



EFFLUENT TREATMENT PROCESS

The site is a bunded site, all washings from IBCs, drums and rainwater go into the first sump. From the first sump the effluent is pumped into the screen to try and catch any plastic and labels before the effluent is dropped into the second sump. From here it is pumped into the holding tanks, there is a 10,000 litre and a 30,000 litre tank. When running the effluent plant, we only take from the 30,000 litre tank as this has an automated mixer set up, the tank is dosed with sulphuric acid and caustic. The aim of this is to try and keep the PH between 4 and 5 PH.

When we start the effluent treatment process, it is set to run at 1 cube per hour until we have the correct split, once we have the correct split it can be slowly increased to a maximum of 4 cube per hour, as long as it keeps the split. The effluent split will dictate how fast the treatment process can go.

Once the treatment has started it goes into the first compartment of the DAF plant. this has a mixer in the water and is dosed with Poly Aluminium Chloride (PAC) this breaks down the effluent, it is then dosed with caustic if needed to bring the PH down to around 7PH. From this compartment it then free flows into the second compartment that also has a mixer, this compartment is dosed with flock to get the effluent to split. The effluent will not split properly if the PH is too far out from 7 PH.

The effluent then free flows to the main DAF tank, where it is injected with white water, this allows the sludge to rise to the top of the DAF tank, the sludge is then scrapped off automatically by the scrapers on the DAF plant. The sludge is scrapped into the end compartment at the front of the DAF tank. From there it is sucked out via an air diaphragm pump into the sludge press. Once in the sludge press the water is pressed out. The sludge press is set to 4 bar and the diaphragm pumps in at 4.5 bar, which helps to press the water out of the sludge, when the sludge press is full, using the hydraulic pump fitted to the press we push the pressure up to 4.5 bar to squeeze as much water out of the sludge as we can. Turning the sludge into a cake.

The treated effluent in the main DAF free flows out the back of the DAF into a 600L IBC. The IBC has a submersible pump with a float switch. The effluent is then pumped into a 1800 litre tank. This tank is fitted with 2 float switches 1 low 1 high, once the lever reaches the high level float its is pumped out via an external pump, this is then pumped into the carbon filter tank. The carbon filter tank has at the bottom of the tank of 750kg of pea gravel and 2 tonne of carbon on top of that. The effluent is pumped in from the top of the tank allowing the effluent to go through the carbon removing things like toluene and xylene, the effluent then flows to the bottom of the tank through the gravel and pumped out from the bottom of the carbon tank to the V notch through the mag flow meter. A record is kept for what volumes, discharged, date, time etc. Once the effluent is in the v



notch the PH is recorded and samples pumped into the refrigerated unit for the previous 24 hour sample for Yorkshire water.

If there is an issue with any part of the treatment, we have pipes set up so we can drop the effluent back in the sumps to start the whole procedure again. If a problem with the DAF treatment the panel will trip out stopping the treatment, an audible alarm sounds to alert the operator of an issue and an email is sent to myself and the Works Manager to notify us of an issue.