DAF SLUDGE REMOVAL REDUCED BY 40% and SUBSTANTIAL REDUCTIONS IN COD at

DAIRY MILK PROCESSOR IN UK- XCELBIO DOSING EVALUATION

Background

Ian Perry, MD of Ecoton Ltd. in general discussions with Mark Carter, M.D. of Carter Environmental Ltd. (CEL) was made aware of one of CEL's clients higher than acceptable COD values found in sampling their effluent discharge. Additionally, there was an unsurprising desire to reduce the number of DAF sludge tanker collections.
A site visit was arranged to familiarise with the site and personnel and promote the anticipated benefits of dosing Xcelbio. Locate a dosing point suitable for the introduction of Xcelbio, check the availability of mains power and assess access for installation and servicing requirements.
The site has a network where the effluent is collected in interceptor pits and pumped to a balance tank via a rundown screen. From the balance tank the effluent is PH balanced and pumped to a DAF unit.
Effluent samples are collected at several locations daily. The data gathered is used to assess load to the plant, DAF efficiency and compliance with Trade Effluent consent limits.

Objective

To reduce the Chemical Oxygen Demand (COD) and therefore produce a reduction in Trade Effluent Charges.
The levels of Suspended Solids (SS) in the effluent stream, after the DAF treatment, are very low and the effluent regularly appears very clear. Therefore, very little reduction in SS could be expected. The DAF system is very efficient in removing suspended solids, but the COD values are produced by the presence of sugars in solution in the discharge effluent.
In addition, it was hoped that a reduction in DAF sludge tanker collections could be achieved.

Methodology

A suitable location in the network was identified. This was not as far upstream as would be preferred but best suited for power supply and dosing requirements. The dosing is into the tank below the rundown screen. This allows a potential 12-18 hours of retention within the effluent treatment system
The Xcelbio is dosed every day, at calculated intervals, into the wastestream from a 150-litre container, topped up as required by site operatives.
Samples were collected by Ecoton Ltd., for analysis using agar dip slides to assess the levels of viable bacteria Colony Forming Units (CFU's).

For sales and technical enquiries contact: infoxcelbio@gmail.com

DAIRY MILK PROCESSOR IN UK-
XCELBIO DOSING EVALUATION

KPI's

The principle KPI was to achieve a consistent reduction in COD and the secondary objective was to achieve reduction in the frequency of DAF sludge tanker collections. Ecoton Ltd resources were made available for regular assessment visits and, if necessary, emergency callouts. Dosing into the rundown screen tank commenced on June 27th, 2019.

Results

Reduction in COD appeared to be minimal for the first 4-6 weeks and the dosing rate of Xcelbio was increased to 'encourage' reduction. However, it was noted that DAF sludge reduction seemed to have started to occur very early in the trial.
The COD sample results started to decrease after the increase of the dosing protocol.
The DAF sludge reduction continued at an extremely encouraging rate.
Cleaning requirements decreased as the locations in the effluent stream, which previously required diligent cleaning, appeared to harbour a much-reduced sticky fat content.

Summary

The continuous, gradual overall reduction in COD results demonstrate the benefits of long-term dosing of Xcelbio into a wastestream, with recognised and established effluent treatment equipment and processes. The reduction in the COD values indicate that the archaea, in the Xcelbio, combined with indigenous bacteria and digested the sugars that are in solution.
At the time of compiling this report COD reduction was in excess of 30%.
The number of tanker collections in May, the month before installation, was 19 and there were 18 collections in June. By September (three months into dosing) the number of tanker collections had reduced to 11.
This seemed extraordinary, at first, but after further assessment of effluent process system it was concluded that the reduction of sludge was mainly occurring in the sludge silo. At commencement of the trial there was 1.6 days retention in the silo. Once the number of collections for September was collated the retention time in the silo had become 2.72 days. This represents a reduction in sludge leaving the site in excess of 6 tons per day. Consequently, there are considerable sustained savings in sludge removal.

Compiled by:
Ian Perry
Technical Consultant for Ecoton Ltd.
and Xcelbio Ltd
15th November 2019.

Natural solutions for man-made problems

For sales and technical enquiries contact: infoxcelbio@gmail.com