

AFT Case Study

FB1

- **Improved Pulp Quality**
- **Increased Plate Life Time**

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.

FINEBAR® refiner plates were supplied for a subject mill to enable conversion of a multi disc refiner to a double disc refiner without compromising the refining intensity. This led to significant cost savings in plate replacement costs. Competitive trials against cast refiner plates demonstrated clear benefits in both quality and energy requirements of the FINEBAR® plates. Additionally, plate life with the FINEBAR® plates was approximately doubled.



The Background

The subject mill is a southern U.S. integrated mill producing various grades of high quality printing and writing papers. The mill has two paper machines with a total capacity of 600,000 MTPY and a basis weight of papers ranging from 132 to 229 g/m2.

The mill was operating with three 38” Multi-disk refiners on their hardwood pulp. The multi-disk refiners were selected to provide very low refining intensity, which is required from an energy and quality standpoint for optimization of hardwood refining. Multi-disk plate life was very poor, averaging approximately two months per plate change, leading to excessive refiner plate replacement costs. Achieving the required intensity and plate life with traditional cast refiner plates was not possible

The Solution

Using the unique FINEBAR® manufacturing technology, ultra low intensity refiner plate patterns were supplied, which allowed the three Multi-disk refiners to be converted to double disk refiners while achieving the same refiner performance. The amount of refiner plates required was reduced from 12 disks to 4 disks with no compromise in pulp quality. The combination of ultra low intensity refining coupled with aerospace purity 17-4 PH material resulted in a significant increase in refiner plate life.

Subsequently, the mill decided to evaluate “best available cast technology” versus FINEBAR® plates. Side-by-side trials were conducted with cast and FINEBAR® plates in two parallel refiners. Results showed significant benefits to both quality and energy requirements with the FINEBAR® plates. Additionally, plate life with the FINEBAR® plates was approximately doubled.

The Benefits

Evaluations of the cast refiner plates with FINEBAR® plates resulted in significant benefits for both quality and energy. Additionally, plate life with the FINEBAR® plates was approximately doubled.

Attached are two graphs and a table comparing quality characteristics of the pulp with FINEBAR® plates versus their cast counterparts.

Property	Change %
Bulk	+2%
Breaking length	+9%
Tear resistance	+5%
Shrinkage	-9%
Curl	-16%
Gross energy	-13%
Plate life	+100%

