

AFT Case Study

FB6

FINEBAR®:

- **Improved NSSC Pulp Quality**
- **Improved Energy Efficiency**

AFT Finebar plates represent a breakthrough in low consistency refiner plate technology. An innovative, patented technology is used to create significantly finer patterns than conventionally manufactured refiner plates - with exceptional strength and durability. Proven benefits in pulp quality, energy savings and plate life have been achieved for a wide range of fiber types and pulping processes.

This technology was applied to NSSC operations where AFT Finebar plates provided 2-3 times more total bar edge length compared to standard cast plates. As a result of the lower intensity refining, the mill achieved 30-40% energy savings to a strength target along with equal to or better shive reduction. This gave them the flexibility of saving energy to achieve current quality targets or increasing strength development and shive reduction at current applied energy levels.



The Background

Key quality parameters for NSSC pulp include Concora, CFC and STFI for product performance, as well as stretch and breaking length for machine runnability. Development of these properties requires generating a high degree of fiber bonding during refining.

In refining NSSC for corrugating medium grades, mills have traditionally used relatively coarse plate patterns which result in refining intensities of 1.5 to 3.0 Ws/m. It is often considered difficult to apply lower refining intensities because of the high yield and variable shive content of this type of pulp.

AFT Finebar® is capable of utilizing much finer patterns and applying lower refining intensities as a result of our materials and manufacturing technology. Our computerized design and custom manufacturing allows us to easily design to a bar/groove geometry that creates a gentle refining action while accommodating the challenges unique to each application.



The Solution

In recent mill trials we have been able to apply our technology in NSSC operations where we increased the total bar edge length by 2-3 times compared with standard cast plates. These pattern changes significantly reduced the refining intensity to a range of 1.0-1.5 Ws/m, which we believe is a more optimum intensity range.

Pulp samples were collected over an extended period before and after the installation of the AFT Finebar® plates. The samples were tested at an independent lab to assess the impact of lower intensity refining on strength development.

The Benefits

The test results demonstrated that the mill achieved significant quality improvements and energy savings with lower intensity refining. These benefits are illustrated in figures 1 through 4 and summarized below:

- 30-40% energy savings to a strength target (incl. Concora, STFI and breaking length)
- Higher stretch at an energy input which leads to better machine runnability
- Flexibility to increase strength when needed for more demanding grades
- Equal to or better shive reduction relative to that achieved with cast plates.

In summary, lower intensity refining has provided the mill with the option of saving energy to achieve current quality targets or achieving increased strength development and shive reduction at current applied energy levels.

Figure 1
Concora vs. Energy

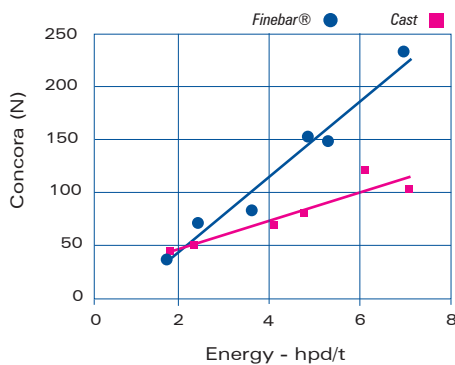


Figure 2
STFI vs. Energy

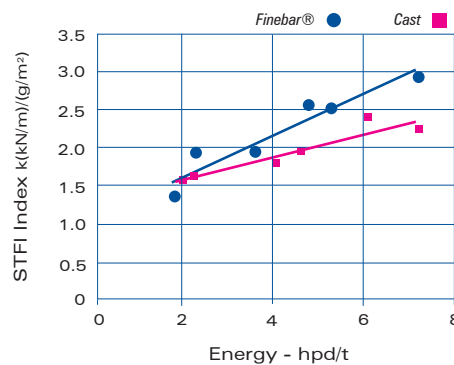


Figure 3
Breaking Length vs. Energy

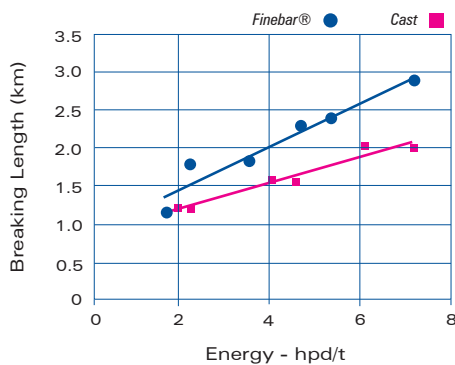


Figure 4
Stretch vs. Energy

