

Section 2

Commissioning of the Fre-energy Anaerobic Digester

Important information:

It is important that the operator is made aware that anaerobic digestion is a biological process. To maximise the biogas potential over the lifetime of the plant the anaerobic bacteria must be given time to colonise the system.

The AD process involves the digestion of biodegradable material (feedstock) which must be fed (loaded) into the digester regularly to establish a stable system. The quality and type of feedstock will determine the amount of biogas generated. Typically, the feedstock dry matter (DM) content should not exceed 10%. This may be increased to 12% after the bacterial colonies have formed. Addition quality parameters, such as starch, sugar and fat content, also have significant bearing on yield. For further information on feedstock contact Fre-energy Ltd.

It is often the assumption with operators who are not familiar with AD that the biogas generation process should start instantaneously from day one and the best chance of getting high gas yield is to intensely feed the digester from day one. THIS IS NOT THE CASE.

Commissioning the AD plant typically takes approximately three¹ feedstock retention times from when the digester has been fully loaded, reached optimum temperature and become biologically active, before there is enough biogas to fuel the CHP at full power. This growth-phase is the time required for the methane-generating bacteria to become established.

Daily inspection checks and routine maintenance on the AD plant are necessary to ensure that all equipment is in working order and is detailed within this manual. Failure to follow these guidelines may result in machinery breakdown and serious reduction of the bacterial activity in the digester. A checklist is referenced in this manual.

Sign to confirm information has been read and acknowledged

AD Owner

Name _____ Print Name _____

AD grid reference _____ Date _____

AD Operator

Name _____ Print Name _____

Position in Company _____ Date _____

¹ The three retention times, timeline, to achieve this process is a guideline only. Anaerobic Digestion is a biological process achieved by living organisms; therefore, it may be shorter or longer than 90 days for the bacterial community to fully grow before the %DM can be increased to reach maximum biogas yields. As a rule of thumb, 3 retention times at a loading rate of 3kg of volatile organic dry mater per m³ of the digester volume is widely accepted as the industry norm.