



## Best Practices in Wood Waste Recycling

### ***Conveying Bulky, Irregular-Shaped Wood Waste***

#### **Material: Wood Waste**

**Issue:** *Wood waste supplies range from sawdust or shavings to large containers or portions of structural framing. Bulky, irregular-shaped forms of wood waste can often present problems at the front-end of a wood waste processing facility if the available material handling equipment is unable to accommodate this type of wood waste material. Wood waste processors can experience excessive labor requirements, clean-up problems, and general reductions in production efficiency.*

**Best Practice:** This best practice recommends that processors use specialized, automated equipment to feed bulky, irregular-shaped wood waste into size reduction equipment. These specialized conveying systems can minimize the potential for hang-ups and blockage. These automated conveyor systems also provide ample in-feed surge capacity (temporary in-process material storage) and can free rolling stock operators from some of their loading duties. Conveyors consisting of a wide or sideless trough can minimize their possible blockage. Possible conveyor types include:

*Drag Chain Conveyor:* a wide trough carrying a chain that is periodically fitted with ‘flights’ which will pull the wood waste along the conveyor.

*Multiple Chain Conveyor:* a very wide trough or sideless deck carrying a series of chains running in tracks spaced at regular intervals. The chains are fitted with ‘flights’ that pull the wood along the trough or deck.

*Walking Floor:* a series of metal slats make up the floor of the conveyor or bunker. Each hydraulically-powered slat moves in a four-phase cycle, sliding wood waste in a parallel direction.

*Tilting Floor:* consists of a wide, smooth floor that tilts by means of hydraulic cylinders, moving the wood waste material through in a sliding motion. The tilting floor system may only be appropriate as an in-feed system for styles of size reduction equipment that do not require steady metering to operate efficiently.

*Large Vibrating Conveyor:* consists of a wide, flat-bottomed metal trough that transports material through controlled vibrations. The transported material becomes oriented with its length dimension parallel to the direction of flow, important for certain styles of size reduction equipment.

*Armored Belt Conveyor:* common in the waste industry, features heavy duty, flighted belting with a chain track on each side of the belt, allowing the conveyor to both convey material horizontally and elevate with the same belt.

*Metal Apron Conveyor:* also common in the waste industry, consists of steel slats connected with piano hinges, rollers, and chain tracks on each side. Like the armored belt conveyor, this conveyor can convey material horizontally and elevate with the same belt.

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**Implementation:** Processing facilities regularly encountering bulky, irregular-shaped wood waste should investigate a variety of specialized, automated in-feed systems that can accommodate large material. When selecting a piece of equipment for infeeding bulky or irregular shaped wood waste, operators should consider the following issues:

*Operational:* By working with an equipment vendor, various types of equipment can be sized to handle different types and volumes of wood waste processed at a given facility. Depending on the specific types of wood waste and other process equipment, some in-feed systems may be more effective than others. One must also consider whether this equipment can raise feedstock from lower to higher elevations if required for subsequent processing.

*Cost:* Although cost comparisons between the types of equipment vary, the drag chain conveyor is generally most economical. In contrast, the walking floor is likely to be the most expensive type of system.

*Maintenance:* Each type of in-feed system has unique maintenance considerations. The additional chains in a multiple chain conveyor require more maintenance than the drag chain (single chain) conveyor. Vibrating conveyors also require significant amounts of maintenance and may also create a dust control problem at the front end of the facility. Walking floors are susceptible to wear from dirt and grit, reducing the life of the floor.

*Safety:* Properly installed in-feed systems with adequately guarded drive components and lock-out equipment are relatively safe.

**Benefits:** The use of specialized, automated in-feed systems to convey bulky, irregular-shaped wood waste can reduce labor requirements, reduce clean-up requirements, and improve overall production efficiency.

**Application Site:** Processing facility.

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### **References:**

1. See Appendix for an Equipment Manufacturer's List
2. International Resources Unlimited, Inc. Eugene, OR.
3. Lyman, Mark. West Salem Machinery. Salem, OR.
4. Walking, Keith. Floor; Keith Manufacturing Company. Madras, OR.

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