Conveyor Belt common problem trouble shooting guide

1. Excessive top cover wear over entire top surface or in load carrying area.

A. The top cover quality is not adequate for the system/material being conveyed. Upgrade to a heavier top cover. Upgrade to a better cover compound.

B. Off centre loading or improper loading of the belt. Make sure load chute places the load in the centre of the belt. Make sure the direction of the material down the chute is in the direction of the belt travel.

C. Material build-up on the pulley faces of the return idlers, or on the conveyor structure it's self. Clean system, improve material containment, install cleaners, check skirting, install belt scrapers after the head pulley.

D. Frozen, dirty, or misaligned return idlers. Clean rollers, properly align rollers, install cleaning devices at head pulley, use self cleaning rollers, improve maintenance (alignment, lubrication, and cleaning).

E. Too much distance in between the idlers causing excessive material movement as the load travels up and over the idlers. Decrease the distance between idlers, increase tension if the belt is under tensioned.

2. Excessive pulley cover wear.

A. Frozen idlers. Replace or repair frozen idlers. Improve maintenance of idlers (lubrication, cleaning, alignment).

B. Insufficient traction between belt and drive pulley. Make sure drive pulley is free of build up. Lag Drive pulley. Increase belt wrap on drive pulley. Increase belt tension if the belt is under tensioned.

C. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, install belt scrapers in front of pulleys.

D. Material is getting trapped between belt and pulleys. Improve containment at load point. Improve containment along the conveyor. Install ploughs or scrapers in front of tail pulley. Practice good house keeping.

E. Bolt heads from pulley lagging, or from slider bed material hold down on bare backs, are sticking up and catching the belt. Inspect and replace or tighten as required.

F. A condition of tilted or over tilted troughing idlers exists. Idler frames should be located per manufacturers recommendations, usually at 90 degrees to the belt and conveyor frame. Align idlers per manufacturers recommendations.

3. Excessive edge wear.

A. The belt is misaligned. Track and train belt.

B. Belt is coming in contact with the conveyor frame and or hardware. Make sure belt is tracking properly. Make sure there is proper clearance between belt and any hardware. Make sure load is centred on belt. Clear any jammed material. Install training idlers on carry and return side of belt.

C. Off centre loading or improper loading of the belt. Make sure the load chute places the load in the centre of the belt. Make sure the direction of the material down the chute is in the direction of the belt travel.

D. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, install belt scrapers in front of pulley.

E. Belt is cambered. Follow Legg Co. procedures for measuring camber. If the camber is less than 1/2%, the belt will train and run fine. If the camber is greater than 1/2%, the belt may need to be replaced.

F. If the edge wear occurs in the splice area, the splice may have been installed crooked. Re-splice belt.

4. Belt runs off at the head pulley.

A. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, install belt scrapers at head pulley.

B. The pulleys and or the idlers are out of square with the belt centreline. Readjust pulleys and or idlers.

C. Pulley lagging is worn or not adequate to produce sufficient traction. Replace with new or correct pulley lagging.

D. Idler stands are not centred to the belt. Readjust the stands for proper alignment.

5. Belt runs off at tail pulley.

A. The belt is running off centre as it comes around the tail pulley and/or through the load point. Re-track belt, install training idlers on the return prior to the tail pulley.

B. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, install belt scrapers in front of pulley.

C. The pulleys and or the idlers are out of square with the belt centreline. readjust pulleys and or idlers.

D. Frozen, dirty, or misaligned return idlers. Clean rollers, properly align rollers, install cleaning devices at head pulley, use self cleaning rollers, improve maintenance (alignment, lubrication, and cleaning).

E. Inadequate belt tension is possible, recalculate tension requirements. If necessary increase weight on gravity take up or increase tension at screw take-up.

6. Belt runs to one side for a considerable distance, or the entire conveyor.

A. The belt is running off centre as it comes around the tail pulley and/or through the load point. Re-track belt, install training idlers on the return prior to the tail pulley.

B. Build up of material on idler rollers. Clean and maintain. Install scrapers, brushes, and other cleaning devices.

C. Off centre loading or improper loading of the belt. Make sure load chute places load in the centre of the belt. Make sure the direction of the material down the chute is in the direction of the belt travel.

D. The pulleys and or the idlers are out of square with the belt centreline. Readjust pulleys and or idlers.

E. Idler stands are not centred to the belt. Readjust the stands for proper alignment.

F. The conveyor frame is not square or the system is not properly supported. Straighten the frame in the affected area and check to make sure support in that area is correct.

7. Belt slips when conveyor is started.

A. Insufficient traction between belt and drive pulley. Make sure drive pulley is free of build up. Lag Drive pulley. Increase belt wrap on drive pulley. Increase belt tension.

B. Inadequate belt tension is possible, recalculate tension requirements. If necessary increase weight on gravity take up or increase tension at screw take-up.

C. Pulley lagging is worn or not adequate to produce sufficient traction. Replace with new or correct pulley lagging.

D. Counter weight hitting bottom, not enough belt tension. Shorten belt and re-splice

E. One or more of the system pulleys are below the acceptable diameter. Replace pulleys with diameters acceptable to belt requirements.

F. Conveyor is overpowered. Reduce HP or consider a soft start if applicable.

8. Belt slips while running.

A. Insufficient traction between belt and drive pulley. Make sure drive pulley is free of build up. Lag Drive pulley. Increase belt wrap on drive pulley. Increase belt tension.

B. Inadequate belt tension. Increase weight on gravity take up. Increase tension at screw take-up.

C. Pulley lagging is worn or not adequate to produce sufficient traction. Replace with new or correct pulley lagging.

D. Frozen idlers. Replace or repair frozen idlers. Improve maintenance of idlers (lubrication, cleaning, alignment).

E. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, install material ploughs and scrapers.

F. One or more of the system pulleys are below the acceptable diameter. Replace pulleys with diameters acceptable to belt requirements.

9. The covers are hardening and/or cracking.

A. Heat or chemical damage to the belt. Make sure to use the correct belt carcass and compounds for the application.

B. Compound degradation due to ozone and ultraviolet light during long term storage. Store inside out of direct sunlight and weather. Utilize spare belts sooner.

C. It is a natural tendency for rubber to get harder as it ages. This is due to the drying out of the plasticizers in the compound. As belts age, and the rubber dries out, the cover wear will be accelerated. This is similar to what is commonly referred to as dry rot in tires.

10. The cover/s are swelling and/or getting soft s in certain areas.

A. The belt is contaminated with spilled oil or grease. Improve house keeping, avoid spilling of hydrocarbon based lubricants on the belt. Don't over grease bearings. Check grease seals on bearings.

11. A certain section of the belt runs to one side regardless of the location on the conveyor.

A. Belt is cambered. Follow Legg Co. procedures for measuring camber. If the camber is less than 1/2%, the belt will train and run fine. If the camber is greater than 1/2%, the belt needs to be replace.

B. If the section is at the splice then the belt splice is crooked. Remove splice and rejoin belt ends insuring belt ends are square in accordance with belt/fastener manufacturer.

12. The belt runs to one side only in a certain section or portion of the conveyor.

A. Frozen idlers. Replace or repair frozen idlers. Improve maintenance of idlers (lubrication, cleaning, alignment).

B. The pulleys and or the idlers are out of square with the belt centreline. readjust pulleys and or idlers.

C. Build up of material on idler rollers. Clean and maintain. Install scrapers, brushes, and other cleaning devices.

D. The conveyor frame is not square or the system is not properly supported. Straighten the frame in the affected area and check to make sure support in that area is correct.

E. The idler stands are not centred to the belt. Readjust the stands for proper alignment.

F. Make sure the conveyor structures is level from side to side. Level structure.

13. Star breaks in belt carcass, or short breaks in belt carcass parallel to belt edge.

A. Material is getting trapped between belt and pulley. Improve containment at load point. Improve containment along the conveyor. Install ploughs or scrapers in front of tail pulley. Practice good house keeping.

B. Too great of an impact on the belt at the load point. Install impact idlers or impact bed. Redesign chute with slow down bars or reduced drop.

C. Upgrade to a carcass with a nylon fill yarn, or an all nylon carcass. (But in the long run fixing the problem will be cheaper.)

14. Transverse breaks in belt at the edge.

A. Inadequate transition distance from the pulley to the troughing idlers. Increase transition length. Rule of thumb, transition is equal to 2.5 times belt width minimum.

B. The belt edges are folding over on the system or folding up on the structure. Re-track belt, centre load point, check the belt as it comes into and through the load point/skirting, check to make sure the belt isn't coming into contact with the conveyor structure.

15. Vulcanize splice failure.

A. Incorrect belt splice type, or incorrect implementation of the splice procedure. Re-splice belt following manufacturer's recommended splice materials and procedures.

B. One or more of the system pulleys are below the acceptable diameter. Replace pulleys with diameters acceptable to belt requirements.

C. The operating and/or start up tension is too great for the belt. Decrease the load, increase the speed utilizing the same drive motor, decrease the angle of incline, increase tension rating and/or number of plies in the next belt.

D. Material is getting trapped between belt and pulley. Improve containment at load point. Improve containment along the conveyor. Install ploughs or scrapers in front of tail pulley. Practice good house keeping.

E. Inadequate transition distance from the pulley to the troughing idlers. Increase transition length. Rule of thumb, transition is equal to 2.5 times belt width minimum.

F. Contrary to popular belief, the original belt has less to do with splice integrity than the splice material does. You can take a belt with exceptional adhesions and produce a splice with little to no adhesions. Conversely, you can take a belt with very poor adhesions, and utilizing the proper splice materials, produce a splice with exceptional adhesions. Also, the RFL (Resorcinol Formaldehyde Latex) treatment of fabrics is 90% activated during the initial curing of the belt, and does very little to nothing for the splice adhesions.

16. The belt is curling up on the edges, cupping. The belt was fine when installed but over time it cupped.

A. Heat or chemical damage to the belt. Make sure to use the correct belt carcass and compounds for the application. There may be cases where this is the norm in handling extremely dry products that pull the plasticizers out of the cover compound. In these cases using a belt with a heavier bottom cover will help off-set the problem. Or, try a belt with balanced covers which would allow you to turn the belt over several times in the life of the belt to counteract the problem.

17. Belt runs fine when it's empty but wont track right when it's loaded.

A. The belt is not making good contact with all of the idlers. Readjust the idlers for proper belt contact.

B. Off centre loading or improper loading of the belt. Make sure load chute places load in the centre of the belt. Make sure the direction of the material down the chute is in the direction of the belt travel.

C. Variations in the formation and nature of the load at the load point. Use a deflector/notched chute to keep the load peak as close to the centre of the belt as possible.

18. The top cover is grooved, gouged, or the top cover is stripped off.

A. Improper skirt board, improper skirt board adjustment, belt to skirting holding structure. Make sure to use proper skirt board, not old belt! Make sure load point is in proper adjustment, i.e. belt clearance. Adjust skirt board to reduce pressure on the belt top cover.

B. Material is lodging in the chute. Open up the chute, reduce size of lumps in material, restrict feed rate.

C. Material hanging up at the load point. Either in the chute or under the chute. Increase distance from belt to chute. Widen the chute. Install baffles to spread the material at the load point.

D. Too great of impact on belt at the load point. Install impact idlers or impact bed. Redesign chute with deflection (slow down) bars to reduce drop. Upgrade top cover compound.

E. Sharp edges on material, foreign material such as tramp iron in the product. Remove foreign material, i.e.. magnet, improve load point drop, upgrade top cover compound.

F. Improper top cover compound for the application. Check with manufacturer for proper compound.

19. You are experiencing excessive belt stretch.

A. The operating and/or start up tension is too great for the belt. Decrease the load, increase the speed utilizing the same drive motor, decrease the angle of incline, increase tension rating and number of plies in the belt. Apply or adjust soft start drive motor controls.

B. The belt is not adequate for the generated tensions. Upgrade to a higher tension belt.

C. The counter weight is too heavy or the screw take-up is over tensioned. Reduce weight in counter weight or reduce tension at screw take-up.

20. Longitudinal grooves or cracks in the bottom cover.

A. Frozen idlers. Replace or repair frozen idlers. Improve maintenance of idlers (lubrication, cleaning, alignment).

B. Material build-up on the pulley face or conveyor structure. Clean system, improve material containment, install cleaners, check skirting, and install belt scrapers in front of pulley.

C. Insufficient traction between belt and drive pulley. Make sure drive pulley is free of build up. Lag Drive pulley. Increase belt wrap on drive pulley. Increase belt tension.

D. Pulley lagging is worn. Replace with new or correct pulley lagging.

E. Too much distance in between the idlers causing excessive material movement as the load travels up and over the idlers, forcing the belt into the idler junctions. Decrease the distance between idlers, increase tension if the belt is under tensioned.

F. Insufficient transverse belt stiffness. Replace belt with one recommended for the weight of load and belt width. Decrease load.

21. Belt breaks just behind the mechanical fastener, or the mechanical fastener pulls out.

A. The fastener plates used in the mechanical fastener are to long. Replace with a smaller fastener if tensions will permit it, or increase the pulley diameters.

B. Incorrect fastener for the belt/application. Improper fastener installation. Check fastener application specifications, make sure it's the right fastener for the job. Make sure fastener is installed per manufacturers instructions.

C. The tension is too great for the fastener. Upgrade to a higher rated fastener if possible. Switch to a vulcanized slice.

D. One or more of the system pulleys are below the acceptable diameter. Replace pulleys with diameters acceptable to belt requirements.

E. Belt scrapers are not correctly adjusted or installed. Check belt scrapers, readjust or replace if necessary.

F. The carcass of the belt is too light or of the wrong material. Up grade to a heavier belt carcass or one that incorporates a nylon fill yarn, or a monofilament fill yarn.

22. Ply separation of the belt.

A. Insufficient ply adhesions in the belt to start with. Check with the manufacturer to make sure the correct belt is being used.

B. Insufficient transverse belt stiffness. Replace belt with one recommended for the weight of load and belt width. Decrease load.

C. One or more of the system pulleys are below the acceptable diameter. Replace pulleys with diameters acceptable to belt requirements.

D. Incorrect fastener for the belt/application. Improper fastener installation. Check fastener application specifications, make sure it's the right fastener for the job. Make sure fastener is installed per manufacturers instructions.

23. Carcass fatigue at the junction of the individual idlers on a carrying idler set.

A. Insufficient transverse belt stiffness. Replace belt with one recommended for the weight of load and belt width. Decrease load.

B. Inadequate transition distance from the pulley to the troughing idlers. Increase transition length. Rule of thumb, transition is equal to 2.5 times belt width minimum.

C. A condition of tilted or over tilted troughing idlers exists. Idler frames should be located per manufacturers recommendations, usually at 90 degrees to the belt and conveyor frame. Align idlers per manufacturers recommendations.

D. The spacing between the individual idler rollers is too great. Replace idlers utilizing a system with reduced roller gap.

E. Too much distance in between the idler sets causing the belt to be forced in between the individual idler rollers. Decrease the distance between idler sets, increase tension if the belt is under tensioned.

24. The belt is curling or cupping down, towards the bottom cover.

A. Oils in the product are causing the top cover to swell or expand. Replace belt with one that is rated for higher oil resistance.

25. The belt is getting narrower.

A. The belt is stretching causing the belt to "neck down" due to excess tension. The system is under belted or over tensioned. Replace belt with a higher tension belt.

26. The belt is shrinking on a slider bed system.

A. Usually occurs when the system is handling a product that either is, or produces, very fine particles. The particles for their way into the fabric yarns, in between the yarn fibres. This causes the yarns to increase in diameter thus causing the belt to shrink. This often times can cause the belt to shrink with enough force to break pulleys and/or pulley shafts.

B. A chemical reaction is taking place due to the material being handled. Especially when handling fertilizers.

27. The belt is stalling or jerking.

A. An improper slack side tension problem exists. Adjust the take up position. Lag the drive pulley or replace the current drive pulley lagging. Add a snub pulley behind the drive pulley to increase the wrap of the belt on the drive pulley.