

BIO-ORGANIC CATALYST
THE POWER IN NATURE®

Fiber-Cat™

An environmentally sustainable solution for pulp and paper companies looking to reduce biocides, lower costs, and improve quality.

Overview

Fiber-Cat™ is a bio-catalytic water treatment agent that transforms the traditional chemistry model in the manufacture of paper-based products.



How we differ

Fiber-Cat™ provides a sustainable alternative to the use of harmful biocides while reducing overall costs, improving paper quality, and reducing the formation of organic compounds such as stickies.



Benefits

Fiber-Cat™ substantially reduces the time it takes to breakdown pulp and paper while removing biocides from the equation.

- Completely replace biocides.
- Accelerate the disintegration of pulp from 45 minutes to approximately 7-12 minutes.
- Produce a better quality of paper.
- Eliminate any holes & stickies in production.
- Lower energy costs.
- Clean and maintain the machinery itself in the process.
- Proven and used in mills throughout Mexico and South America.



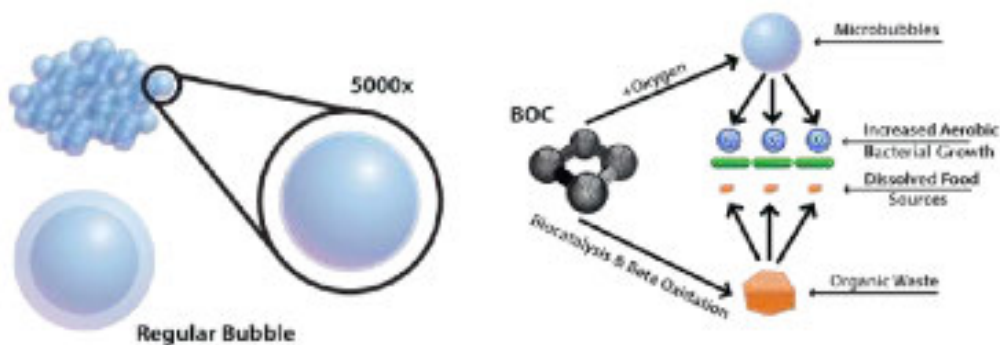


How our technology works

Creation of Bio-Organic Catalysts

Fiber-Cat™ is a highly dense nutrient fermentation composition, blended with surface modifying components, in a very powerful liquid concentrate. Fiber-Cat forms ultra-fine micro-bubbles in water that act as the physical platform for accelerated chemical and biological reactions. These negatively charged micro-bubbles attach themselves to the microbial structures of biofilms, and organic components such as stickies, effecting a rapid disintegration. The agitation action within the process water activates the Fiber-Cat™ micro-bubbles, continually generating their formation as they catalytically dissolve all organic elements adhering to surfaces.

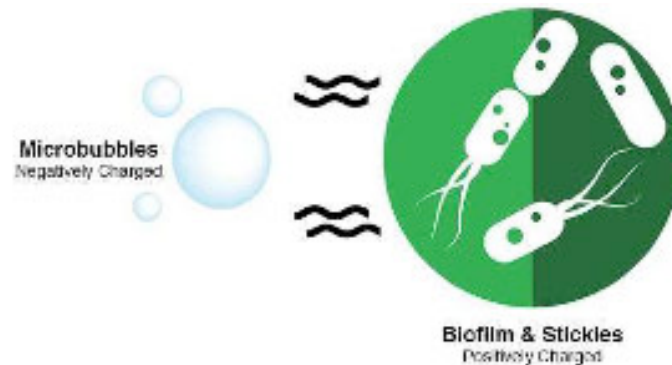
When these micro-bubbles are introduced into a water or sprayed onto organic material, there is an immediate oxygen transfer that occurs which allows them to break molecular long-chain bonds.



Mechanism of Action

Our micro-bubbles are negatively charged and are attracted to positively charged slime layers (biofilm) and stickies. Our surfactant provides a wetting action across membrane hydrophobic barriers of the slime and stickies, thereby dissolving their structures. Due to higher aerobic conditions in the water formed by our microbubbles:

- Water quality is improved,
- Wastewater quality is improved,
- Treatment is improved.



Degradation of Stickies

Fiber-Cat™ offers a strong degradation action on gums and stickies. Additionally, the fine micro-bubbles produced by Fiber-Cat™ will help maintain higher dissolved oxygen and aerobic conditions within the process water. Paper produced with Fiber-Cat™ has shown a whiter and brighter appearance as well as improved softness.



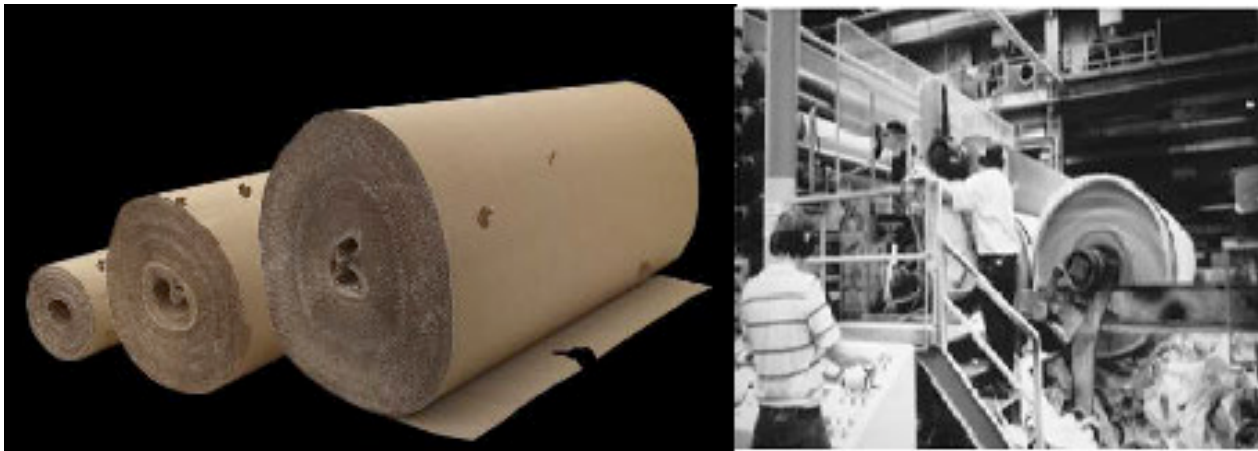
Microbiological Control

Fiber-Cat's™ revolutionary mechanism of action dissolves the molecular structure of organic biofilms and slime formations, allowing a substantial reduction, or elimination, of toxic biocide chemicals. This shifts the entire management requirements of machine maintenance. Substantial cost savings are obtained, water and environmental quality is improved, and worker safety is enhanced.



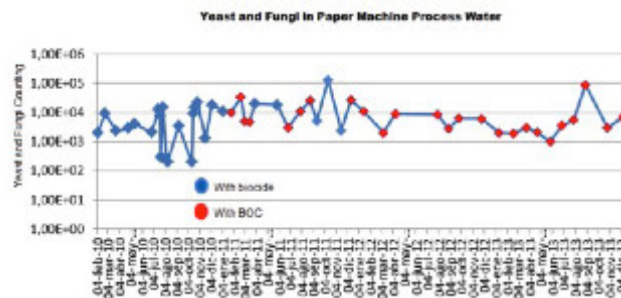
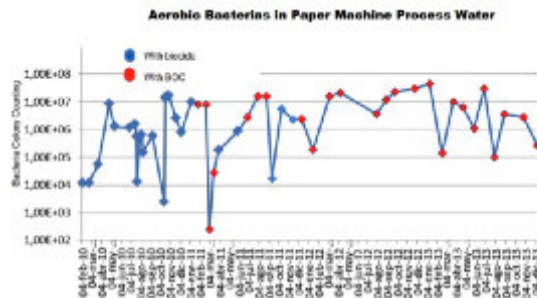
Operational Costs Savings

Fiber-Cat™'s ability to transform the inherent characteristics of the process water used throughout the manufacturing of paper and board products benefits all aspects of the production cycle. Studies have shown the virtual elimination of micro-imperfections in tissue production. Downtimes are substantially reduced, dangerous chemical solvents are eliminated, processing speeds are increased and maintenance costs contained.



Improved Water Quality

Microbiological water testing shows that Fiber-Cat™ meets, or exceeds, the microbial water quality control of toxic biocide use. By shifting the microbial control model from the killing of various microbial strains, Fiber-Cat™ eliminates the underlying formation of microbial colonies on surfaces, resulting in greatly enhanced water quality over time. The downstream treatment of wastewater discharges are substantially benefitted, with corresponding cost reductions in the treatment phase, and enhancements in discharge quality.



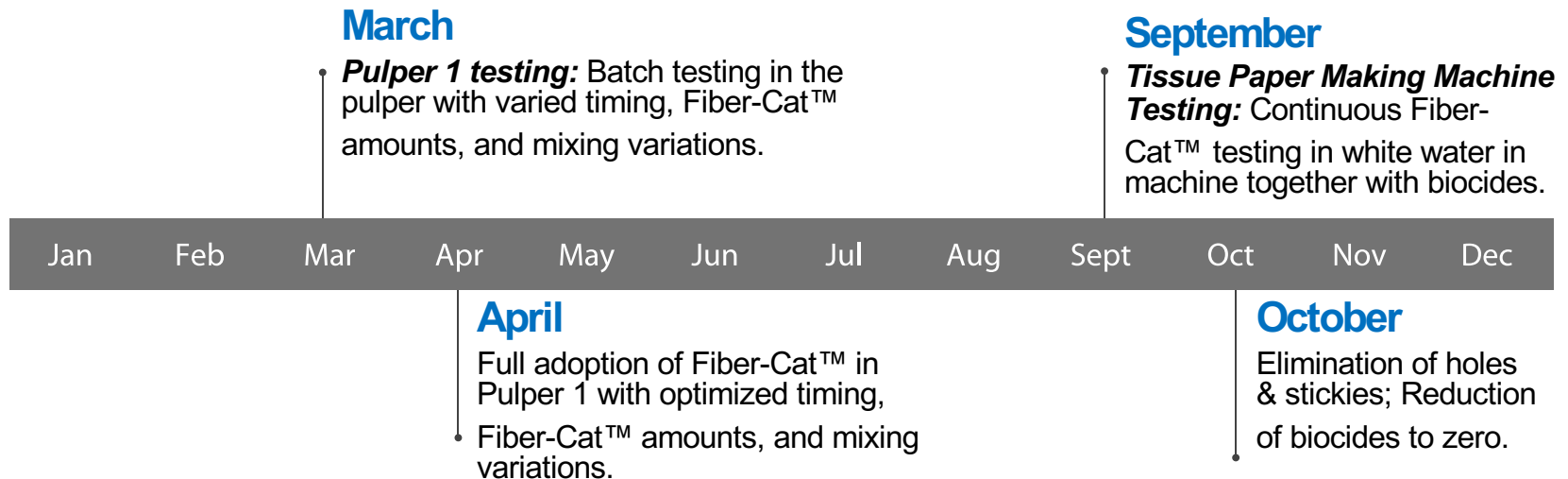
Aerobic bacteria, yeast and fungi counts in process water from a paper machine producing test liner and corrugating medium (100% recycled fiber material) when normal biocide and BOC was added.



Case Studies

Example Testing Period at Tissue Plant

Testing periods were broken down into 2 one month tests:
Pulper 1 testing and Tissue Paper Making Machine testing



Results and Conclusion (Part 1)

Quality of Disaggregation: From the samples, it is observed that at 7 minutes the additive could disaggregate the Atmos (recycled) paper with Wet Strength using 150 mL of additive as shown in Figure 1.

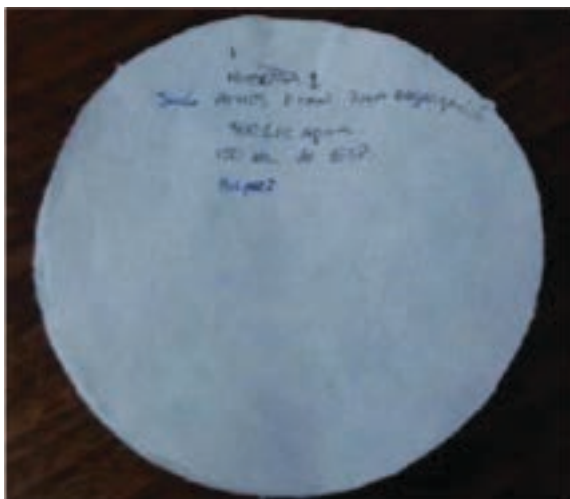


Figure 1:
Disintegrated Atmos (recycled)
paper sample in 7 minutes.

Results and Conclusion (Part 2)

Figure 2 shows the quality of paper after passing through the disperser without paste tablets to maintain quality.

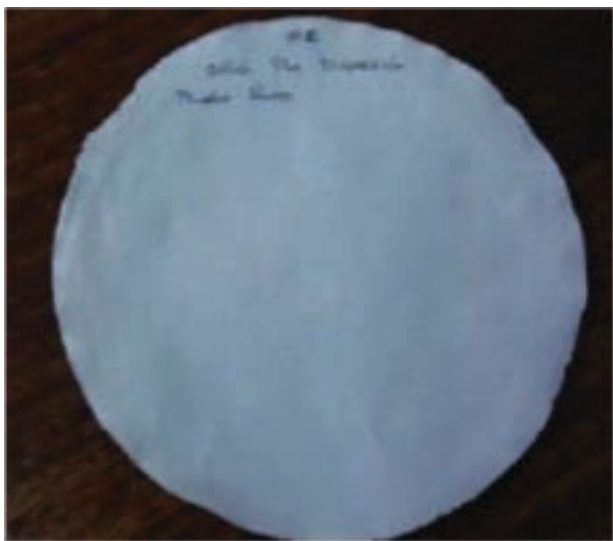


Figure 2:

It is observed that the final load after passing through the disperser does not have paste tablets maintaining the quality. Sample of fiber after passing through disperser

Costs and Consumption

It is observed that in the test, 150 mL of Fiber-Cat™ was discharged for a load of 3,500 kg to disaggregate the Wet Strength blanket for an annual production of approx. 100,000 tons.

Additive	Load Additive in Pulper (mL)/Ton	Specific (grams/ton) of paper	% of Treatment Cost Reduction Over Current Cost Per Ton
Fiber-Cat	150	13,15	> 80 %

Results on Treating Discharges

Testing at Suchonskiy Pulp & Paper Mill, City of Sokol, Vologda Region, Russia. COD was used as an indicator for determining the effectiveness of the BOC products. A dose of BOC product = 100 mL per 1 ton of pulp. The obtained data are provided in the table:

Water treated	Initial water testing results			BOC product added into water	In 2 hours			In 24 hours		In 48 hours	
	pH	Suspended solids, mg/L	COD, mgO ₂ /L		pH	COD, mgO ₂ /L	% reduction in COD from the initial	COD, mgO ₂ /L	% reduction in COD from the initial	COD, mgO ₂ /L	% reduction in COD from the initial
Inlet to the fiber capture facility	6.6	257	1,532	ESP	6.62	1,068	30%	673	56%	713	53%
				Eco-Cat		678	56%	753	51%	634	59%
Paper production circulating water	6.79	2,803	2,418	ESP	6.75	806	67%	871	64%	1,109	54%
				Eco-Cat		967	60%	852	65%	634	74%
Inlet to dissolved air flotation trap of HFB plant	3.95	1,149	25,392	ESP	3.92	25,020	1.5%	24,753	3%	24,710	3%
				Eco-Cat		25,380	0%	25,347	0.2%	25,120	1%



Seal of Safety

The Bio-Organic Seal of Safety is our commitment to offering the highest bio-aquatic safety on the market today.