UPDATE ON NEW DEVELOPMENTS FROM CHEROKEE

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Abstract

Cherokee has been busy working on additions to the product line since our last address to the Beltwide Cotton Ginning Conference in 2010. While not every concept presented here will be new to the industry, there are certainly some new applications and improvements included. We hope the reader will recognize our desire to make dependable, heavy-duty equipment that is easy to operate and maintain.

Introduction

Sometimes customers ask for new equipment outside of the existing product line, and sometimes we try to anticipate what the industry may need in the near future. Either way, careful planning can help control the costs associated with new equipment purchase, operating costs, and personnel requirements.

Materials and Methods

Round-Up II

In 2010, Cherokee announced plans to introduce a newer version of round module unwrapper, the Round-Up II. Since that time, many have been installed throughout the country. The Round-Up II unwrapper unloads round cotton modules onto raised bed module feeders with ease as seen in Figure 1. In most gins, a single operator can safely handle each module and remove the wrap at the end of the cycle as seen in Figure 2.

An important advantage to the Cherokee approach is the fact that the plastic wrap is not cut. This eliminates the risk of creating loose pieces of cut wrap during the opening process. During the initial concept testing in 2007, several pin designs were tested to insure the wrap material would be pierced without cutting any pieces away from the parent material. Additional testing by a large independent equipment manufacturer has confirmed our conclusion that this replaceable pin design creates no plastic contamination.

Figure 1. Round-Up II at Keich-Shiver-Miller Gin in Monette, AR.

Figure 2. Operator Removing Wrap on a Round-Up II.

Vertical Cylinder Dryer

For 2012, Cherokee added a vertical cylinder dryer to the product line. Inside the dryer, cotton is thrown from a rotating cylinder onto fingers that slope down towards the next rotating cylinder as seen in Figure 3. There is a small gap between the fingers, allowing air to be pulled straight down through the fibers as the locks of cotton slide down toward the next cylinder. This action increases drying efficiency when compared to a traditional tower dryer. This concept is not new, but the finger retention method, and the ease of access for finger replacement is unique, plus there are cleanout doors on both sides. An optional service platform provides access to all of the doors on both sides.

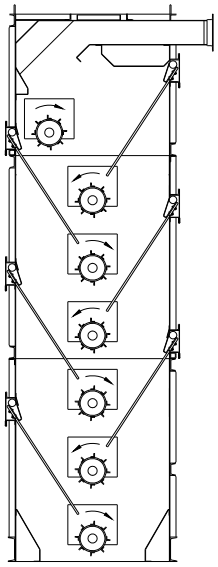

Figure 3. Vertical Cylinder Dryer Cross-Section

15 Cylinder Horizontal Hot Air Cleaner

Horizontal Cylinder Cleaners with 9 or 12 cylinders have been popular with Cherokee customers in West Texas for several years. However, this year Cherokee added a 15 cylinder machine to the product line in both gravity and hot air cleaner versions. Figure 4 shows a Vertical Cylinder Dryer mounted directly over a 15 Cylinder Horizontal Cleaner.

Figure 4. Vertical Cylinder Dryer over a 15 Cylinder Cleaner at Bernie Farmers Gin in Malden, MO.

Integral Moisture Sensors

Also new this year is a moisture sensor with readout integrated into the burner display portion of the main gin console as seen in Figure 5. Seed cotton is measured at the module feeder hopper just below floor level for incoming moisture levels. After-drying moisture levels are measured in the feeder hopper just prior to ginning. Moisture levels are displayed for the ginner to use as a tool when making decisions about burner settings.

Figure 5. Cherokee Burner Controls with Integral Moisture Sensor Display.

Magnum Gin Line

At the heart of any ginning operation is the gin stand. The new Magnum 244 saw gin stand is 12 feet wide, with the greatest number of saws found in any single machine on the market today. When joined in series with the new Magnum extractor feeder, the Magnum pneumatic jet lint cleaner, and the Magnum 142 saw-type lint cleaner, a single Magnum gin line as seen in Figure 6 can operate at over 30 bales per hour.

Figure 6. Magnum Gin Line.

As gin stands have become wider through the years, it has become more difficult to open the roll box door on most gin stands. In contrast, the Magnum 244 has a powered roll box door, which is opened by a single ginner at the touch of a button. A safety feature prevents the roll box door from opening unless the breast is out and the agitator motor is not powered up.

When the time finally comes to replace a saw cylinder, the front of the Magnum 244 can simply be un-pinned up top and the front can be lowered to the floor allowing easy access to the saw. In addition, the agitator can be changed without having to disassemble the cylinder stub shaft, and can be removed through either end or through the top of the gin stand.

The heads and legs of the machine are made from 1-1/2" thick steel plate to provide stability and endurance. The rib rails are machined from 2" x 4" solid steel bar stock to resist bowing during heavy ginning loads. The agitator, picker roller and optional upper moting screw conveyor are equipped with direct drive motors as seen in Figure 7, which reduces the number of bearings and belts required for any one gin stand.

Figure 7. Direct drive motors on the Magnum 244 Saw Gin Stand.

Cherokee introduced these concepts with the 2007 installation of the first Cherokee Avenger 174 gin stand in West Texas. Many more Avenger 174 gin stands have been installed since then, and The Magnum 244 is built upon the foundation of these same rock-solid, field-proven features.

The color touch-screen control panel is easy to understand and has one of the widest viewing angles available on the market today. The large display makes it easy to see the feed rate, saw motor load and agitator motor load. Each of these is displayed in a bar graph and a numeric percentage format. The screen also includes pushbuttons for increasing or decreasing manual feed rate, breast in and out and the gin hood pressure switch values. There is also a true automatic mode that regulates the feed rate based on cotton conditions.

We are also pleased to let you know The American Society of Agricultural and Biological Engineers (ASABE) announced that Cherokee Fabrication has won an AE50 award for the Magnum 244 Gin Stand. It was deemed one of the year's most innovative designs and is featured in the January/February 2013 special AE50 issue of ASABE's *Resource* magazine.

Conveyor Distributor and Overflow

Also new for Cherokee is a 20" diameter conveyor distributor with no overflow hopper at the end, so that all of the cotton overflow drops into the module feeder hopper as seen in Figure 8. This arrangement provides a much simpler plant layout and eliminates the need for a traditional overflow hopper, vacuum wheel, diverter valve, elevator fan, separator, and cyclone. Each of these machines would have otherwise required ductwork, steel supports, motors, starters, wiring, controls, and installation labor.

Figure 8. Conveyor Distributor at Bogue Chitto Gin in Macon, MS.

Burners and Moisture Restoration Unit

Gas–fired burners in various sizes have been manufactured in whole or in part by Cherokee for some time, but this marks the first year all of the burners and controls, plus the new Cherokee Big Ten Moisture Unit were manufactured entirely in-house. The Big Ten Moisture Unit works in conjunction with the Cherokee Cirrus Cotton Conditioner to add moisture back to the lint prior to baling.

Figure 9. Cherokee Big Ten Moisture Unit.

Final Trash Fiber Reclaimer

Cherokee has offered an inclined, spiked cylinder mote cleaner for several years, but this year a double extractor Final Trash Fiber Reclaimer has been added to the product line to help clean and salvage fiber for use in mote bales. Both or either one of the extractor saws can be bypassed as desired. A complete final trash reclaimer stack-up can be seen in Figure 10.

Figure 10. Final Trash Fiber Reclaimer.

Summary

At Cherokee, we strive to expand our product line and make improvements to existing machines each year. The final goal is to provide complete ginning solutions for customers who want to make small changes to their gin, all the way up to customers who want one-stop shopping for a new turn-key gin plant.