TRADEBE

BAT for Boiler use for VOC Destruction

There is no change to the principle in operation of the VOC abatement system allowed under current Permit. Design intent is to apply and use an appropriate combination of the technologies outlined in Waste Treatment BREF BAT 47.

- Condensation
- Wet scrubbing
- Recirculation of process off-gas in a steam boiler

The undertaking of distillation employs condensation as key process step. S4 project includes improvements to chiller capabilities which will improve vent condensation performance across all plants including S4.

Site containment network ensures all VOCs from plants and storage are naturally aspirated through our wet scrubber.

> This gas stream will then be drawn by means of a fan to the burner system on the plant steam boilers. Detail in drawing A113.P.D.001 Rev02 PFD.

VOC Injection to Steam Boilers.

Basis of Safety in design is to maintain vapour mix in the line to boilers below the Lower Explosive Limit (<20% LEL) at all times by means of dilution in air. To accomplish this, an LEL analyser will be employed in conjunction with a dilution valve that mixes the VOC with fresh air. System has been designed by our specialist consultant to cope with maximum projected loadings from all process activities. Worse case scenarios have been considered at design stage.

The system has been sized to cope with the highest instantaneous emission and stack flows seen from previous monitoring rounds plus a conservative factor for the new plant installation. The system is designed to achieve <30mg/m3 TVOC.

The system has undergone a comprehensive Process Hazard Analysis involving independent HAZOP Lead, multidisciplinary team, relevant equipment providers and specialists.

As above, the system is designed to meet applicable BAT AELs and our specialist consultant Socotec have conducted an air quality impact assessment of releases of VOC from all three boilers at Hendon Dock including unit on VOC destruction duty. Study has been conducted assuming worst case conditions for the assessment.

We are aware of BAT 47 note on recirculation of process off-gases in a steam boilers and as such do not recover halogenated solvent products and do not intend to. Fuel for boilers has in place strict specification agreed with the Agency.

Monitoring will be aligned with frequencies outlined in BAT 8.

In the abnormal and highly unlikely event that the LEL value of the mixture surpasses 20%, the system will automatically redirect the mixture to a designated safe location (emergency relief point), Release from the emergency relief point have been modelled based on highest VOC load and lowest air volume (conservative worst case). Based on the desired stack height of 12m, the assessment indicates comfortable compliance with air quality standards (at residential locations) and workplace exposure limits (within and around the site boundary). In the event of emergency relief processing would cease on all Plants until normal operation is resumed

There remains the facility to redirect the waste gas stream post- scrubber to existing permitted release point A20 bypassing boiler. Air dispersion modelling for this release point conducted by Socotec shows full compliance with air quality standards.