Conveying Wood Ash at Georgia Pacific Dimensional Lumber Mill in Pineland, TX

General Description of the Application

Georgia Pacific in Pineland, TX is a dimensional lumber mill that produces structural lumber such as two-by-fours and two-by-sixes that are used for commercial and residential construction. The Pineland mill has been in existence since 1910 and was purchased by Georgia Pacific from Temple Inland in 2013.

Wood waste in the form of wood chips, shavings and sawdust is a byproduct of the lumber making process. Georgia Pacific utilizes the wood waste to fuel boilers for generation of electricity to power plant operations. After the fuel is burned, wood ash is produced and must be conveyed to a collection area where it is sold as an additive to be used in road construction. The ash is very abrasive and the existing Ash Pit Screw Conveyor wore out every 9 to 12 months, requiring constant maintenance and replacement. Working with Motion Industries and Georgia Pacific, KWS provided a cost-effective, long-term solution to the problems with the existing Ash Pit Screw Conveyor.

Design Parameters of Application

Product Type: Wood Ash
Material Density: 40 to 50 Lbs. per Cubic Foot
Conveyor System Capacity: 645 Cubic Feet per Hour
Moisture Content: 60 to 70-Percent Dry
Duty: 16 Hours per Day, 6 Days per Week

Advantages Provided by KWS

A team of engineers from Motion Industries and KWS visited the Pineland mill and met with the Georgia Pacific Maintenance Planner to review the application and determine the exact needs of the plant. While onsite, the team gathered dimensional information on the existing equipment to determine solutions and recommend a new design which would handle current requirements while providing additional reliability for the conveyor. KWS tested multiple material samples of the ash to determine accurate bulk densities and flow characteristics. Based on all the information gathered, KWS was able to perform calculations and redesign the Ash Pit Screw Conveyor.

Special Features of KWS Design

The existing Ash Pit Screw Conveyor was not designed for the harsh application. Based on material testing and new calculations, KWS designed the new replacement screw with 3/8-inch thick abrasion resistant AR-400 flights continuously welded on the carrying side of a heavy wall center pipe. AR-400 is a special abrasion resistant steel that is much harder and tougher than standard mild steel and typically outlasts mild steel by a factor of 10-to-1. By continuously welding the flights to the center pipe, the flights will not fatigue and break away from the center pipe under upset conditions. The existing screw conveyor trough was also wearing out prematurely due to the abrasiveness of the ash. KWS replaced the existing trough with a 3/16-inch thick trough with a ¼-inch thick AR-400 liner. The new KWS design was first installed in 2011 and lasted over 5 years before the replacement components were installed in late October, 2016. The cost savings to Georgia Pacific was and continues to be significant.

Design Engineering Manufacturing

KWS Manufacturing
3041 Conveyor Drive
Burleson, Texas 76028

Toll Free: (800) 543-6558
Phone: (817) 295-2247
Fax: (817) 447-8528

www.kwsmfg.com