



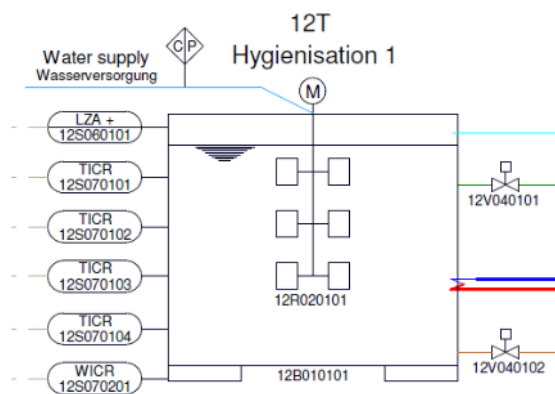
TECHNICAL DESCRIPTION OF THE PASTEURISING PROCESS “3 x 5m³ PREMIUM”

The pasteuriser unit used at the Food Waste AD Site in Cardigan consists of 3 tanks with a volume of 5m³ each. These tanks can be fed either by the primary or the secondary digester via a rotary lobe pump located in the technical container. After the pasteurisation process is completed, the digestate is pumped into the storage tank by another rotary lobe pump. Per standard each tank runs on a 4.5-hour batch cycle unless a different mode is required.

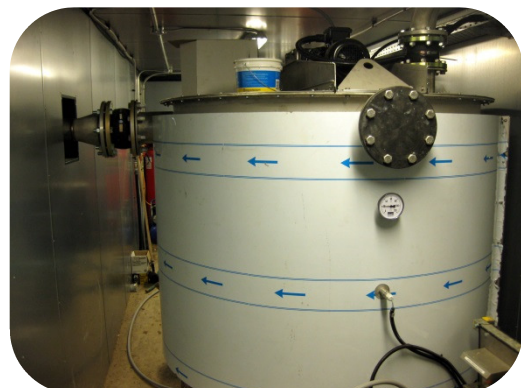
A batch starts with the filling of a 5m³ tank via the pump in the technical container. That process takes less than half an hour. To control the filling process, the weight of the tank is measured by weighing cells. To avoid overflowing, a level sensor is installed as well. After the tank is filled completely, a heating pump transfers all the surplus heat from the heating manifold (fed by CHP) into the tank. A hot flow temperature level of 85°C is expected for heating up the digestate. The temperature in the pasteuriser tank is measured by four temperature sensors on different levels. The time for heating up the digestate to 70°C is expected to be less than 2 hours. After all temperature sensors show a temperature of more than 70°C, a timer starts counting down one hour in order to meet the EU regulations. During that hour a mixer ensures an equal temperature of the digestate at any position in the tank. Another rotary lobe pump, especially made to pump hot liquids, pumps the pasteurised digestate into the storage tank. That last step again takes less than an hour. The temperature- and weight- curves of every batch are monitored and recorded on our main process control and can be extracted directly by USB or remotely via an internet connection. As a result one tank at 5 batches a day with a duration of approximately 4.5 hours per batch give a pasteurisation capacity of 25m³ (24m³ proposed) per day. With three tanks a total volume of 72m³ or roughly 72t per day can be achieved.

As a standard the pasteuriser unit comes with a macerator to ensure that the digestate contains no particle sizes above 12mm. At this particular case, the maceration is installed inline the feed pipes before the substrate enters the digester. By installing the macerators that way, synergy effects can be used to support degradation processes.

Please see technical specification copied from proposal on the next page.



P&I D of one of the three Pasteuriser Tanks



One of three Pasteuriser Tanks during installation

Pasteurisation Unit 3x 24 m³/d - Premium

Pasteurisation Unit with a capacity of 3x 24m³/d

Connections:

1x Filling

1x Extraction

1x Ventilation

Tanks

Amount: 3 pcs.

Material: stainless steel

Volume: 3x 5m³

Inside Diameter: 1600mm

Outside Diameter: 1800 mm incl. heat bags and insulation

Height: 3800mm

Temperature measured points: 4

Removable Lid

incl. agitator, capacity: 3,0 kW / 400V / 50 Hz / IP54

Weighting system

Amount: 3 pcs. with each 3 measured points

incl. evaluation unit

- Pneumatic Valve System

- Pumping Technology

Direction: From pasteurisation tanks to storage

Capacity: 11 kW / 400 V / 50Hz / IP54

Protection against dry running

MIP-shell technology

incl. 2x stainless steel pipe connections

incl. 2x pressure sensors for protection reasons

incl. 2x ball valves 2" for inspection purposes

incl. 2x rubber bellow joints

pipe dimension: DA160

max. pipe length: 100m

max. 8 bends 90°

Outer Dimensions

9m length x 2.5m width x 4m height

Important note:

Groundworks are to be carried out by the clients. The pasteurisation needs to be protected against climatic influences which can cause weight fluctuations and a reduced throughput.

To reach the capacity it is important to fulfil the following conditions by the customer:

- Input dry matter: max. 10 % DM

- fibre length: max. 12 mm

- Substrate input temperature: min. 10°C

- flow temperature: min. 85°C

The pasteurisation is only suitable for cat. 3 material (according to EU regulation 1774 / 2002).