

Headbox Audit Helps Improve Product Uniformity While Reducing Fan Pump Load by 20%

Machine: 1-ply Twin Wire Dry Crepe
Grade: Facial / Toilet

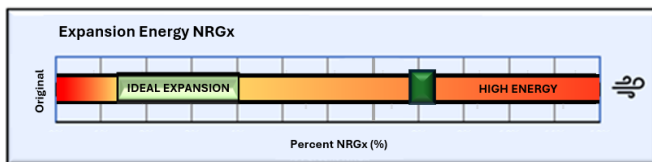
Opportunity

Customer desired an improvement in formation to improve the appearance of pinholes and uniformity of strength tests in the finished sheet. Wet-end optimization and Yankee coating adjustments were unable to deliver improvements.

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 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. The graph below shows how the expansion rate of the original arrangement compares to the "ideal" range generally seen on similar tissue machines.

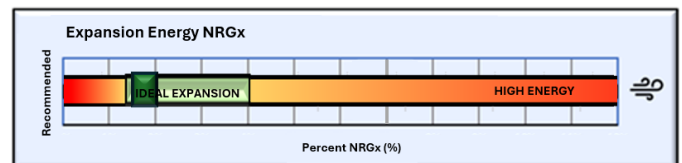


Analysis of the data revealed the headbox energy was too high for the grades being produced. The original design was generating very high expansion energy, which can have a substantial negative impact on formation and specifically on pinhole generation.

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 formation to the point that the mill was able to close back the slice opening, reducing fan pump energy load by 20%. The improvement in formation also helped generate a more consistent strength profile across the sheet. The below graph shows the expansion energy level with the recommended arrangement.



Financial Benefit

The change in headbox sheet design generated a 20% reduction in fan pump load, improved sheet formation and reduced product variability. This resulted in savings of more than 200,000 EUR/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