

PermaFlux™ V8

Brignano

Anaerobic Digestate Thickening

Application: Anaerobic Digestate fed with Chicken Manure
Capacity: 8,000 gpd
Location: Brignano, Italy
Commissioned: 2019



Introduction and Challenge:

Chicken manure is a free, readily available source of nutrients for anaerobic digesters. The digestate ingests the feed and forms a mixture that is extremely high in COD, TSS, and nutrients. This wastewater is extremely difficult to treat but needs to be filtered to keep the biology healthy and maintain digester capacity. Additionally, the filtered liquid effluent needs to be free of suspended solids to allow sunlight to penetrate it since it will be used to grow algae. The solids need to be as concentrated as possible prior to being sent to downstream treatment and drying before being used to fertilize local fields.

Solution:

After a successful pilot study competing against numerous alternative technologies Thetis was awarded the contract to provide a PermaFlux™ system as part of an overall water treatment solution. The solution was comprised of multiple water treatment steps including an anaerobic digester, liquid-solid separation/thickening (PermaFlux™), and dewatering. PermaFlux™ was fed influent from the digester which it separated into clean permeate and concentrated sludge. PermaFlux concentrated the sludge above 4.5% total suspended solids prior to sending it to dewatering, reducing the demand on the dewatering process and increasing its efficiency. Once the sludge was dewatered it was sold back to the farmers as fertilizer. The nutrient rich permeate was discharged to ponds to aid in the growth of algae, or blended and used as irrigation in local crop fields. In both cases the nutrients in the water reduced the amount that was needed to be added, saving the customer money.

This process provided numerous revenue streams including: tipping fee for taking the waste manure from the farmers, producing the electricity by the digester, selling the fertilizer and irrigation water back to the farmers, and selling the algae grown from the ponds.