

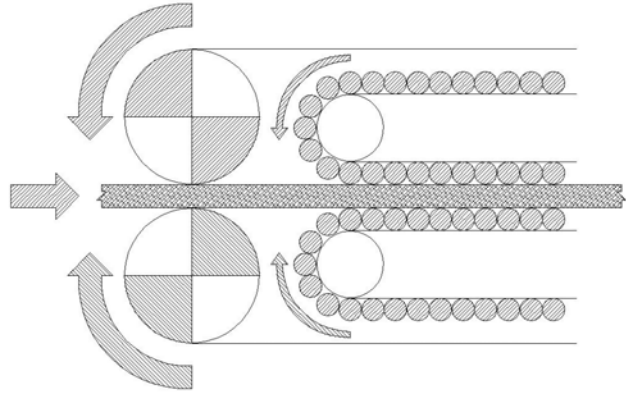
Application: Acoustic Board Plant

Data

Environment : Indoor, temperature: 170° F (76.66° C), high humidity
Product on belt: Shredded aspen wood with a mixture of sulphite, oxide, and salt water

Process description:

A layer off fine strands of shredded aspen wood is fed into the system. This is saturated with a mixture of sulphite, oxide, and salt water. Then the mixture runs between a top and a bottom press belt inside an oven at 170° F (76.66° C). The press belts are sandwiched between heavy steel rolls that apply 2000 lbs/inch² (140.61 kg/cm²) of pressure on the material.



The bottom belt is mechanically tracked while the upper belt is tracked with the aid of an air actuated automatic tracking device. This cocks one end of the pulley forward or back as the belt makes contact with a limit switch on each side of the belt.

Belt requirements:

Heat resistance:

The temperature in the oven is approximately 170° F (76.66° C).

Chemical resistance:

The shredded wood gets sprayed with a mixture that contains sulphite, salt water and oxide.

Release:

The belts must release the product well at the end of the forming process.

Issue:

The process is running 8 hours a day, 5 days a week. When the process is not running, the oven stays at 160° F (71.1° C). Therefore a belt can only be replaced during the shut down period around Christmas. The customer's requirement is the belt must last 2 years in application.

Previous Belt Problem:

5-ply Black Nitrile Cover by Friction

The manufacturer was experiencing belt width shrinkage of about one inch over time; there were also tracking problems. This began to affect product quality, causing boards to finish narrow, reducing yield and increasing scrap. Approximately 70% of the belt width loss was due to compound shrinkage, and 30% due to edge wear when the belt mis-tracked. Also, when the belts were not running they became stiff and very brittle. These problems produced an effective service life for the belts of 18 months, six months less than desired. In addition, the belts required treatment with an expensive coating to achieve the desired release of the product.

Solution:

Chemprene 5-ply Black Butyl Cover by Cover

The belt width has only shrunk by ¼” (12.7mm), which is within tolerance. There is no loss of product. The Chemprene Butyl belt takes the temperature better, does not become stiff, and has good release properties without a special coating. A full two years of productive use is considered assured; three years is considered likely.

Belt Replacement Cost Savings Analysis:			
<i>5-ply Black Butyl Cover by Cover</i>		<i>5-ply Black Nitrile Cover by Friction</i>	
Lifetime	: 3 years	Lifetime	: 2 years
Belt cost	: \$80,000	Belt cost	: \$80,000
Installation costs	: \$ 2,000	Coating costs	: \$ 1,000
Installation labor*	: <u>\$ 1,680+</u>	Installation costs	: \$ 2,000
Total Cost (3 years)	: <u>\$83,680</u>	Installation labor*	: <u>\$ 1,680+</u>
Total Cost (1 year)	: <u>\$27,893</u>	Total Cost (2 years)	: <u>\$84,680</u>
= Yearly Savings	: \$14,447	Total Cost (1 year)	: <u>\$41,580</u>

*Replacing a belt requires 6 employees working one full day of 8 hours.

Details:

Minimum pulley diameter : 30” (762mm)
 Center to center distance : 85’ (25.91m)
 Belt width : 99” (2514.6mm)
 Speed : 21’/min (6.4m/min)
 Splice : Hot glue vulcanized step.
 Support : Pressure rollers

Remark:

In this application there are no special standards required, the belts do not incline nor decline, have no knife edges, no crowning, no reverse bends, no scrapers, and are not troughed.

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