

## Headbox Audit Helps Improve STFI 10%, Reduces Basis Weight

Machine: 2 Ply Linerboard  
Grade: 35# Linerboard

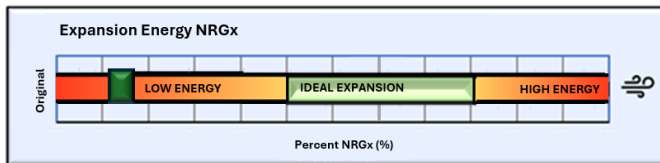
### Opportunity

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

### 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 a tailored headbox sheet arrangement may struggle to achieve strength properties due to ineffective fiber orientation.

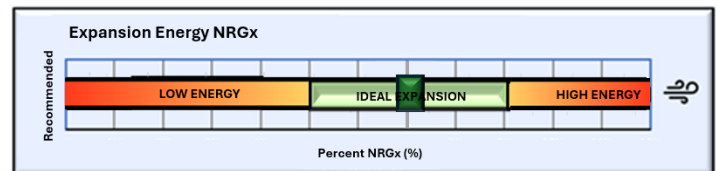
The BTG engineer collected the necessary information about the mill's process and current headbox sheet arrangement and set-up. The figures below show the expansion energy of the original headbox sheet arrangement and the lack of activity on the former. The reference points to other machines producing Liner grades are shown as the "ideal expansion" zone in the chart.



An analysis of the data revealed the headbox energy was too low for the grades being produced.

### BTG's Recommended Solution

The solution proposed was to increase the energy with a different sheet configuration. Typically liner grades produce the best paper properties when operating at higher expansion energy ratios. The image below shows the increase in turbulence on the former with the change in headbox sheet arrangement. The graph also shows the expansion rate of the recommended set.



### Financial Benefit

The change in headbox sheet design generated a 10% increase in STFI and resulted in 0.5-1lb of basis weight reduction, refining energy reduction, and allowed the machine to speed up 50 fpm. This resulted in a financial impact of more than \$75,000/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)*