

Document ref: B2.1 A – Process Description



Proposed ASL C502 Part 6.8 A (2) Installation at:

Edge Close Green Energy

Main Road, Flagg

Process Description

1. Raw material is transported to the machine from the Intermediate Plant and knackery processing and storage area.
2. Raw material enters the machine via the intake hopper and is then macerated; during these stages the material passes through a metal detector and metal is removed.
3. It is then pumped to a buffer tank where it is automatically checked for density and viscosity. These are corrected as necessary to ensure the correct product specification for processing.
4. The macerated raw material is then pumped by the material feed pump through an inline steel kettle that heats the slurry. The kettle uses live steam as the heating medium and precise control of the steam is maintained by the machine's programmable logic controller (PLC). The ensuing slurry is then further heated in an inline vessel.
 - NOTE - All material is pushed through the entire process by the material feed pump, and as such all the vessels and pipework have to be sealed in order for the process to operate.
5. From there the slurry material is pumped to the separation process that uses a specially designed three-phase decanter centrifuge that separates the slurry into solids, water waste and oil in a sealed process.
6. There are two centrifuges; one will operate at a time with the other on stand-by.
7. The solids are discharged via an enclosed auger screw conveyor to the protein dryer.
8. The protein dryer evaporates the residual moisture from the protein solids, and the evaporated moisture is condensed back into water in an air condenser and then mixed with the water removed by the centrifuge. The dried solid product (meat and bone meal) is discharged via a cooling screw into a covered trailer within the building for dispatch for use as a fuel elsewhere.
9. The dried non-condensable gases are ducted to the electricity generator air intake and burnt as combustion air in the generator engine.
10. The extracted animal oil from the centrifuge is then pumped to the oil storage tank, prior to use as fuel in an electricity generator engine.
11. The water from the centrifuge is pumped to storage tanks prior to being removed for approved disposal.

12. The flow rates, temperatures and times of the entire process are recorded continuously on the main control PLC using sensors in the machine to ensure compliance with regulations.
13. The PLC also uses the sensors within the machine to maintain product quality and efficient running.
14. The PLC incorporates process start and stop programs as well as monitoring the performance of the centrifuge and separator.
15. The process start program brings the machine up to working temperature and starts the various components in sequence to check their operation.
16. The system stop program incorporates a cleaning sequence that makes sure the machine is available for startup when necessary with no operator involvement in cleaning.
17. The PLC uses a waterproof touch screen to provide the operator interface and information on operation.
18. The machine is designed to process animal by-products in compliance with the EU Animal By-Products Regulations 1069/2009.