TREATING BREWERY WASTEWATER

<table>
<thead>
<tr>
<th>CLIENT:</th>
<th>The Coastal Brewing Company</th>
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<tbody>
<tr>
<td>LOCATION:</td>
<td>Australia</td>
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<tr>
<td>TREATMENT TYPE:</td>
<td>Brewery wastewater</td>
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<tr>
<td>CAPACITY:</td>
<td>3.5m³ per day</td>
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<tr>
<td>SYSTEM SIZE:</td>
<td>2 x BioGill Towers</td>
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**SITUATION**

Making beer is a water intensive process that generates wastewater high in nutrients, Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS). Given the nature of this high-strength wastewater, many breweries face discharge fees, with some even trucking wastewater offsite.

The Coastal Brewing Company, a brewery based in Forster, Australia, had to reduce BOD in its wastewater to below 600mg/L, in order to meet regulations from the local water authority. Co-founder and head brewer, David Black, wanted a wastewater treatment solution that was effective, affordable and simple to operate.

Another key factor was that as beer production volumes frequently change, the solution had to cope with fluctuating wastewater loads.

**SOLUTION**

In 2017, the brewery installed a treatment plant using two BioGill Towers to treat wastewater in excess of 4,000mg/L BOD₅ to below 600mg/L BOD₅.

The BioGill Towers use patented nano ceramic media, known as gills. These gills provide the ideal habitat for microorganisms to consume nutrients from the brewery wastewater. Microorganisms grow through the gills, feeding on the nutrients in the wastewater on one side and drawing oxygen from the opposite side, growing into a healthy treating biomass. This biomass can cope with flow fluctuations and absorb shock loads.

As the technology is modular and scalable, further BioGill Towers can be added as beer production increases. The system is designed to meet a future hydraulic capacity of 14m³/day, allowing for a fourfold increase in production.
To reach compliance, the effluent target was <600mg/L BOD. Over a three-month sampling regime (September – November 2017), the BioGill wastewater treatment system recorded 100% compliance. Designed for an influent of >4000mg/L BOD, the sampling results showed an effluent average of 249mg/L BOD with the best recorded reduction at 26mg/L BOD.

The wastewater first passes through initial settling and a screening process to remove particles larger than 1mm, such as grain and fibre from the hops. The wastewater then moves into an equalization tank where pH is corrected. It is then pumped to the top of the first BioGill Tower where a recirculation tank then passes it through to the second BioGill Tower stage. Wastewater is dispersed over the top and gravity fed down through the gills. Due to discharge requirements from the local water authority, a tank collects the treated wastewater, until it can be discharged to the sewer at specified times (often overnight when other demand on the sewer system is low).

Two BioGill Towers were installed as part of the wastewater treatment plant.

For further information please contact:

**AMERICAS**  infoamericas@biogill.com

**APAC**  infoapac@biogill.com

**CHINA**  infochina@biogill.com

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