HUMAN RELIABILITY IMPACTS ASSET RELIABILITY

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Tool-Box Talk

Human Reliability Impacts Asset Reliability

The concept of Human Reliability reflects an understanding that people and systems are not error-proof, and that improved reliability requires an understanding of human error problems, leading to improved mitigation strategies.

These are the 12 most common causes of error within maintenance:

- Lack of communication
- Complacency
- Lack of knowledge
- Distraction
- Lack of teamwork
- Fatigue
- Lack of resources
- Pressure
- Lack of assertiveness
- Stress
- Lack of awareness
- Norms

Use of a Repeatable Procedure is the Answer along with the Discipline to Follow the Procedure

Most Common Factors of Equipment Failure (70-80% of Failures is Caused by Human Error)

Lack of a Repeatable Procedure which ensures anyone with the same skill set can repeat maintenance work, PM, CM, etc. to specification. If one has repeatable procedures and a chronic failure occurs the possible root cause could be the procedure is not accurate.

Example #1: 2 Technicians are given the same work order: “Replace Bearings” (based on PdM findings), both techs would interpret the statement in different ways based on their experience and knowledge of bearings

Tech 1 arrives at jobsite with a hammer and adjustable wrench and replaces bearing, WO Complete – Bearing fails in 1 year

Tech 2 arrives at jobsite with a Procedures with step by step instructions, specifications, and special tools replaces the bearing, completes work order with “Condition as Found”, “Condition as Left”, – WO Complete - Bearing last 3 years

Time: Depends on if you are Tech 1 or Tech 2

“Human Induced Failures are the Largest Cause of Failures”

Example #2: 2 Technicians are given the same work order for a specific asset:

“Lubricate Bearings”

Tech 1 (Proactive) arrives at jobsite with a Procedure with step by step instructions, grease type, amount of grease required, condition as found, condition as left, and any recommendations to changes to procedure. – Bearing life is long and when it does begin to fail PdM identifies the defect along with severity of defect, when severity reaches a specific point bearing replacement is planned and scheduled minimizing equipment premature failure.

Tech 2 (Proactive) arrives at jobsite with a Procedure with step by step instructions, grease type, amount of grease required, condition as found, condition as left, and any recommendations to changes to procedure. – Bearing life is long and when it does begin to fail PdM identifies the defect along with severity of defect, when severity reaches a specific point bearing replacement is planned and scheduled minimizing equipment premature failure.

Time: 1 hour

WO # 12033		Asset # 12332 – Line 1			
Job Description: Lubricate Bearings					
Frequency: Monthly					
Estimated Craft Hours: 1 x 1.0		Estimated Production Downtime: 0			
Originator: Bill Hill	Origination Date: 01/12/2020				
Owner: Maintenance Dept	Version #: 1				
Previous Version(s) Modifications:					
Approval: RAS	Version #: 1.0				
Cautions: Failure to follow PM Requirements could result in equipment failure					
Personal Protective Equipment Required: Gloves, hearing protection					
Part # (Stores ID)	Part Description	Quantity	Quantity Description		
C-1395	Synthetic Lube	1	Each		
Consumables Needed: Lint Free Towels					
Special Tools Required: Single Pump Grease Gun - Type 237 (Synthetic Grease Gun)					
Mobile/Special Equipment: None					
Required Departmental Coordination: Production Lead will be notified before execution of Lubrication					
ID	Description	Craft Type	# of Crafts	Craft Hours	Initial Steps
1	Ask Operator if any issues with asset	M	1	.3	KL
2	Inspect asset for any leaks or abnormalities	M	1	.3	KL
3	Clean grease fitting with lint free rag	M	1	.1	KL
4	Insert grease into 4 "Zerk fittings" (2 Pumps per fitting)	M	1	.1	KL
5	Notify Production work is complete	M	1	.1	KL
6	Complete Work Order	M	1	.1	KL
Total Hours				1	KL

Condition (As Found): (Required)
Leaks coming from #1 Gearbox

Condition (As Left): (Required)
Clean up oil, notified production leader to keep area clean of oil

Comment(s): (Optional)
None

Craft's Feedback on Procedures: (Optional)
All Good

Craft's Signature(s): (Required)
Jim Jimbo

Date:
10/11/2019

PM Procedure Example

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How to write a Repeatable Procedure:

Step 1: Identify 2 Maintenance Techs (2 of your best) to create repeatable procedures. (Create a Work Order and Schedule this Work as Priority 1)

Step 2: Provide an example of what a “Good” or “Best Practice” Repeatable Procedure looks like.

Step 3: Identify which procedures would make the biggest impact on equipment reliability.

Step 4: Begin writing / re-writing procedures

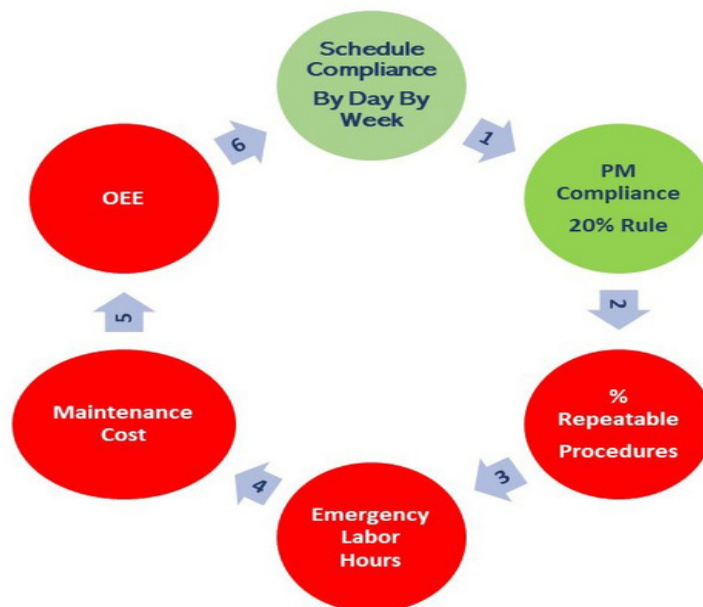
Step 5: Implement the new procedures

Step 6: Establish/Post a dashboard in the plant to measure the effectiveness of procedures

Step 7: Make all decisions based on solid data

“Make sure procedures for Critical Assets are reviewed for effectiveness”

Repeatable Procedure Dashboard



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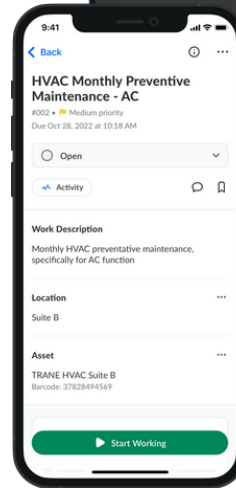
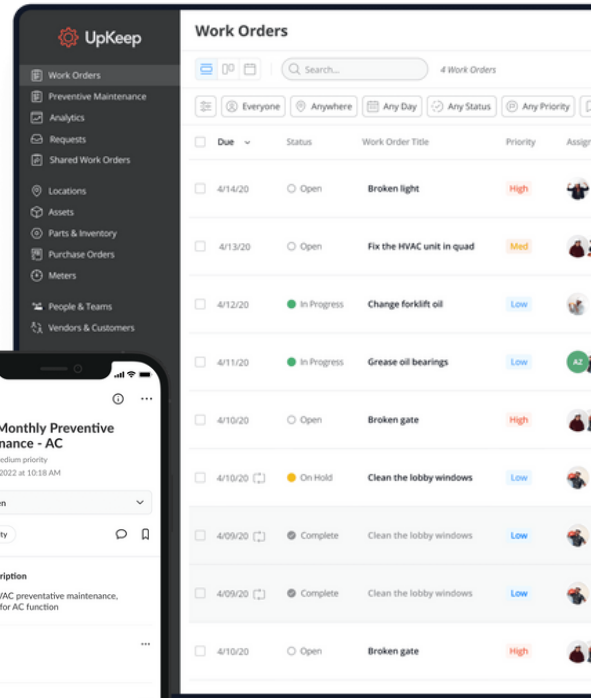
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★★★★★ Paul D, Health and Safety Coordinator



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The Maintenance Community Coalition was founded on the belief that working together will benefit everyone within our community

Committed to helping each other thrive in our individual professional journeys by sharing resources and expertise, granting scholarships, hosting events, and unlocking knowledge – always at no cost.

