syntekenvironmental
industrial wastewater treatment and reuse

# CASE STUDY

# Hatchery Waste

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# Industry application:
## Poultry and Egg production

The poultry industry produces eggs and meat for consumption as food products, a key step in the production of poultry are hatcheries. Hatcheries are where the incubation and hatching of eggs takes place. It is a precise and sensitive process. Fluctuation in temperature, humidity and airflow can have a significant impact on the effectiveness of the hatching process and the quality of the chick produced.

Broken shell from the hatched chicks and any mortalities that may occur require disposal. Waste is placed into bins and disposed of to landfill. Due to the foul odour and possible pathogens present it can be difficult and expensive to dispose of.

# Problems that need to be solved

As the waste breaks down it produces a very foul odour, it is expensive and at times difficult to dispose of.

BIO CONVERSION ecosynergy

# What is the Ultraverte® Process?

The Ultraverte® bioconversion process is an effective in substantial reductions in volume and mass loadings of solid waste whilst also achieving substantial reductions in contamination levels. The reductions in contamination levels often result in re-classification of the waste, translating into large reductions in disposal costs due to 2 main factors of volume reduction and disposal cost per tonne reductions.

The biological based process differs from other thermo process by elevating the speed of biodegradation utilising the Ultraverte® bacteria in digesting of specifically targeted waste. The end product is water/steam, inert solids and inert biogases. The reaction time usually varies from 6 hours to 24 hours depending on waste type and concentration.

Pathogens present in the sludge are destroyed during the Ultraverte® process. Where the sludge contains levels of toxic materials such as high hydrocarbon content or organic chemicals as the organic material is converted to CO2 during the process. During the conversion process offensive odours are greatly reduced or eliminated and the weight can be reduced by over 75%.

Ultraverte™

## What was done

Waste was provided for conversion, a mix of broken shell and deceased hatchlings. The Sample was converted using the Ultraverte bioconversion process. A small amount of Millrun was used as dry media to provide substrate for microbial growth as well as regulate the moisture and texture of the material being converted. The conversion was run for 16 hours.

## What were the outcomes

Bioconcersion broke down the egg shell and chick carcasses so that no chicken remains were left, only a dry powder, as can be seen in the pictures below.

(a) Raw hatchery waste

(a) Converted hatchery waste

## Volume/mass reduction

After 16 hours conversion the converted material was dry with no odour, mass had decreased by 26.1%.

The converted material was a dry, odourless powder with broken egg shell visible but no chicken remains present. The feed pellets added had also broken down and were not visible. Addition of more moisture to the conversion may have led to further reduction in mass.

## Stabilisation

After conversion the material as fully stabilised meaning it does not breakdown and generate foul odours, does not grow mould or propagate pathogens.

## Odor reduction

The converted material had no odour. Some raw sample was left for a day and produced a strong foul odour, the converted hatchery waste however maintained no odour indefinitely.

## Operation cost reduction

A 26% reduction in waste mass requiring disposal generated a direct saving, in addition to this the improvement in stability and odour makes the material easier to cheaper to dispose of. Dependent on testing there are also re-use opportunities for the converted material.


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