



Anaergia
4 Spencer Court
Howard Road
Eaton Socon
St Neots
Cambs.
PE19 8ET

Inspection Date 7th May 2021

REF: D2 Tank, BIODYNAMICS, Colwick

To whom it may concern,

Further to the visual, non-destructive internal inspection of the primary structure that forms D2 tank I can confirm that the condition of the 2 elements as listed below are of a structurally sound and as designed condition without the requirement for any attention:

1. In-situ cast slab
2. In-situ cast ring beam

This also includes the central thickening plinth that supports the (now removed) central column.

The Pre-cast concrete (PCC) walls measuring 6m in height contained a cast-in HDPE liner with a extrusion welded seam connecting adjoining panels. This was limited to the top 1m of the tank and most likely have been limited to the top 1m as this would have been the designated 'gas zone'.

In the region of between 500mm to 1m below this liner shows a build up of Struvite on the PCC wall panel. This is evident on all PCC wall panels right down to the in-situ ring beam. This was locally removed and the PCC wall panel was exposed. The concrete was in excellent condition. In the environment of a Digester such as this structure- the Struvite appears to be have formed a secondary layer of protection to the PCC concrete.

There are some localised areas where in the immediate area below the 'gas zone' some very minor degradation of the PCC wall panel had occurred. The most likely cause of this was the operating level of the tank and the 'gas zone' may have been well below the liner (ie below the designed gas zone). One could assume that the operating level was most likely to have been ~1.5-1.7m from the top of the wall- this is based on the observation of where the struvite build up generally begins. We would recommend that these areas are treated with a suitable epoxy coating or alternative where this has occurred. Indeed, if it is to be that the operating level of the tank is to be consistently at this level then protecting the concrete to the bottom of the gas zone should be considered.

A-Consult Limited

The Barn • Manor Business Park • East Drayton • Retford • DN22 0LG

Tel. +44 (0) 1777 249444 • Fax: +44 (0)1777 248542 • info@aconconsult.co.uk • www.aconsult.co.uk

Registered in England No. 05132425



At the top of some PCC walls (less than 10 areas) there is some obvious signs of degradation and erosion of the PCC wall top. This causation of this would most likely have been from gas leaks from the double membrane gas tight roof. The worst of these area was locally chiselled away at with hammer and bolster (during this inspection) and the softness to the PCC wall was limited only to the top 15-25mm. We would recommend that where this degradation has occurred all the loose concrete and laitance is removed and then reinstated with a suitable repair mortar.

Similarly, minor degradation had occurred on the outside of the PCC wall panel where biogas escaped to the atmosphere. This will require some minor repairs carrying out.

From the inspection, it was understood that a new gas membrane is to be installed with a new fixing pattern. The optimum fixing method would be a resin and rod type arrangement. Some of the post-drilling carried out previously was done too close to the inner face and subsequently spalling had occurred. It is likely that this would have contributed to some gas leaks.

Appended to this covering statement are some annotated photographs (REF: Appendix 1 Biodynamics D2) from the inspection with brief descriptions and/ or recommendation where applicable.

We do recommend that the tank internals are inspected at every drain down/ decommissioning (ideally not longer than 5 years). It is especially pleasing that the tank supplier has been contacted to inspect this tank internally.

If the minor repair works are carried out to the PCC wall panels, then it is highly unlikely that the primary structure would give any reason for concern. We do also recommend that a scheduled regime of extracted anchor inspections is put in place. A-Consult can confirm that this has not yet been carried out on any of the digester's constructed in 2014. This, along with the internal inspection carried out identifies the best practice approach that we would recommend for any of our structures in any environment.

Your Sincerely

Steve Houghton
Construction Manager BSc (Hons)

A-Consult Limited

The Barn • Manor Business Park • East Drayton • Retford • DN22 0LG

Tel. +44 (0) 1777 249444 • Fax: +44 (0)1777 248542 • info@aconult.co.uk • www.aconsult.co.uk

Registered in England No. 05132425