Astell Bio

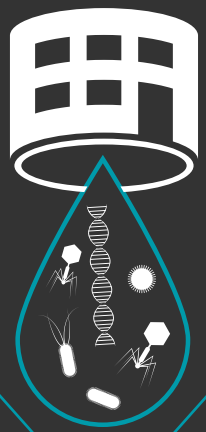
Thermal EDS (Effluent Decontamination Systems)

ELECTRICALLY POWERED WASTEWATER STERILISATION

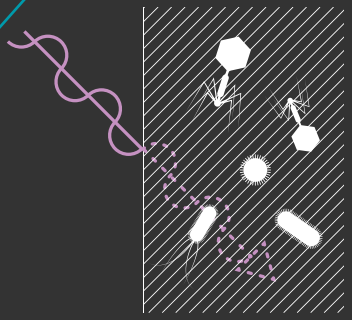
WHOLE FACILITY
LIQUID WASTE STERILISATION

The Options: **Effluent Biohazard Control**

Sites operating in biological sectors produce liquid waste contaminated with pathogens and genetic material, presenting a pathological hazard and promoting drug-resistant organisms. Wastewater sterilisation can reduce these risks.



Chemical sterilisation involves hazardous substances that pose risks to human and animal life. The chemicals require specialised equipment for storage and handling, and regular supply maintenance. Chemical-treated effluent can be highly toxic to wildlife if it overflows into waterways during its degradation period.



UV radiation sterilisation is effective for clear, particle-free liquids, but opaque liquids and solid particles can prevent UV rays from reaching pathogens, allowing biological hazards to escape sterilisation.

Thermal sterilisation can penetrate solid and liquid materials, regardless of opacity. It requires no chemicals, and does not add substances into wastewater.

Amongst the most proven, effective, and trustworthy methods of sterilisation, thermal sterilisation is easily validated, low-maintenance, and self-sustaining, requiring only the input of electricity and water.

Components and Layouts: **Thermal EDS**

Facilities produce biologically contaminated wastewater in different rates and volumes.

By varying the quantity of three key components, AstellBio produces Thermal EDS designed for a facilities individual effluent generation rate and volume. These three components are:

Kill Tank

This vessel sterilises liquid waste using heat.

Steam Generator

Converts electricity and water into pressurised steam. This steam provides heat to the Kill Tank

Holding Tank

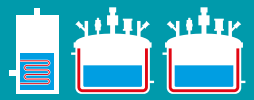
Stores liquid waste when the Kill Tank is full or processing waste

Different combinations of these core components provides each Thermal EDS with unique capabilities. Examples of these include:

1 x 1 Thermal EDS

1 x Kill Tank
1 x Holding Tank
1 x Steam Generator

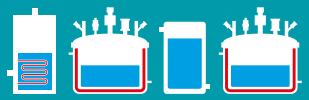
When processing, the Kill Tank is sealed. The Holding Tank allows for the capture effluent while the Kill Tank is active.



2 x 0 Thermal EDS

2 x Kill Tank
0 x Holding Tank
1 x Steam Generator

This system alternates the Kill Tank's roles between sterilising, and holding effluent while the other tank is active. The tanks then switch roles after the active Kill Tank empties.



2 x 1 Thermal EDS

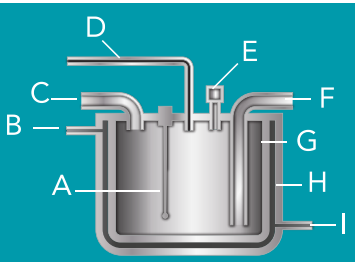
2 x Kill Tank
1 x Holding Tank
1 x Steam Generator

This system features two Kill Tanks and a Holding Tank, allowing for high levels of fluctuation in effluent input.

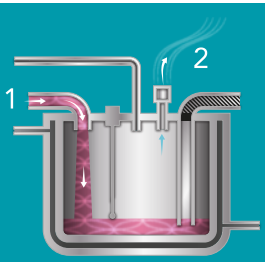
AstellBio produces Thermal Effluent Decontamination systems that are designed to sterilise liquid biological hazards up to Containment Level 3 (CL3) / BioSafety Level 3 (BSL3). These systems use pressurised steam to heat effluent to between 121°C and 135°C to automatically sterilise thousands of litres of liquid simultaneously, multiple times a day.

How it works: **The Thermal EDS Kill Tank**

The Kill Tank is site of effluent sterilisation within AstellBio Thermal Effluent Decontamination systems.

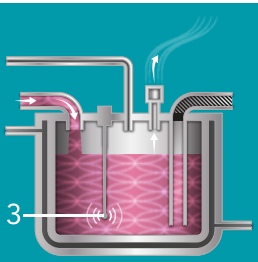


A Radar-Type Level Control Probe
B Jacket Input Pipe
C Effluent Input Pipe
D Compressed Air Input Pipe
E Expelled Air Output
F Effluent Output Pipe
G Kill Tank Vessel
H Kill Tank Jacket
I Jacket Output Pipe

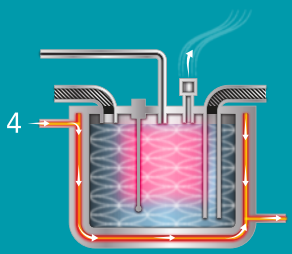


1 Effluent flows into the Kill Tank.

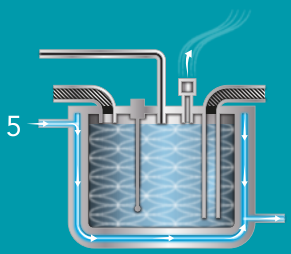
2 The air that was in the Kill Tank is displaced by the effluent, and forced out through the biologically retentive air filter.



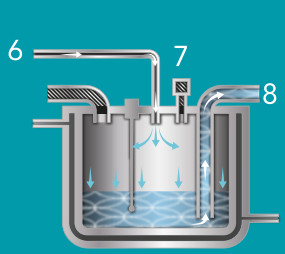
3 A radar-type system detects the fluid level within the tank. Kill Tank is full, the effluent input is stopped.



4 Steam at a predetermined pressure is passed through the Kill Tank jacket. This raises the temperature in the tank to a level where all biological matter is killed or deactivated. If fitted, an agitator stirs the effluent. This greatly improves the speed of heat distribution through the fluid.



5 Once the effluent has been sterilised, the jacket is flushed with cold water to reduce the temperature of the effluent to 60°C.



6 The Kill Tank is filled with compressed air.

7 The air vent is closed.

8 As the compressed air fills the Kill Tank, it forces the effluent out through the dip pipe.

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