

Problem Statement

Report Number	None	RCA Owner	Chris Eckert
Report Date	4/9/2015	RCA Facilitator	Brian Hughes

Focal Point: Line Down > 1hr (Vacuum Pump)

When

Start Date: 3/5/2015	End Date: 3/5/2015
Start Time: 00:00	End Time: 01:00
Unique Timing	During normal operation, after operator hit the e-stop after noticing smoke from the vacuum pump.

Where

Location	Pennsylvania Operation
Component	Vacuum pump housing
Equipment	Line 33 Tray Packer

Actual Impact

Production Impact	1 hour downtime ?	\$10,000.00
Cost	Additional man hours	\$500.00
		Actual Impact Total: \$10,500.00

Frequency

Frequency Note	3 times in past year on this machine
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Potential Impact

Safety	Potential for fire (contained to machine)	\$0.00
Cost	Potential to destroy machinery	\$50,000.00
Production Impact	Potential to have a much greater impact on production	\$250,000.00
		Potential Impact Total: \$300,000.00

Report Summaries

Executive Summary

On 3/3/2015 at midnight (12:00AM) Line 33 was shut down for more than an hour after smoke was observed coming from the Line 33 Tray Packer Vacuum Pump. Cardboard dust had accumulated over time and began smoking.

Cause and Effect Summary

On 3/3/2015 at midnight (12:00AM) Line 33 went down for more than an hour after smoke was observed coming from the Line 33 Tray Packer Vacuum Pump. An operator noticed the smoke and hit the emergency stop. It required approximately one hour to trouble shoot the issue and clean the vacuum pump.

It should be noted that the Operator recognized the situation quickly and acted according to his training. This helped prevent the incident from escalating.

Cardboard dust had accumulated on the vacuum pump. There was sufficient quantity of dust accumulation along with sufficient pump runtime to cause the dust to smoke. Had a fire broken out, the damage could have been much worse.

Cardboard is used for packaging and the environment is dry enough to generate a great deal of dust. This dust requires periodic cleaning. The accumulated dust cannot be easily observed from the outside of the pump.

Operators are not expected to take the covers off the vacuum pumps or to pull out filters – this is normally a maintenance task. PMs were up to date, but the frequency of three months was too long between cleaning and inspection.

Solutions

SO-0001	Solution	Increased cleaning frequency.	
	Cause(s)	Dust not cleaned off	
	Note	Duplicate	
	Assigned		Criteria Not Checked
	Due		Status Identified
	Term		Cost
SO-0002	Solution	Install a dust cover over the vacuum pump.	
	Cause(s)	Enough cardboard dust accumulated on it	
	Note	It may be possible to better protect the vacuum pump from dust. A dust cover may be a viable option - maintenance to prototype and test.	
	Assigned	Brian Hughes;	Criteria Passed
	Due	6/19/2015	Status Approved
	Term	short	Cost
SO-0003	Solution	Install an exhaust fan/filtration system.	
	Cause(s)	Dusty environment	
	Note	This solution would part of a larger upgrade to air conditioning in the packaging area. This single problem does not warrant the expense. But it will be taken into consideration as a common cause solution to the body of problems caused by, or exacerbated by, the dusty environment.	
	Assigned		Criteria Passed
	Due		Status Selected
	Term	long	Cost
SO-0004	Solution	Ensure that maintenance is able to complete required PMs on time and on schedule.	
	Cause(s)	Maintenance PMs not conducted frequently enough	
	Note	Be sure to involve Ops in maintenance planning. Then stick to the schedule - do not put off required PMs based on immediate production requirements. Hire additional maintenance personnel if required.	
	Assigned	Brian Hughes;	Criteria Passed
	Due	6/19/2015	Status Approved
	Term	short	Cost

SO-0005	Solution	Install air pulse device to blast dust off of vacuum pump.	
	Cause(s)	Dust not cleaned off	
	Note	Is there an air device that can keep sensitive equipment clean? Examine this further.	
	Assigned		Criteria Not Checked
	Due		Status Selected
	Term	medium	Cost
SO-0006	Solution	Checklist including visual accumulation of dust prior to operation.	
	Cause(s)	Unaware of enough internal dust accumulation	
	Note	Duplicate	
	Assigned		Criteria Not Checked
	Due		Status Identified
	Term		Cost
SO-0007	Solution	Develop a process to regulate cleaning.	
	Cause(s)	Not cleaned frequently enough	
	Note	This may be completed by Operations or by Maintenance. Details to be worked out. Include a checklist to monitor visual accumulation of dust prior to operation.	
	Assigned	Brian Hughes;	Criteria Passed
	Due	6/19/2015	Status Approved
	Term	short	Cost
SO-0008	Solution	Control humidity in warehouse.	
	Cause(s)	Humidity conducive to dust	
	Note	Humidity in the warehouse is a problem for other reasons as well. Consider cost/benefit of a broader effort to control humidity and whether it may cause other problems.	
	Assigned		Criteria Passed
	Due		Status Selected
	Term	long	Cost

Team

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Chart Key

- T Transitory
- N Non Transitory
- ⊖ Transitory Omission
- ⊖ Non Transitory Omission
- Undefined
- ▲ Chart Quality Alert
- ★ Focal Point
- E Evidence
- N Notes
- S Solutions
- A Actions

