

John Coleman Tobacco Consulting LLC

8902 Norwick Circle
Richmond, VA 23229
(804) 741-8582
umtaliman@gmail.com
www.johncolemanengineering.weebly.com

Av. Joao Pessoa 1800
Santa Cruz do Sul
96815-770 RS, Brazil
51-2107-4138

Conversion from T & T to Whole Leaf Threshing

For those traditional tipping plants wishing to lower costs and simplify the process, whole leaf threshing is a well-proven and attractive option. The pros and cons of this conversion are described in a separate article. This article will explain the changes necessary to make the conversion.

New equipment

In most cases the following new equipment will be required:

1. A simple blending conveyor with scale where farm bales can be loaded and scanned.
2. A manual or mechanized means of cutting and removing string, paper and burlap from the bales.
3. A reject mechanism so that unsatisfactory bales can be removed from the feed.
4. A splitting or flaking system if bales are larger than 100kg.
5. A Direct Conditioning Cylinder (DCC) of sufficient size to condition the maximum designed flow.
6. Two or three leaf silos with pin feeder discharge of sufficient size to give full blend capability.
7. A weighbelt to control the discharge of the silos.
8. A rearrangement of the picking and NTRM systems to handle whole leaves and remove sand.
9. Possible additions to threshers, separators and screening depending on existing system.

The drying, packing and by-products systems will be unaffected assuming no increase in production rate is envisaged. Net energy consumption will be much lower if the tipping system involved vacuum pre-conditioning. Otherwise it will be largely unaffected.

System configuration

The system must be reconfigured to properly process the whole leaf feed. This will involve the following:

1. Wider tooth spacing on first and second stage threshers.
2. Larger baskets in these threshers.
3. Higher airflow on first and second stage separators. This may require higher horsepower on fans.
4. Larger aperture screens on first separators in first and second stages.

In a properly set up full-thresh system about 70% of lamina is removed in the first stage and about 20% in the second.

Correct design of all the required equipment is essential. The most important device is the DCC. When feeding farm bales at 14-16% moisture, conditioning must start as the bale/slice enters the cylinder. The number and placement of atomizing nozzles is critical. The airflow and heat-exchanger configuration must allow precise control of cylinder environment. The controls and measuring devices for temperatures, flows and moistures play an important part in the process and must be correctly designed.

The silos and feeders ensure good blending, equilibration of temperature and moisture and a consistent flow to the picking and threshing systems. Silos are common but proper design is necessary to give a level fill and smooth discharge. The discharge feeders must be designed to give a constant feed without degrading the tobacco and must be controlled by accurate weighbelts.

The feed to the first-stage threshers must be smooth, well-conditioned and hot. This means that the cylinders must be placed as close to the feeders as possible and ideally the system enclosed to preserve heat and moisture. Excess steam must be exhausted.

In a well-engineered system as long as all parameters are controlled precisely the plant will deliver a good product with minimum standard deviation. This way it can be run close to targets to achieve maximum flow, yield and efficiency.