

## Headbox Audit Helps Improve STFI & Reduce Basis Weight

Machine: 2 Ply Linerboard  
Grade: 35# Linerboard (100% OCC)

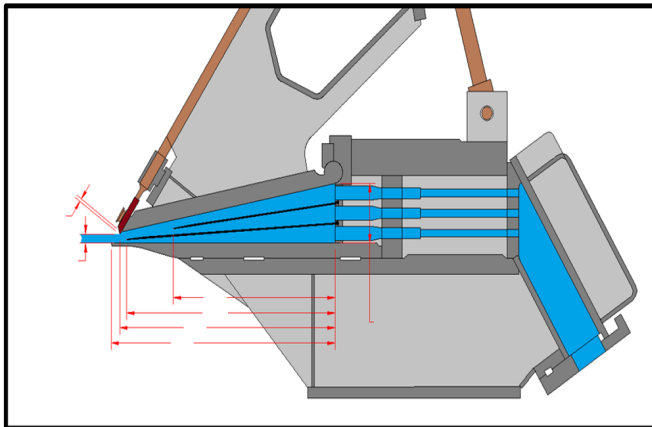
### Opportunity

Customer desired to improve cross directional strength (STFI) tests. Machine regularly ran 1-2lb over target basis weight to achieve required STFI results.

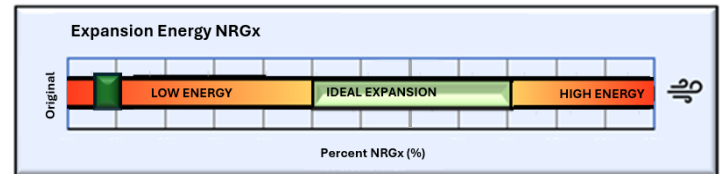
### BTG's Approach

After reviewing what had been done to date with minimal success, BTG recommended conducting a headbox energy audit. A headbox that does not have a tailored headbox sheet arrangement may struggle to achieve strength properties due to ineffective fiber orientation.

The BTG engineer collected the necessary information about the mill's process and original headbox sheet arrangement and set-up. The figure below shows the original sheet arrangement.



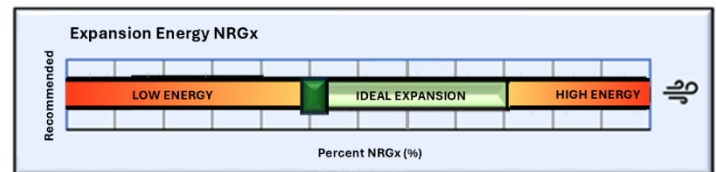
An analysis of the data revealed the headbox energy was too low for the grades being produced. The following graph shows how the expansion rate of the original arrangement compares to the "ideal" range generally seen on similar linerboard machines.



### BTG's Recommended Solution

The solution proposed was to increase the energy in the base ply headbox with a different sheet configuration. Typically, linerboard operations run best in a higher expansion energy range in order to generate enough turbulence to create good bonding on the former.

The recommended arrangement provided visual improvement to stock turbulence on the former and generated the desired CD strength properties needed to reduce the basis weight back to target levels.



### Financial Benefit

The change in headbox sheet design generated a CD strength increase such that the mill could reduce basis weight and was thus able to save 250-300 tons of fiber per month. This strength was generated by increasing the turbulence out of the headbox nozzle, allowing for a higher degree of fiber mixing on the former. This equates to a cost savings of \$400,000USD/year.

*If you would like to verify if your headbox sheet arrangement is optimized for your process, please feel free to contact your local BTG account manager or [NRGx@BTG.com](mailto:NRGx@BTG.com).*