

Headbox Audit Helps to Improve Formation & Reduce Refining Energy.

Machine: 2-ply TAD machine
Grade: Towel

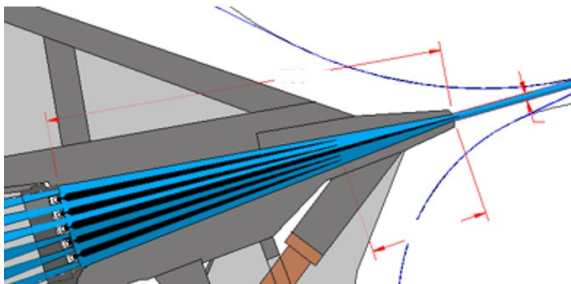
Opportunity

Customer desired an improvement in formation and the current headbox sheets were cracking/breaking at the tips. The existing arrangement included a divider headbox sheet that was extending through the slice lip opening.

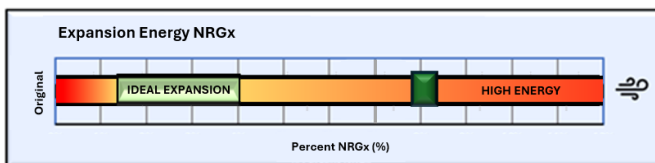
BTG's Approach

After reviewing what had been done to date with minimal success, BTG recommended conducting a headbox energy audit (NRGx). A headbox that does not have its energy properly balanced can result in poor formation, pinholes and high variability in the finished product.

The BTG engineer collected the necessary information about the mills process and current headbox sheet arrangement and set-up. Figure below shows the original sheet set-up.



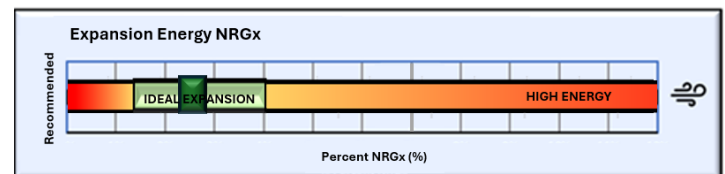
Analysis of the data revealed the headbox energy was too high for the grades being produced as seen below.



BTG's Recommended Solution

Poor formation is often caused by the expansion energy in the jet being too high. Higher expansion rates cause increased turbulence in the jet as it leaves the headbox and impinges on the wire. High expansion energy in tissue operations can also contribute to pinholes and poor layer purity / ply integrity.

The recommended arrangement, which generates a lower expansion energy, improved the formation and allowed the mill to lower the jet-to-wire ratio. This reduced fan pump energy consumption and improved bonding efficiency enough to reduce refining while maintaining tensile targets. The expansion rate of the recommended set can be seen below. This new headbox arrangement lowered the turbulence in the nozzle resolving the sheet tip breakage issue.



Financial Benefit

The change in headbox sheet design improved the overall sheet formation, reduced jet-to-wire ratio, and reduced refining energy for a cost benefit of more than \$50,000USD/year.

If you would like to verify if your headbox sheet arrangement is optimum for your process, please feel free to contact your local BTG account manager or NRGx@BTG.com