

## Type of waste:

Organic solids/sludge

## Client/ Location:

Dubai UAE (2015)

## The project:

Spread over an area of 1.02 million square feet, the 515,000 - square foot facility, currently employing 555 people, specialises in the manufacturing, canning and packaging of branded products. Items include powder milk, chocolate and bottled water. The Middle East has been identified as a region of tremendous growth potential for the client, and expanding their operation to meet growing market demands also requires sufficient provisions regarding their environmental impact, specifically their waste management.



## Objectives:

The aim of the trial was to improve the following areas related to onsite waste processing and disposal:

- Digest organic waste in an XO unit, significantly reducing mass and volume, and leaving a clean output of material.
- Avoid the use of chemicals hazardous to health or the environment.
- Adhere to the environmental sustainability directives and operational targets implemented by the client.
- Eliminate noxious odours and airborne pollutants.
- Introduce a system that is fast and efficient at reducing the water content of residual material below 10% humidity.

## XO trial log sheet:

Date	Time	Input of waste (kg)	Outlet from XO (kg)	Comments
21/02/2015	9:00am	100	—	Bacteria and nutrient added.
22/02/2015	9:00am	350	—	Bacteria and nutrient added & temperature settings modified
23/02/2015	9:00am	200	—	Bacteria and nutrient added
24/02/2015	9:00am	250	—	Bacteria and nutrient added
25/02/2015	9:00am	400	—	Bacteria and nutrient added
26/02/2015	9:00am	400	—	Bacteria and nutrient added
27/02/2015	—	—	—	Power disruption
28/02/2015	9:00am	200	—	Normal operation
01/03/2015	—	—	—	ETP sludge not available
02/03/2015	9:00am	450	—	Balance available sludge placed in XO
<b>Total</b>		<b>2350.00</b>	<b>186.00</b>	

## Implementation:

A site wide survey was conducted prior to the Advetec XO installation. During this evaluation, samples were collected and analysed by Advetec's laboratories to assess expected digestion rates. An XO unit was installed on the grounds of the factory and containers full of waste were brought to the unit, which was then weighed and loaded into the machine. The table on the left is information obtained our team which monitored the machine with staff over the 10-day trial. period.

## Results:

The results of the trial show that 2350kg of influent waste was digested to 186kg of output. This outlet value was determined after weighing the digestate remaining in the XO at the end of the trial period. This level of waste reduction is equivalent to a 92% reduction of the original mass. This reduction percentage would increase if the machine ran for a longer time frame as the bacterial colonies in the biomass become more established. The power requirement for the machine would also decrease, as the exothermic reaction produces heat and decreases the energy requirement.

## Summary:

The trial period demonstrated that the Advetec XO reactor could effectively reduce the sludge waste produced by the client, as it achieved volume reduction rates greater than 90% within 72 hours. This shows that the XO reactor is successfully performing and has a significant impact on the environment, as the machine will prevent large volumes of waste going to landfill or incineration. **The client subsequently purchased an Advetec XO which was installed in 2016.**