



**Water & Waste Management**

# **BG Max™ 3000**

**Food & Beverage**

Case study: Optimized brewery production by decreasing COD removal and improving water quality

A treatment with BG Max™ 3000 was initiated in a brewery to optimize the performance of the Wastewater Treatment Plant (WWTP).

## Benefits

- **Reduced the overall effluent COD indicator by 23%**
- **Decreased recovery time from shock loads by more than 30%**

## Background

A brewery experienced wastewater treatment issues when transitioning from low level production, to peak summer production periods. The plant sought to improve operations and contacted Novozymes for assistance.

## Application

Technical experts visited the site and evaluated the situation. It was recommended that BG Max™ 3000 be applied to the anaerobic reactor in order to increase reactor rate performance.

## Results

Although inlet COD load to the anaerobic reactor increased since dosage start-up date, in April, the reactor was not affected and removal rate increased. Also, as shown on the Figure 1, the amount of biogas increased from the beginning of April. The amount of COD (kg/day) removed in the anaerobic reactor increased between the first week of April and the beginning of July. Higher biogas production was expected during dosage period, but it was limited by lack of alkalinity in reactor.

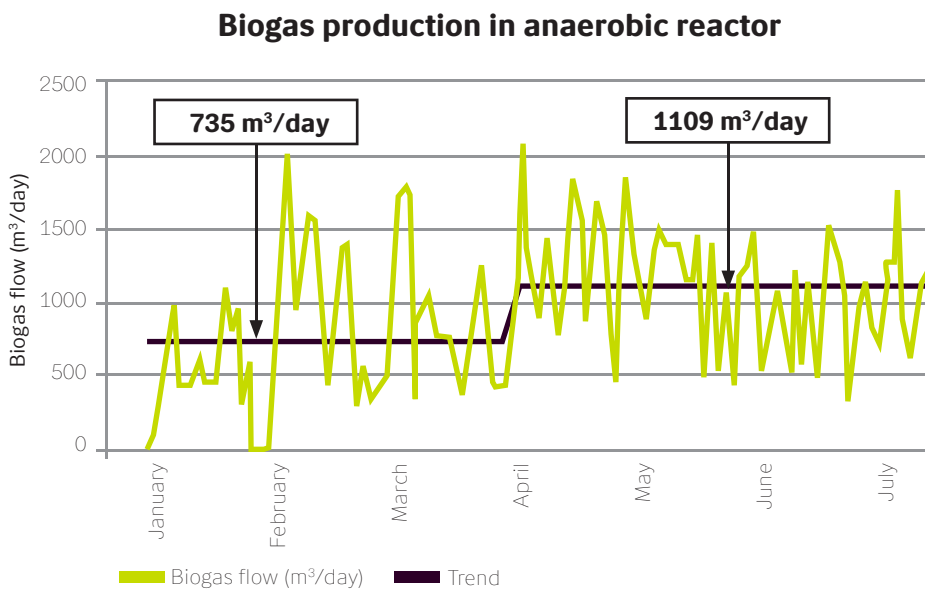


Fig. 1. The average Biogas flow increase from 735 m<sup>3</sup> to 1109 m<sup>3</sup>/day

The secondary aerobic stage also benefits from BG Max™ 3000 treatment. The treatment improved the COD discharge

water, decreasing the Month 5/6 average COD from 102 mg/L before the trial to 63 mg/L in after the trial.

### Discharge water COD - Before vs. after trial

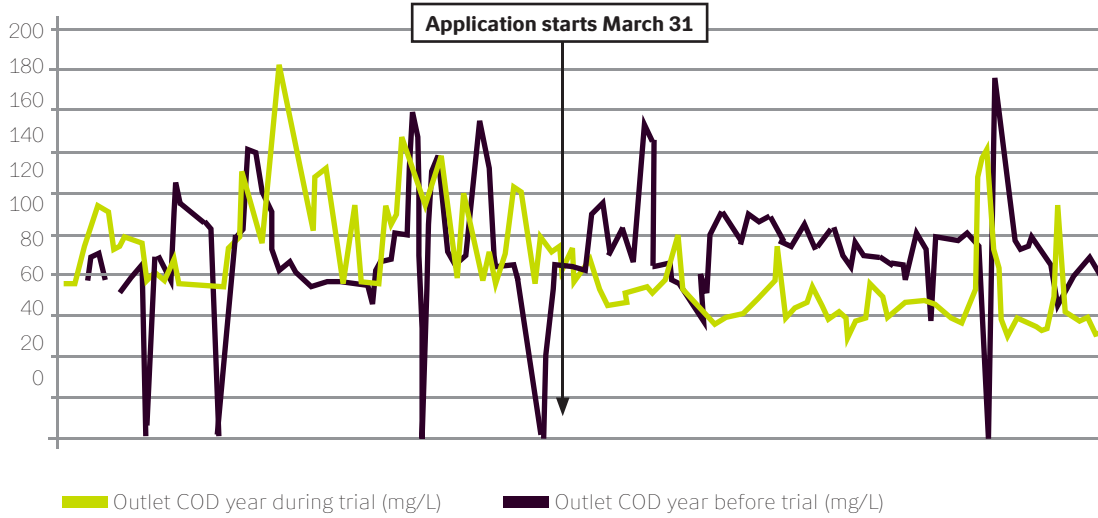


Fig. 2. The BG Max™ 3000 treatment improved the COD discharge water

### Discharge water TSS - Before vs. after trial

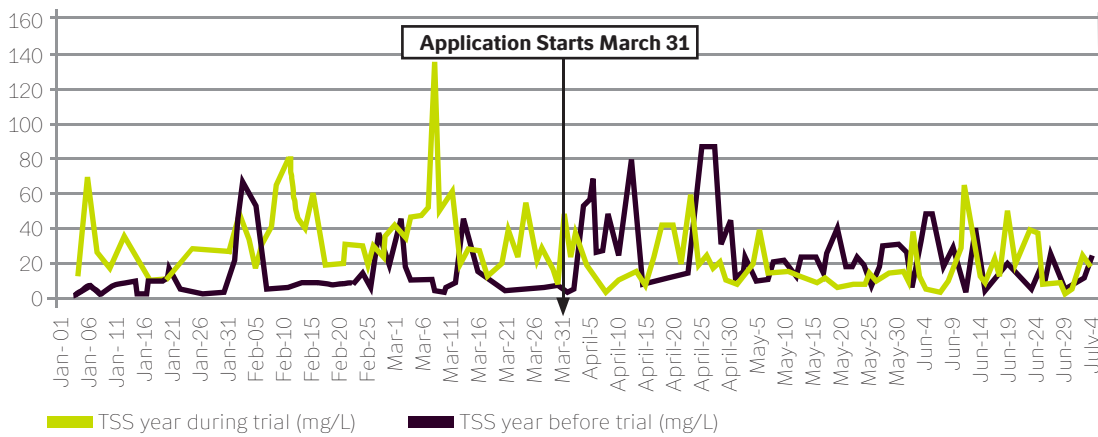


Fig. 3. The BG Max™ 3000 treatment has improved the TSS discharge

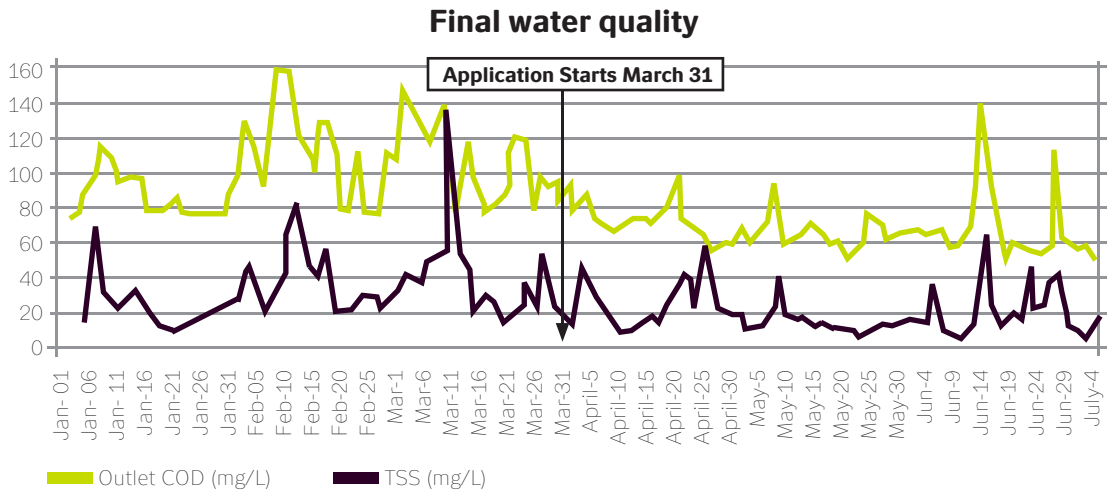


Fig. 4. COD and TSS ( mg/L) concentrations decreased in final discharged water

Before application of BG Max™ 3000 a slimy foam layer could be observed at the top of anaerobic reactor. On Day 36 of bioaugmentation treatment, visual

analysis of samples were taken from the anaerobic reactor; the slimy foam layer was no longer observed.



Fig. 3. Visual analysis of first and fifth tap anaerobic reactor samples on day 54.

## Discharge water quality

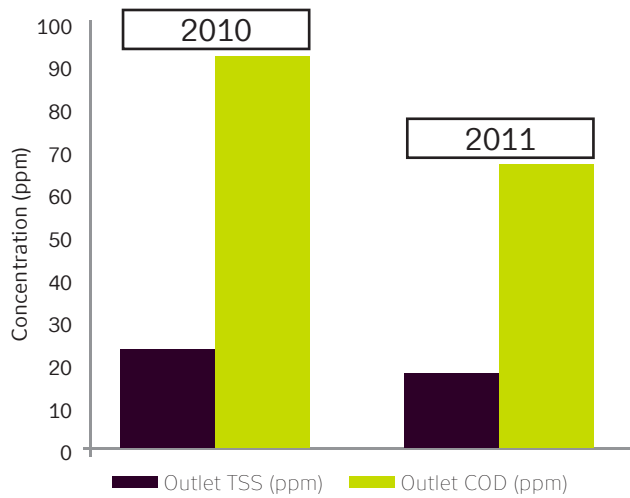
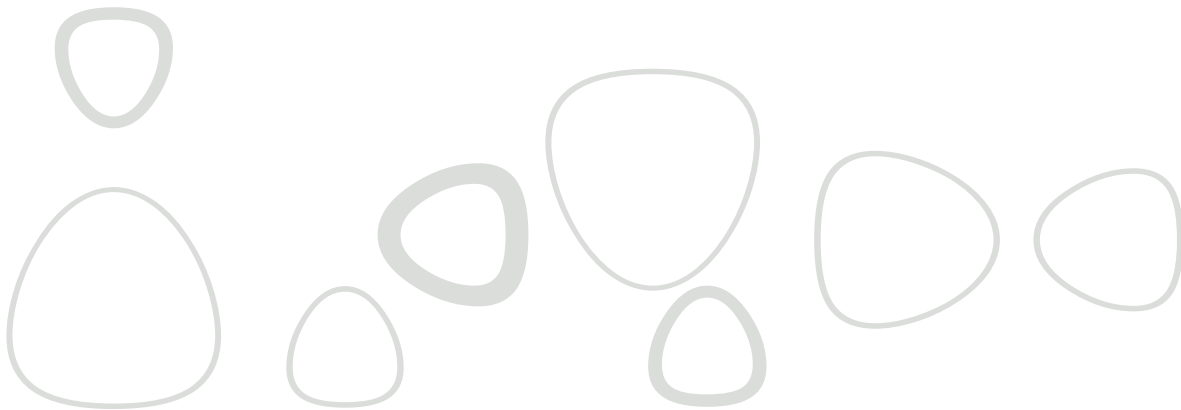


Fig. 5. The BG Max™ 3000 treatment improved discharge water quality

## Conclusion

By using BG Max™ 3000 the manufacturer was able to achieve its goals of improving water quality, increase biogas production and increasing COD removal with following associated benefits:.

- **Lower operating cost**
- **Simplified plant operations**
- **Improved plant efficiency**





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### About Novozymes

Novozymes is the world leader in biological solutions. Together with customers, partners and the global community, we improve industrial performance while preserving the planet's resources and helping to build better lives. As the world's largest provider of enzyme and microbial technologies, our bioinnovation enables higher agricultural yields, low-temperature washing, energy-efficient production, renewable fuel and many other benefits that we rely on today and in the future. We call it Rethink Tomorrow.

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