Lockout/Tagout Procedures

Problem: Hazards on preforming maintenance on conveyor systems
Solution: Practice of a safe lockout/tagout procedure

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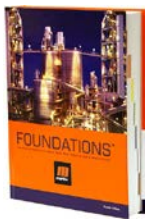
A crucial part of a conveyor safety program is the lockout/tagout procedure. In the United States, lockout/tagout is an Occupational Safety & Health Administration (OSHA) requirement; Mine Safety and Health Administration (MSHA) has adapted a similar version of this rule. To achieve complete safety in the face of the potential energy stored in belt tension or elevated bulk materials, the additional components of blockout and testout are recommended.

Lockout/tagout rules require that power to the conveyor system (and any accessory equipment) be shut down, locked, and tagged by the person who will be performing work on the system.

The lockout/tagout rules require that power to the conveyor system (and any accessory equipment) be shut down, locked and tagged by the person who will be preforming work on the system, Only the person who locked out the system can unlock it. This prevents someone from starting the conveyor belt unknowingly while someone else is working on it.

Typical lockout/tagout procedures follow:



A. Own lock

Each worker is required to place a personal lock on the de-energized switch or switches. This may require one lock bar or multiple lock bars.

B. Own key

Only the employee who places each lock has the key to that lock, and only that employee can remove the lock.

C. Multiple locks

If a number of employees are working in a given area, each should place a lock on the power source. Some equipment will have numerous locations that may require lockout.

D. Own tag

Each employee who placed a lock should also place a tag that includes the employee's name and contact information.

Blockout Procedures

Even when a belt conveyor has been properly locked out and tagged out, there may still be significant amounts of tension or potential energy present in the system. One easy-to-understand scenario is if an inclined belt had an emergency shutdown with material loaded on the belt, the weight of the material will cause the belt to roll backward. Both the movement of the belt and the potential cascade of material off the downhill end of they conveyor cause risk of injury to the unlucky or unwary employee.

Lifting the gravity take-up's counterweight might not release these tensions. This method should not be relied upon. Properly installed breaks and backstops may help prevent this roll back. However, a plant should not rely on the backstops nor breaks to prevent a belt from moving on its own. There have been instances in which the belt has moved due to the internal tensions by the belt stretch.

Blocked out chutes, material trapped at load zones, material under the belt or bad bearings may stall the belt sufficiently to create considerable belt tensions. The belt may move in either direction, based on the conditions present at the time of the work; these conditions can do change as the work progresses.

If employees are required to be on the belt or near pinch points on the conveyor, the belt should be physically restrained from moving under its own power. This is called "blocking" the conveyor belt, or blockout. Belt clamps, chains, and comealongs (ratchet lever hoists) can be used to physically restrain the belt by securing the blocking device to a structural member of the conveyor capable of restraining the expected forces.

It is recommended that engineered equipment be purchased that will securely clamp to the belt to prevent movement.

Testout Procedures

A testout procedure provides a final check to make sure the system is secure and de-energized before work proceeds. It is a good practice to try and start the belt conveyor or interlocked equipment after the lockout lock has been placed. This should include both local start/stop stations and the system's remote controls. This ensures that the correct breakers were de-energized.

More on lockout/tagout can be found in Chapter 2 of FOUNDATIONS™ Fourth Edition by Martin Engineering.

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