

Section 7

Trouble Shooting

7.1 ICP

When monitoring the loading, unloading and mixing of feed and digestate, occasionally the Hz figure is not visible even though the amps are showing. This would indicate that there is a blockage in the system which is being used.

Hz depicts the speed of the motor

LOAD PUMP
RUNNING FORWARD
13.00Hz **10.4A**

Amps depicts the power supply to the motor

Depending on the system, the pump will need reversing either from the ICP or manually at the pump. In some cases, a pipe or pump will have to be dismantled.

7.2 Pumps

If there is a blockage in the loading pump and operating in reverse does not fix the problem, there are a couple of things that can be done to help.

Safety – Before working on a pump ensure it is electrically isolated local to the pump. Remember pumps can start under remote control. It is good practise to also activate the local Emergency Stop Button

Safety

The pump may well be under pressure from, take care when opening any pumps, always assume that pressure is present

Note! Most of the pumps have visible pressure gauges attached to the sides that could have pressure present

We recommend that some training from Fre-energy is provided before attempting to open a pump; this work should not be attempted by untrained persons.

- There are two plates that can be removed either side of the auger section of the pump; this will allow access and possible removal of the obstruction.
- If this does not work, loosening the main pump will allow the obstruction to be reverse pumped.

7.3 CHP

Any CHP problems please contact 2G (supplier)

7.4 Power Failure Safety Procedure

In the event of a power cut/failure there are several steps that must be taken. This is necessary to prevent damage to the plant and maintain the plant in a safe condition.

- Short term disruption: if power is to be disrupted for less than 5 days

The most important requirement is to restore power to the gas blower pump in order to keep the gas dome inflated. As the gas holder loses its inflation the structural integrity of the roof system is compromised. This can therefore lead to damage if adverse weather conditions with high winds get hold of it. A three-phase generator would be required to re-establish a temporary power supply to the pump. Either a local qualified electrician or a Fre-energy engineer should be arranged to do this. Fre-energy can provide a duty standby system with a backup single phase air blower that can be connected to a standard single-phase generator to keep the gas holder inflated during a power failure.

- If the electrical supply is to be removed for longer than 5 days

Contact Fre-Energy for advice regarding restarting procedures and to provide provisions to re-establish power to the main control panel to keep the gas agitation and de-gritting arm moving. Fre-energy have provided controls for systems where the farm has a standby three phase supply where the control system can switch into a low power mode, this runs a reduced mixing and de-grit arm function to keep the plant alive.

It is important is the CHP (heat source is going to be offline) for an extended time (more than 1 day) that all efforts are made to maintain the heat in the digester.

Suspend all feeding. Loading of cold material represents the largest heat load on the digester

After 12 hours of no feeding reduce the mixing rate. Set the off time of the Gas mixing system to a minimum of 40 seconds.

Consult Fre-energy technical help for advice.

If the digester loses too much heat (falls below 35°C) it may be necessary to bring in external heat to re-start the process.

On resumption of thermal operation, DO NOT immediately massively feed the digester as this will drop the temperature further and may stop the process. Gently ramp up the feeding to allow the temperature to increase back up to 38°C.

If you know the heat source is going to be unavailable for a time, a larger time buffer can be achieved by ramping the digester temperature up to maximum (around 44°C) this will give you more time. If not, being loaded and the mixing reduced, heat losses can be less than 0.5°C per day. If you keep feeding it will be more than twice this.

Consult Fre-energy for advice. Having to re-heat the digester is both costly and time consuming.