

CITADEL ENVIRONMENTAL SOLUTIONS


Citadel
BIOCAT⁺2

BAY TREE FOOD COMPANY EFFLUENT TREATMENT CASE STUDY

Objective:

To explore whether introducing BioCat+2™ would result in reductions of COD and TSS values. Additionally, it would be desirable if the pH values could be encouraged to be more stable and nearer to the minimum consent of 5.5.

It was hoped that this would have the effect of reducing Bay Tree Food Company's trade effluent charges and use of caustic (Causdeta).

Background:

Ecoton Limited were contacted by Bay Tree Food Company, a manufacture of jams, marmalades and chutneys, as there were problems on site with high COD values and low values of pH. The effluent sample data supplied by the utility company, South West Water (SWW), showed that spot samples taken during the preceding 12 months averaged 5369mg/l for COD and a Suspended Solids (SS) average of 140 mg/l.

Bay Tree's main production is Monday to Thursday and occasionally on Fridays. There is little or no flow from Thursday evening to Monday early morning. The effluent from the factory is collected in an interceptor fat trap and flows from there, by gravity, to the SWW treatment works. Bay Tree Food Company had previously put measures in place to remove the larger solids away from the effluent stream and are currently monitoring and correcting pH (by adding caustic).

Method:

A suitable location, upstream of the interceptor, was identified and an Ecoton dosing unit was fitted to dose BioCat+2™ into the system. It is thought that the total retention time in the system is around 6 hours. Test samples were collected prior to the installation to assess COD levels and bacteria Colony Forming Units (CFU). CFU assessment showed 10^3 .

Target (KPIs):

To increase the number of CFU, reduce COD values by 25% and reduce the requirement for adding caustic, to be monitored by site.

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BIOCAT+2™ DOSING START DATE - 27th APRIL 2018
BAY TREE FOOD COMPANY SAMPLE TEST RESULTS

	COD mg/l
1 SWW average 01/03/17- 09/01/18	5725 Calculated ave. Max and min removed
2 SAMPLE COLLECTED 30/05/18	6870 Spot NRM test
3 SAMPLE COLLECTED 06/08/18	4450 Spot NRM test

So effectively the COD values reduced by 35% from the sample taken at the end of May to the sample taken in August.

SOUTH WEST WATER TEST RESULTS

DATE	COD mg/l	pH
09/05/18*	13540	5.40
06/06/18	4590	6.50
13/06/18	3492	6.20

Caustic dosing:

During the period from 27th April 2018, when the BioCat+2™ dosing commenced, until the meeting on 8th August 2018, it was reported by Darren McCabe, Production and Projects Manager for Bay Tree, that the usage of Causdeta had reduced.

This was from an average of around 11 litres per week, before BioCat+2™ was introduced, to an average of around 4 litres per week.

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Summary:

The dosing of BioCat+2™ appears to have produced a positive effect in overall reduction of COD values, increasing the CFU from 10^3 up to 10^7 . Additionally, the requirement for adding caustic to ensure pH compliance has drastically reduced.

*The sample collected by SWW on 09/05/18 was unexpectedly high.

Bay Tree and Ecoton were able to investigate and it was found that an unusual, high in COD, spillage into the waste stream had occurred.

Measures were put in place by Bay Tree to prevent repetition of this event. It was reported, by Darren McCabe, that some 'fatbergs' were found in the interceptor on 16th July. It appeared that this was 'old fat' that had been eroded by the increased biological activity stimulated by the Biocat+2™ (see picture below).

Continued improvement:

Monitoring of the effluent will continue and auto-dosing of caustic is currently being investigated prior to the anticipated trial.

Case Study Report compiled by: Ian Parry.

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Picture of 'fatberg' released by BioCat+2™ activity

