

Read the text and do some tasks below.

Factory Issue: Conveyor Belt Breakdown in a Packaging Line

Problem:

At a packaging facility, the production line experienced a sudden halt due to a failure in the conveyor belt system. The conveyor belt, which moves finished products from the assembly station to the packaging area, suddenly started making loud grinding noises. It began moving erratically and eventually came to a complete stop. This caused a major delay in the production process, with workers unable to proceed with packaging, leading to a bottleneck in the system.

The production manager immediately initiated an emergency stoppage, as the conveyor system was one of the most crucial elements of the line. With several hours of lost production, there was a need to find a quick solution to minimize downtime.

Investigation and Diagnosis:

After shutting down the system, the maintenance team examined the conveyor. They found that the cause of the problem was not an issue with the motor, as initially suspected, but rather an issue with the conveyor belt itself. Upon closer inspection, they discovered that the belt had come loose from its rollers and had started to misalign with the rest of the system. This misalignment caused the loud grinding noises and friction that led to the eventual stop. Further analysis revealed that the tension in the belt was improperly adjusted, and there was also some wear and tear on the rollers, which contributed to the misalignment.

The maintenance team also identified that the belt had been used for a much longer period than recommended without proper lubrication and maintenance, which led to the friction and wear on the components.

Solution:

To fix the issue, the team took the following steps:

Re-aligning the Conveyor Belt: The team manually adjusted the belt to realign it with the rollers. This required resetting the tension and ensuring the belt was properly secured in place.

Replacing Worn Components: Several rollers were replaced due to significant wear and damage. These components were crucial in ensuring smooth movement of the belt, so replacing them was necessary.

Lubricating the System: To prevent future friction, the team applied appropriate lubrication to all moving parts of the conveyor system. This would reduce wear on both the rollers and the belt.

Checking the Motor: Although the motor wasn't initially identified as the main issue, the team checked it to ensure it was running properly and had not suffered from overheating or wear due to the extra strain caused by the malfunction.

Routine Maintenance Schedule: A new maintenance schedule was implemented for the conveyor system to ensure that the rollers and belts would be checked regularly for wear and lubrication. This would prevent the system from running into similar issues in the future.

Outcome: The repairs were completed within a few hours, and the conveyor system was back in operation. The production line was able to resume operations, and the backlog of items that had built up during the downtime was cleared quickly. As a result, the team was able to get back on track and minimize the impact of the disruption on overall production.

Task 1. Read the statements below and decide if they are True (T) or False (F).

1. ___ The conveyor belt stopped because of a problem with the motor.
2. ___ The production manager ignored the issue and allowed the workers to continue packaging.
3. ___ The maintenance team found that the conveyor belt was misaligned due to improper tension and worn rollers.
4. ___ The team replaced all the motors in the conveyor system to fix the issue.
5. ___ A new maintenance schedule was introduced to prevent similar breakdowns in the future.

Task 2. Choose the correct answer.

6. _____ **What was the first sign of the conveyor belt issue?**
A) The motor stopped working suddenly.
B) The belt made loud grinding noises and moved erratically.
C) Workers noticed a loose screw in the system.
7. _____ **What was the actual cause of the conveyor belt breakdown?**
A) A power outage in the facility.
B) A loose belt, misaligned rollers, and lack of maintenance.
C) A faulty packaging machine.
8. _____ **Which of the following was NOT part of the repair process?**
A) Replacing the worn-out rollers.
B) Lubricating the moving parts of the system.
C) Installing a completely new conveyor system.
9. _____ **Why was a maintenance schedule introduced after the repair?**
A) To ensure regular checks and prevent future breakdowns.
B) To increase the speed of the conveyor belt.
C) To reduce the number of workers needed on the production line.
10. _____ **What happened after the repairs were completed?**
A) The conveyor system remained offline for another day.
B) The production line resumed, and the backlog was cleared.
C) The workers had to replace the entire packaging system.

Task 3. Factory Maintenance Crossword Puzzle

Reboot, Prevent, Minimize, Replace, Restore, Maintain, Reduce, Exceed, Redistribute

Across:

2. To stop something from happening before it occurs. _____
4. To make something as small as possible. _____
6. To bring something back to its original condition. _____
8. To change something old or broken with a new one. _____

Down:

1. To share or spread something evenly. _____
2. To restart a system or device. _____
3. To keep something in good condition. _____
4. To make something smaller or decrease its amount. _____
5. To go beyond a set limit. _____

Task 4. Match the problems with the possible causes.

Problem	Possible Cause
1. The conveyor belt is slipping and not transporting materials efficiently.	A) Sensors are incorrectly calibrated, causing misalignment in parts during assembly.
2. The robotic arm is stopping unexpectedly during its movements.	B) Insufficient cooling in the motor housing due to accumulated dust and debris.
3. The circuit breaker trips whenever multiple machines are running at once.	C) Dirty fuel injectors are causing the engine to lose efficiency and cut off during operation
4. The CNC machine motor is overheating during operation.	D) Incorrect software settings cause it to stop at certain points due to incompatible updates.
5. The automated assembly line is producing defective products.	E) The drive motor is underpowered due to fluctuating voltage from the power supply.
6. The palletizer is misplacing items on the wrong pallets.	F) Refrigerant leaks are preventing the cooling unit from reaching the required temperatures.
7. The forklift is losing power and stopping intermittently.	G) Electrical spikes from older machines are overloading the circuit and triggering the breaker.
8. The cooling unit in the factory is not maintaining temperature.	H) Faulty programming or an error in the pick-up sequence is causing the system to misplace items.

Task 5. Match the problems with equipment with possible solutions.

Problems with Equipment	Possible Solutions
1. The conveyor system is making loud grinding noises and not moving properly.	a) Regularly monitor and update the software firmware.
2. Multiple machines are tripping the circuit breaker due to overload.	b) Clean the sensor and recalibrate it for accuracy.
3. The hydraulic press is leaking fluid and not building pressure.	c) Check for coolant leaks and ensure the fan is operating correctly.
4. The automated control unit occasionally shuts down unexpectedly.	d) Increase lubrication frequency and check the bearings.
5. The robotic arm is moving erratically and missing precise movements.	e) Realign the motor and tighten all mounting bolts.
6. A sensor in the assembly line is not detecting items correctly.	f) Implement a load distribution plan across circuits.
7. The cooling system in a machine is overheating.	g) Shut down the machines immediately and call for repair.
8. A motor in the production line is vibrating excessively.	h) Inspect all connections and replace any worn parts.

Task 6. Fill in the blanks with the correct verb forms.

Yesterday, a technical issue 1)_____ (detect) in the conveyor system, and production 2)_____ (halt) immediately. While the maintenance team 3)_____ (analyze) the problem, the workers 4)_____ (wait) for further instructions. After the root cause 5)_____ (identify), the team 6)_____ (carry out) the necessary repairs. By the end of the day, the system 7)_____ (restore), and production 8)_____ (resume) as usual.

Task 7. FILL IN THE GAPS with the appropriate verbs.

1) _____ an investigation for any blockages that may be obstructing movement, and 2) _____ that all components are adequately lubricated to 3) _____ future breakdowns.

4) _____ a strategy to 5) _____ electrical loads among multiple circuits, or consider upgrading the circuit to handle increased demands.

6) _____ a thorough inspection of the hydraulic lines to 7) _____ the source of the leak, and 8) _____ any damaged hoses to 9) _____ full functionality to the hydraulic press.

10) _____ the software in the automated control unit and 11) _____ it to ensure that all functions are operating correctly, minimizing the risk of future shutdowns.