



Best Practices in Wood Waste Recycling

Disk Scalping Screens

Material: Wood Waste

Issue: *The wood waste delivered to a processing facility typically contains a certain quantity of small-sized wood (chips and chunks), fines, and small contaminants mixed in with the larger pieces of wood waste. This material can cause problems for the processing facility. The small-sized wood and fines complicates manual sorting activities because they overwhelm sorters with a many individual pieces that hide internal contaminants, which appear upon the conveyor. The wood fines are also typically mixed with dirt and grit contaminants. The combination of fines, dirt, and grit tend to cause excessive wear on material-handling and size-reduction equipment, thus creating excessive equipment maintenance requirements. Finally, the small contaminants can be easily missed by manual and automated contaminant removal systems before the size reducing process. Failure to remove these small contaminants could lead to excessive requirements on equipment maintenance and degrade the quality of the end-product.*

Best Practice: This Best Practice recommends the removal of small-sized wood, fines, and small contaminants from wood waste incoming into a processing facility. A disc scalping screen is one type of equipment that processors can use to perform this function. Following is a description of this equipment:

Disc Scalping Screen: Disc scalping screens are designed to align with a chain or belt conveyor of the same width. The disc scalping screen consists of a series of driven shafts that turn in the direction of material flow. The shafts are mounted with discs, arranged in rows along the length of the shaft. As the wood waste passes over the turning discs, smaller material falls out between the discs and the larger pieces are carried across to the next conveyor or processing equipment. Operators can control the size of material that is allowed to fall through the disc screen by varying the number of discs and the distance between shafts. Some models are available with adjustable discs that allow better screening control. Disc scalping screens are generally available in sections running from about ten to fifteen feet in length.

Implementation: Disc scalping screens should be installed in the initial stage of wood-waste processing to remove small materials and contaminants early in the process. Following is a description of the selection considerations for a disc scalping screen:

Selection Considerations. The primary issues that an operator should consider when selecting equipment like a disc scalping screen include the following: operational issues (effectiveness, compatibility with other process equipment, capability to handle targeted production throughput, etc.), capital cost, maintenance issues, and safety issues.

Operational: Through work with an equipment vendor, disc scalping screens can be sized to handle the types and volumes of wood waste processed at a given facility. Disc scalping screens function best when there is a large disparity between the size of the material passing through and that running over the top of the discs.

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Cost: Disc screens are effective and relatively inexpensive compared to competing screen systems.

Maintenance: Disc scalping screens usually require little maintenance. On occasion, particles that are *under* or *on-size* in only one dimension might attempt to pass through the openings and become trapped because of its irregular shape. This jamming, especially if caused by a stone or other hard material, is sometimes sufficient to jam the entire screen, which may result in mechanical damage to the drive and other components. The solutions to this problem include using spacers between the discs made from a softer, flexible material which allows the discs to deflect slightly and permit the trapped particle to drop free. Also, some hydraulic drives can sense pressure build-up and momentarily reverse rotation to clear the jam.

Safety: The general operation of disc screens creates no unique safety issues so long as drive components are adequately guarded.

Benefits: The removal of small wood, fines, and small contaminants during the initial stage of waste wood processing is an effective way to maximize contaminant removal and avoid excessive equipment wear. Disc scalping screens are an effective piece of equipment for removing small wood, fines, and small contaminants such as metal, rocks, glass, etc. from the larger pieces of wood waste.

Application Site: This Best Practice applies to wood-waste processing facilities.

Contact: For more information about this Best Practice, contact CWC (206) 443-7746, e-mail info@cw.org.

References:

1. General Kinematics; equipment brochure
 2. Lyman, Mark. West Salem Machinery; Salem, OR.
 3. Pneuco Sales and Engineering Ltd.; Richmond, BC, Canada.
 4. Sherman, Raymond. General Kinematics; Barrington, IL.
 5. West Salem Machinery; equipment brochure
- (See Appendix for an Equipment Manufacturers List)

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