Effluent Decontamination

EDS+™ System
Product Portfolio
Features of Suncombe Range of BioWaste Effluent Treatment Systems

Suncombe and BioWaste
Suncombe offer Batch BioWaste decontamination systems. Our systems are available for both thermal and thermochemical inactivation. Thermal inactivation can be performed using steam, super heated water or an established licensed electrical heating technique which minimises time and space.

- First System installed in 1990s
- 50+ years of design experience.
- Suitable for full validation.

BioWaste Levels
Bio-waste can be classified by the relative danger to the surrounding environment as biological safety levels (BSL). There are four safety levels. These are level 1 through level 4. Higher numbers indicate a greater risk to the external environment.

Risk Assessments
Suncombe Bio-Waste Inactivation Systems are individually subject to risk assessments throughout the design, development and build process.

Safety Integrity Level
The Critical processes within BioWaste systems should be designed to Safety Integrity Level as defined within IEC 61508. In cooperation with site personnel, a SIL assessment, calculation and report would be carried out on the critical processes.

Automation System
The Integrated Biosuite™ automation packages are designed to be operator friendly and simple to use whilst providing flexibility and optimisation. Reliable and robust, they have been developed over the last 10 years in co-ordination with clients operations staff, engineers and validation staff. They encompass all elements required to provide a controllable, repeatable automatic system.

A range of automation levels are available, starting from low level semi-automated systems, through low and mid level PLC and HMI versions, to advanced SCADA based systems. All levels are designed with the facilities required to provide a repeatable automated cycle.

Totally Integrated Automation
Pressure Relief
Complying with worldwide regulations, the pressure relief requirements are considered for each project individually. Detailed design activities provide the relieving requirements ranging from the removal of relief to double redundant bursting disc and pressure safety valves. Pressure relieving is also fitted to incoming services to ensure a positive pressure is always applied to the containment envelope.

Suncombe Process Development
Suncombe process engineers are qualified, experienced designers who are dedicated to serving the critical process sectors. With vast experience in BioWaste processing, we will apply leverage to all design methodologies, to ensure a smooth, reliable, robust Effluent Treatment project is completed.

Manufacturing Standards
- 316 stainless steel product contact parts, 304 non-contact parts, Hastelloy and Duplex Stainless
- ASME BPE, 3A, cGMP standards, fully drainable, crevice free.
- T.I.G. Welding; using an argon gas purge, using a computer controlled enclosed head orbital welding plant, carried out by technicians coded to EN 287, to Suncombe procedures coded to EN ISO 15609, tested to EN ISO 15614 Part 1.
- ASME BPE standard Pipework, fully annealed, chemistry to ASTM A-269, manufactured to ASTM A-270, and 3A Standard.

Dual Redundancy
Each section of the plant can be cleaned (CIP) and sterilized (SIP) with a double valve arrangement in place thereby ensuring operator safety and maintenance of containment. This facility provides secondary containment with the inter-valve space decontaminated on every cycle.

Instrumentation
High quality analytical and process instrumentation.

Process Valves
Sanitary and sterile process routing valves providing reliable, robust routing.

Maintainability
The schemes are designed to ensure 100% safe and straightforward maintenance and service operations.

Validation/ Documentation
The lifecycle approach is adopted (DQ, FDS, HDS, SDS, FAT, SAT, IQ & OQ) with validation being key to every stage of the development process, including Factory Acceptance Testing (FAT), SAT and Qualification.

Example Electronic Data
Systems provide electronic data of critical parameters for each cycle.

Thermal Mapping
Thermal mapping studies are carried out to provide thermal models of process cameras. Options for PTZ cameras for area monitoring.

System Equipment
Best quality sterile suitable equipment.
The EDS+™ system is used for Biological Hazardous Effluent Decontamination and Growth Media Sterilisation. It is a custom designed system incorporating one or two vessels, which are used for both collection and treatment. With capacities to suit the waste volume, the systems are supplied with controls and interlocking functionality to ensure containment is always maintained and there is always a positive release prior to discharge of treated waste.

Primarily used for thermal inactivation, they also offer a back-up or alternative chemical and thermochemical facility. Thermal inactivation can be performed using steam, super heated water or electricity.

**EDS+™ Advantages**
- **Regeneration**- using a two tank EDS+™ system allows thermal regeneration of up to 75% of energy
- **Dual Redundancy**- using a two tank EDS+™ system allows dual redundancy if one tank or system needs maintenance
- **pH Neutralisation**- using a one or two tank EDS+™ system provides pH Neutralisation
- **Anti-foam**- using a one or two tank EDS+™ system provides the controlled addition of anti-foam
- **Self CIP**- using a one or two tank EDS+™ system provides the ability for self CIP
- **Up-time**- using batch technology ensures a large % of uptime, compared to on-line technologies
- **Positive Release**- treated waste can be positively released manually or automatically
- **Validatable Records**- Electronic records are provided of all treatment parameters
- **Chemical Treatment**- The EDS+™ system can also be used for chemical treatment or thermochemical treatment
- **Containerised Versions**- The EDS+™ system can also be supplied pre-constructed inside a shipping container

**EDS+™ with CHO Cells, GMO and GMM**
Extensively used in biopharmaceutical processing, genetically modified Chinese hamster ovary (CHO) cells are classed as genetically modified microorganisms (GMM) and regulations call for waste containing Class 2 to 4 GMM to be inactivated prior to release. The new EDS+™ System addresses this requirement for GMM/GMO inactivation by providing multiple inactivation functions including variable temperature thermal kill, thermo-chemical kill and chemical kill.

**Design Features**
- Integral compressors and boilers
- Heat regeneration
- Electronic batch reports and records
- CIP and SIP Modules
- pH adjustment
- International design guidelines — cGMP, PED, ASME BPE, CE, GAMP, ISPE, FDA, 21CFR11, ATEX & EHEDG.
- Communication with other systems
- Validation package with supporting documentation
- Hastalloy and duplex stainless for handling chlorine
- Macerators for handling solids
- Bespoke design for your specific requirements
- Consultancy for commissioning and validation

**EDS+™ Effluent Decontamination System**

**EDS+™ One Tank Layout**

**EDS+™ Dual Redundant Two Tank Layout**

**EDS+™ One Tank Dimensions**

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<th>Treatment litres per day</th>
<th>Dimensions m</th>
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**EDS+™ Dual Redundant Two Tank Dimensions**

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