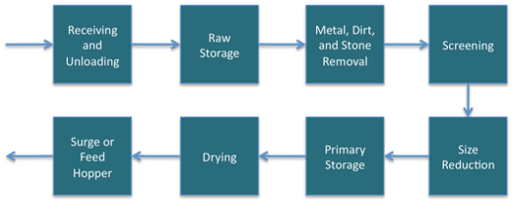
JENIKE & JOHANSON INCORPORATED

Biomass Feedstock Handling Steps

The number of biofeedstock handling steps at a facility depends on the source of the material and the size of the facility. Biomass handling steps typically include receiving and unloading, raw storage, contaminant removal, screening and size reduction, primary storage, drying, and feeding to the downstream process.



Typical Biomass Handling Steps

Receiving and unloading: Biofeedstocks usually arrive at the user's facility by truck. Three types of trucks are commonly used: dump trucks, trucks equipped with live-bottom floors (which "walk" the load on a series of narrow floorboards), and standard semi-trailers. Dump trucks and live-bottom trucks are able to unload themselves directly onto storage piles or underground bunkers.

Raw storage: At some facilities, the trucks themselves are used for storage of raw materials. In others, the biofeedstocks are stored in hoppers, bunkers, or covered or open stockpiles. Each method of storage offers its own set of benefits, limitations, and risks that must be evaluated and matched to the operational goal and objectives.

Removal of contaminants: While ferrous metals can be removed with magnets, detectors must be used to identify the presence of non-ferrous contaminants. Often, removal of stones, dirt, and other debris is dictated by contractual obligations of the biofeedstock supplier.

Screening and size reduction: To remove oversized particles, screening operations are used. To reduce the size of oversized particles, knife hogs and hammermills are used. Care must still be taken in storage, reclaim, and feeding systems to minimize particle size distribution swings as a result of segregation.

Primary storage: Storage facilities typically consist of open or partially covered stockpiles, hoppers, bins, silos, and bunkers. Open, uncovered stockpiles typically provide the greatest storage, however, their cost is highly dependent on the method of reclaim, and they also introduce greater risks for fuel variability, uncontrolled moisture, freezing, and stagnant regions. Hoppers, bins, and silos require the least amount of space, but the biofeedstocks are susceptible to arching or ratholing if the designs are not based on the materials' flow properties.

Drying: Removing or controlling the moisture in biofeedstocks often presents great benefits to the downstream process. While rotary drum dryers or suspension dryers are frequently used to reduce the biofeedstock moisture content, hoppers equipped with heat exchangers or silos modified to allow injection of flue gas, superheated steam, or exchanged air are also alternatives. Of course, minimizing the exposure of biofeedstocks to moisture can reduce the levels of moisture.

Feed hopper: Often, a hopper is needed to provide surge capacity and ensure uninterrupted feed to the downstream process. Unless properly designed, feed hoppers are prone to mechanical bridging, cohesive arching, or ratholing.

Contact Jenike & Johanson to avoid a trial-and-error process for selecting biofeedstock handling equipment, reduce project risk, and ensure a reliable design.

400 Business Park Drive
Tyngsboro, Massachusetts 01879-1077
Tel: +1 (978) 649-3300 Fax: +1 (978) 649-3399

3485 Empresa Drive
San Luis Obispo, California 93401-7328
Tel: +1 (805) 541-0901 Fax: +1 (805) 541-4680

Also: Toronto, Canada • Viña del Mar, Chile • Perth, Australia

www.jenike.com