

Project Info

JUL

8

08 / 07 / 19

CC

CCH5™ Bulk Rolls

#

800m²

V

Vertical layers

G


Central Europe

H

EKOFLEX Ltd.

i

CC Hydro™ used to remediate the walls of a concrete digestate tank to prevent further leakage into the local environment



Completed CCH digestate tank remediation

In July 2019, CC Hydro™ was chosen to remediate a leaking concrete digestate tank at an undisclosed Biogas plant in Central Europe.

The tank had numerous cracks greater than 0.2mm and was leaking digestate into the local environment. As a result, the local environmental agency demanded for the tank to be remediated.

Other solutions were considered, in particular a two-stage chemical coating. However, the humidity in the concrete was higher than this coating allowed and so CCH5 (a 5mm thick variant of the CC Hydro material) was chosen for this reason.

CC Hydro™, a Geosynthetic Cementitious Composite Barrier (GCCB), is the world's first all-in-one armoured impermeable liner, created specifically for containment applications such as bund, lagoon and tank base lining.

CC Hydro™ (CCH) combines the concrete filled geotextile technology of Concrete Canvas® with a highly impermeable, chemically resistant geomembrane liner. The liner incorporates a hi-visibility welding strip which allows joints to be thermally welded with a double-track or triple-track air channel for on-site testing.

CCH removes the need for protective top cover, dramatically reducing installation times and simplifying logistics. For this project in particular, CCH would be considerably quicker to install, more consistent and therefore would greatly reduce the risk of any weak spots in the remediation layer.

Prior to installation, the tank was emptied, scraped clean and then pressure washed to remove the digestate. Any large cracks were then repaired using a mortar cement to eliminate any potential voids below the CCH material.

Due to the height of the tank, which stands at 9m, a mobile scaffolding tower was constructed within the tank and moved along the wall as the installation progressed. This allowed the welding device, a Leister Twinny S with triple track adaption, to be guided down the length of the wall by operators without a stop-start process.

At the top of the tank, the CCH5™ material was laid flat onto the 300mm wide tank wall and mechanically fixed using stainless steel bolts and washers. The CCH was again bolted to the tank wall at the base, and a concrete plinth measuring around 300mm high by 500mm wide was poured following completion of the installation to ensure good anchorage of the material.

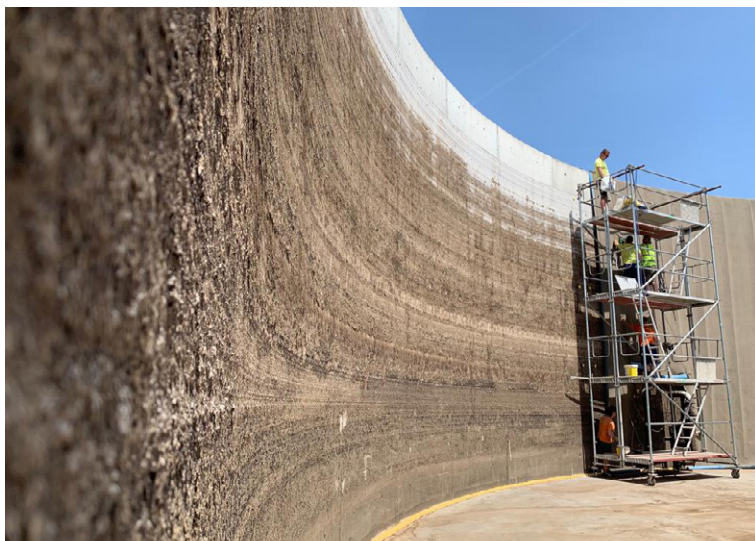
To ensure the CCH sat flush to the vertical wall, four Sika WP Discs were secured to the wall per square metre to which the CCH was then welded.



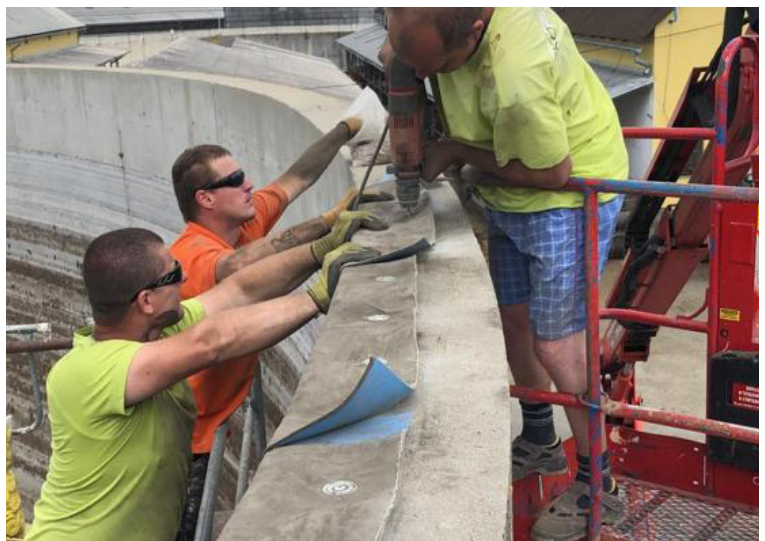
The digestate tank measured 9m high and had 300mm thick walls



Clearing digestate from walls following emptying of tank



Walls were degrading due to varying levels of stored leachate



Leading edges were secured to wall top with SS bolts



Installation was carried out using a portable scaffolding tower



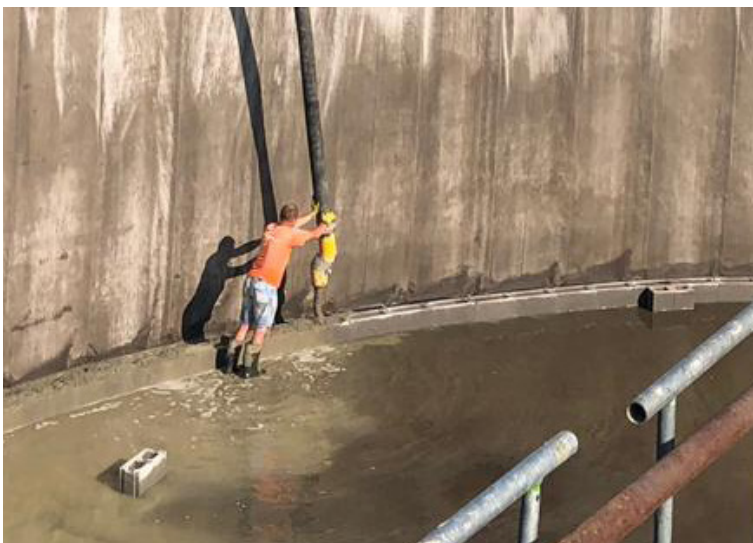
CCH was welded to Sika WP discs to ensure flush contact with the wall



Lengths of CCH were welded together using a Leister Twinnys S



Image title



Pouring the concrete curb



Completed installation



Tank back in use

Once lengths of CCH had been installed; they were hydrated. Due to the installation being vertical and the ambient temperatures around 35°C, the CCH was hydrated several times and two-hour intervals to ensure sufficient saturation.

A total of 800m² of CCH5™ were installed during this project. The material was delivered in bulk rolls to allow for batching to required lengths on site, reducing waste. The project was completed in 10 days by a team of eight from Ekoflex Ltd.

The project was deemed very successful due to the speed and ease of the installation, reducing the outage of the biogas plant, which produces 20.64MWh.

“CC Hydro™ [combined with our] knowledge from tunnel construction created a very innovative and rapid installation system with the potential to repair damaged concrete tanks in various industries.”

Marek Kvasnica
Director,
Ekoflex Ltd