Industrial anaerobic digestion can take place in various configurations of an industrial plant. Such plants tend to vary in the extent to which each of the steps outlined above are separated from each other, and it is understood that there may be, in any plant, at least some overlap of the steps. One system available from Suez is a two phase anaerobic digestion system (2PAD) that separates the methanogenesis step from the previous steps by the use of a separate treatment tank or tanks for the methanogenesis step. Such a system may conveniently interpose an additional pasteurisation step between the hydrolysis/acidogenesis/acetogenesis steps and the methanogenesis step. Pasteurisation is achieved by heating the waste biomass and holding it at an elevated temperature. For example, biomass may be heated to 70°C or above and held at that temperature for at least one hour in one or more pasteurisation tanks. Pasteurisation has the advantage of killing pathogenic organisms and thereby reducing potential hazards of downstream material to human and animal health. In the UK, the State Veterinary Service requires a 70°C/1hr pasteurisation in order that the residual solids produced at the end of the process (sometimes called “digestate”, and also referred to herein as “solid residue”) can be legally spread onto agricultural land without constituting an animal health risk. If this is not done the residual material is categorised as hazardous waste and as such may be expensive and difficult to dispose of.

It has been found useful on many anaerobic digestion plants to use at least a portion of generated biogas to fuel a combined heat and power (CHP) generating engine. Heat from a CHP engine may conveniently and efficiently be used in a heat exchanger to raise the temperature of the biosolid sufficient for pasteurisation. Unused biogas can be purified and sold via a private connection or injected into the national gas network. Any excess electricity not used on site can be sold via a private connection or to the national electricity network.

Summary

In one aspect, the present disclosure refers to a waste processing plant comprising:

- a waste receiving apparatus for receiving biomass waste and processing it into a liquid stream or slurry stream before passing it to,
- one or more anaerobic hydrolysis tanks for hydrolysis, acidification and acetylation of the stream, before passing it to,
- a heat exchanger for raising the temperature of the stream to a pasteurisation temperature before holding it at the pasteurisation temperature in one or more pasteurisation tanks sufficient to ensure adequate pasteurisation before passing it to,
- one or more anaerobic methanogenesis tanks for anaerobic digestion of a portion of the stream into biogas, characterised in that,

the plant is configured so that at least a portion of the stream which is downstream of the hydrolysis tank(s) and upstream of the methanogenesis tank(s), and which has a temperature of above 68°C, is centrifuged to remove a portion of the oil contained therein.

In another aspect, the present disclosure refers to a method of processing biomass waste comprising the steps of:

- receiving the biomass waste and processing it into a liquid stream or slurry stream, then
- subjecting the stream to anaerobic hydrolysis, acidification and acetylation, then
- raising the temperature of the stream to a pasteurisation temperature by means of a heat exchanger, and holding it at the pasteurisation temperature in one or more pasteurisation tanks sufficient to ensure adequate pasteurisation, then
- anaerobically digesting the stream in one or more anaerobic methanogenesis tanks to biogas, characterised in that,

at least a portion of the stream which is downstream of the hydrolysis tank(s) and upstream of the methanogenesis tank(s), and which has a temperature of above 68°C, is centrifuged to remove a portion of the oil contained therein.