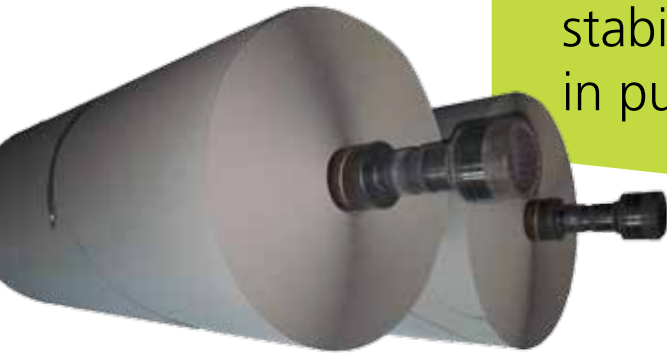


Novozymes BioRemove™ 1100

Improves effluent quality and plant stability through enhanced COD reduction in pulp and paper mill wastewater



Wastewater treatment plants in the pulp and paper industry have unique challenges due to the large volumes of water used and the high concentrations of organics resulting in the wastewater. Success or failure of the treatment process depends on the ability of microorganisms to tolerate often harsh conditions and to efficiently degrade COD prior to the final discharge.

BioRemove 1100: Specially selected microorganisms for pulp and paper COD reduction and black liquor tolerance

BioRemove 1100 is a unique COD reduction technology for the pulp and paper industry that also provides resistance to toxic shock loads, including black liquor spills. It is designed to target the wide variety of organics found in wastewater from pulp and paper, recycle, and specialty fiber mills.

The benefits of using BioRemove 1100

Lower operating costs

- Reduces permit violations
- Reduces surcharges

Improved plant efficiency

- Improves COD reduction in pulp and paper wastewater

Simplified operations

- Improves system stability
- Protects against black liquor spills

Novozymes is the world leader in bioinnovation. Together with customers across a broad array of industries we create tomorrow's industrial biosolutions, improving our customers' business and the use of our planet's resources.

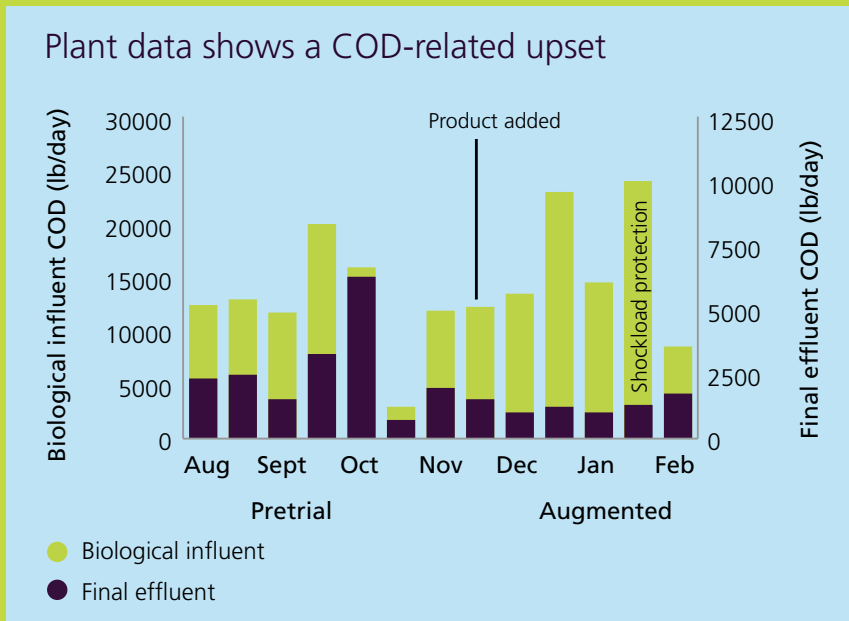


Fig. 1. While using Novozymes BioRemove™ 1100, the plant remained stable during heavy loading in December and January.

		Influent COD	Final COD
Pretrial without BioRemove™ 1100	Average	11,791	3,077
	Standard deviation	2,241	1,020
With BioRemove 1100	Average	10,505	1,959
	Standard deviation	3,707	534

Table 1. Demonstration of reduced effluent COD and stability enhancement at a 1.8-MGD (7,000 m³/day) pulp and paper mill. During treatment, the final effluent variability decreased by 48% while the influent variability increased by 65%. At the same time, the average COD loading in the final effluent decreased by 36%.

Enhancing your business is our business

Team up with Novozymes for innovative biosolutions to reduce costs, improve water quality, and capitalize on renewable energy opportunities. Unique products, experience with beneficial microorganisms and enzymes, and our commitment to improve our business are just three reasons to choose Novozymes as your bioinnovation partner.

For more information please visit www.novozymes.com

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