Material Buildup on Belting and Conveyor Components

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Every year millions of dollars are spent replacing conveyor belts due to damage caused by material carry back. If a belt is not properly cleaned, the material being conveyed will build up on pulleys and return idlers. This results in mistracking of the belt into the frame and edge damage or causing the belt to load off center resulting in spillage at the load point and possibly on the top side of the conveyor. Not only is the replacement of the belt expensive and most likely not in the budget, MSHA statistics show that most accidents occur during maintenance and clean-up operations directly related to spillage, carry back and buildup problems.

There is no one magic solution to cleaning a belt 100%. However, many measures can be taken to drastically improve buildup problems. You must first familiarize yourself with the bulk material being conveyed and understand that the behavior of the material is ever changing. A material that is dry and easy to remove from the belt can become sticky and a real problem when wet conditions are present. You could be dealing with large lump and sharp edge material that will cut and gouge a belt 's cover. This allows fines to get into the gouges or cracks in the top cover where a belt cleaner has no effect. Carry back of these fines will buildup on the return idlers, bend pulleys, take up pulleys and possibly the tail pulley.

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The following is a quick guide to possible solutions for many of the problems found in conveyor belt systems experiencing material carry back or buildup of material on conveyor components.

Installation of belt cleaners

The best place to install a belt cleaner is on the head pulley so the material being scraped from the belt will fall into the chute and on to the next belt. When choosing a cleaner, you must first consider if the conveyor belt has a vulcanized splice or mechanical fasteners. If possible try to counter sink the mechanical fasteners by removing some of the top cover of the belt. There are also materials you could use to cover the mechanical fasteners. This would allow the belt cleaner slide over the fasteners and not cause any damage to the blade. In this case, you are most likely using a type of urethane blade. For more aggressive cleaning when you have a vulcanized splice, you can use a cleaner with a tungsten blade. No matter the type of cleaner, it is important to install the cleaner on the head pulley below the point where the material falls off the belt. For ultimate cleaning, install a second cleaner in the area right where the belt comes off the head pulley on the return side.

Buildup of material on conveyor components on the return side of the belt.

If you are dealing with an older worn belt and fines are imbedded in the cover and carrying back try some of these solutions. Install a softer rubber lagging (45 durometer) on the bend and take up pulleys. This softer rubber will repel the material and not allow it to stick to the pulley. There are several styles of return idlers that are manufactured with a material that resists material sticking to it. There are also methods to cover the return idlers with sleeves made of rubber or urethane. If material is building up on return idlers, install return training idlers at areas along the return side and not too close to a transition point so they can work effectively. This will keep the belt from tracking off and into the conveyor frame. Be sure that the belt is tracked squarely into the tail pulley so it is in the center of the troughing idler or impact system at the load point.

Material sticking to the bottom cover of the belt

If you have material sticking to the bottom cover of the belt, this can cause buildup of material on the troughing idlers on the top side of the conveyor. Consider installing a "V" plow before the tail pulley on the return side. There are plows that will put some pressure on the belt and scrape the material off prior to the belt entering the tail pulley.

One final thought is the importance of a good skirting system at the load point of the conveyor. A good skirting system will prevent spillage and center the load on the belt. Weather you use idlers or an impact system, create a stable and positive seal in the loading zone.

No matter what belt cleaner you use or conveyor component you install, regular and timely inspection and maintenance will help prevent problems. Within the NIBA organization there are many great manufacturers of the components I have listed within this article. Within these companies there is expertise and knowledge to help you and your customer. Reach out and ask for assistance when needed.