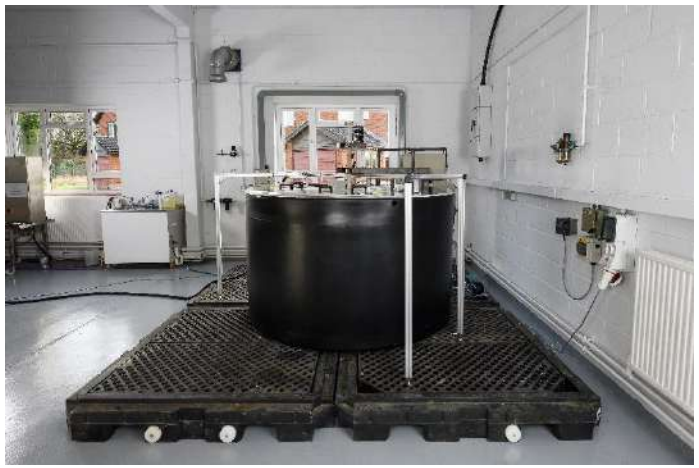
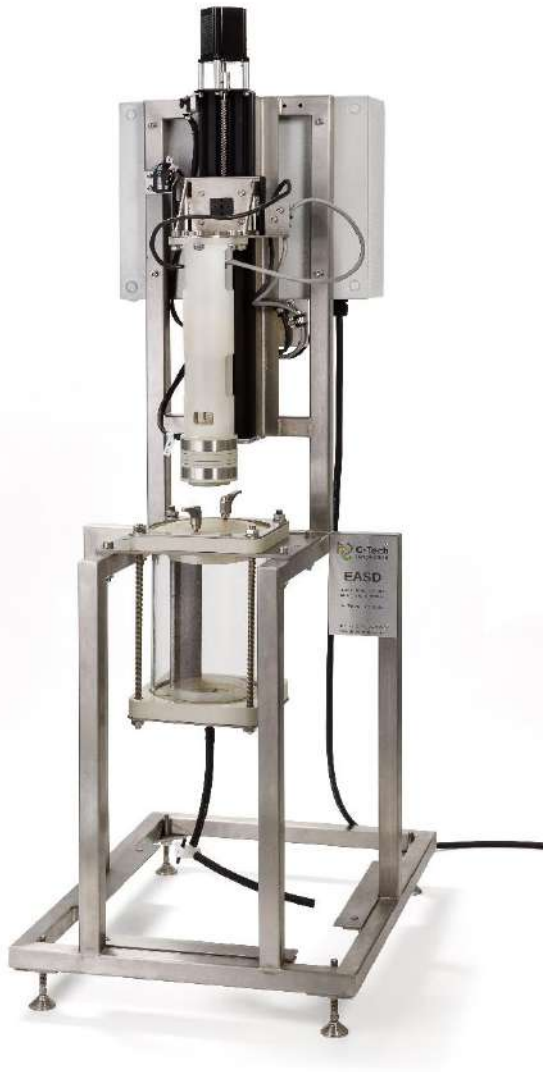
C-Tech INNOVATION





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Company Overview

C-Tech Innovation have been leading the way with patented nuclear decommissioning technologies. We have novel electrochemical approaches delivering a step change in the decommissioning of metals and organic matter.

The scope of our expertise and industry experience has led to us being able to recognise the decommissioning challenges of the nuclear industry. We are leaders in electrochemical solutions, and we offer a suite of electrochemical technologies addressing current and future issues for nuclear plants.

- ***EASD*** *(Electrolytically Assisted Surface Decontamination).*
  For the rapid decontamination of the surfaces of stainless-steel vessels and pipes.

  EASD has two applications to cope with different requirements:
  EASD Jet and EASD In-Pipe

- ***ELENDES*** *(Electrochemical Nuclear Decontamination)* For the removal of contaminated organic matter from aqueous effluent prior to downstream processing.

EASD JET

The purpose of the EASD jet is to decontaminate the internal surfaces of reactor vessels, including all pipework and structural elements of nuclear reactor vessels.

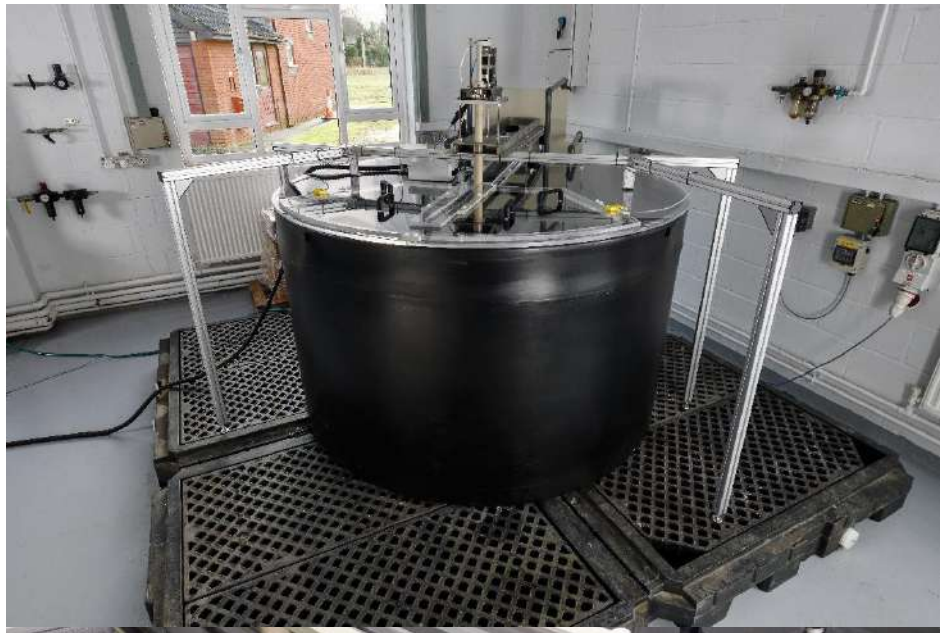
The EASD Jet system uses two jets, each supplied by its own nozzle and each with an electrode in the path of the liquid flow. Nozzles are mounted on a movable boom, together with the camera used to monitor the activity. Power for the electrolytic process comes from a remote power supply via cables on the boom. The nozzles are manoeuvrable so that all interior surfaces of the vessel can be reached with a liquid.

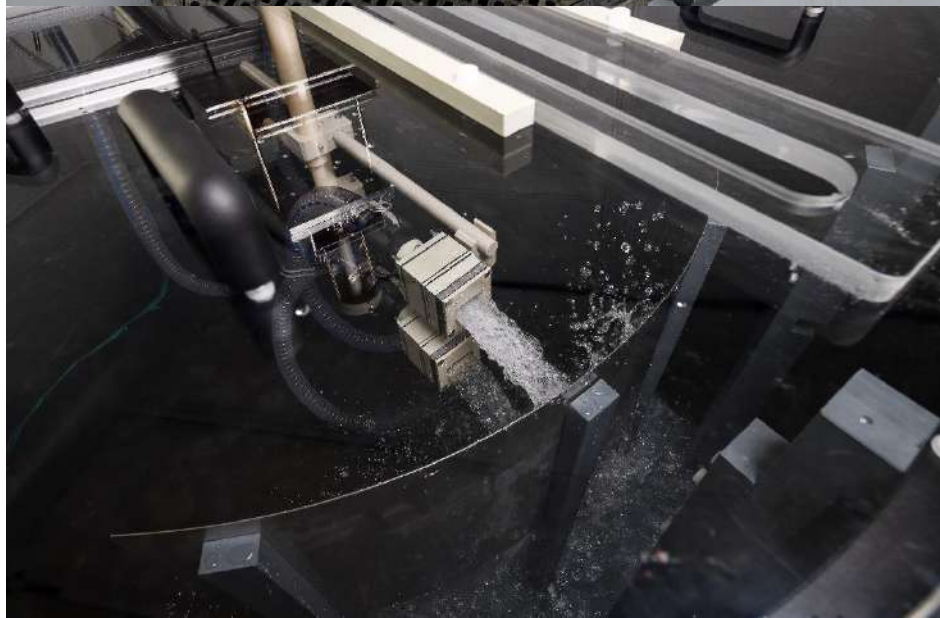
Two types of nozzles are used in the Jet system.

Surface nozzle: These nozzles give a simple jet profile and are used for treating the surfaces of the vessel, and for any internal fittings. The jets can be directed to treat closely adjacent patches of surface, or different parts of the interior.

Knife Jet: Used to treat otherwise inaccessible surfaces of pipes or brackets that are located adjacent to the vessel wall. The Knife Jet direct liquid flow radially inwards to flow around a pipe or bracket, so that the obscured reverse surfaces are treated. Adjustment of the electrical current path lengths ensures that the treatment profile around the circumference of the treated item is consistent.

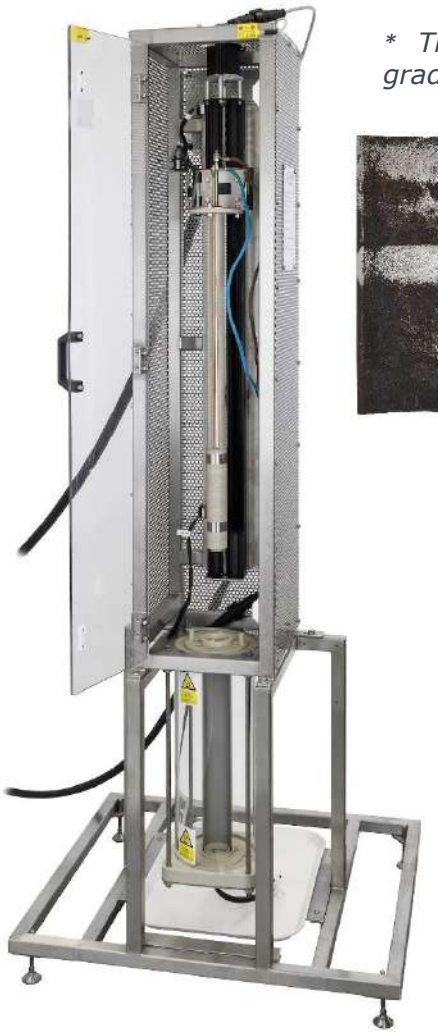
With our EASD Jet system a current flows from one nozzle counter-electrode, along the jet to the part of the vessel structure being treated, and back up the second jet and to the second nozzle counter-electrode in a continuous loop. Electrolytic action takes place at the interface between the liquid jet and the metallic substrate.



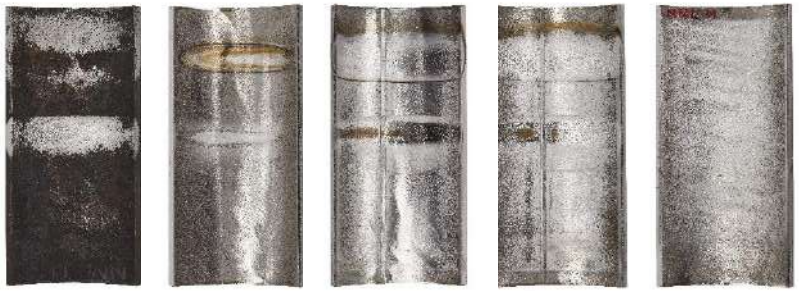


EASD IN-PIPE

The purpose is to decontaminate the internal surfaces of steel pipes that have become contaminated with radionuclides.



** The EASD in-pipe is applicable to all grades of stainless steel*



Our EASD In-Pipe system is a cost-effective decontamination method of a flexible design able to treat isolated plant areas commonly found on a nuclear plant. the system can be implemented during the nuclear site decommissioning phase. the technology gives the opportunity for controlled electrical and chemical conditions to enable metals to be decontaminated for free release. Meaning minimised waste volumes, which, in turn, provides significant cost savings.

The EASD in-pipe is designed in a way that allows for in-situ treatment of contaminated steel pipes, prior to dismantling and removal. The system has been purposely designed to cope with bends and irregularities of the pipework whilst keeping a consistent depth of surface removal. Our design allows for reduced gas build-up and any gas build-up that happens during the process is dispersed locally by means of a circulation of electrolyte around the treatment head. This method also avoids blinding of the electrodes and horizontal sections of pipe do not need to be completely flooded for the treatment to be applied.

Treatment Heads:
The treatment head dimensions are matched with the pipe dimensions, for example: *A 50 mm internal diameter pipe is treated using a 38 mm diameter treatment head, giving a 6 mm clearance all round between the pipe and the treatment head.* Depending on the nature of the pipework the treatment head may be longer or shorter.

Electrodes:
Two cylindrical counter-electrodes are mounted on the treatment head and separated from one another by an electrically insulating section. The concentricity of the counter-electrodes within the pipe is maintained by means of guide-springs which accommodate bends in the pipe and irregularities of the pipe interior.

ELENDES

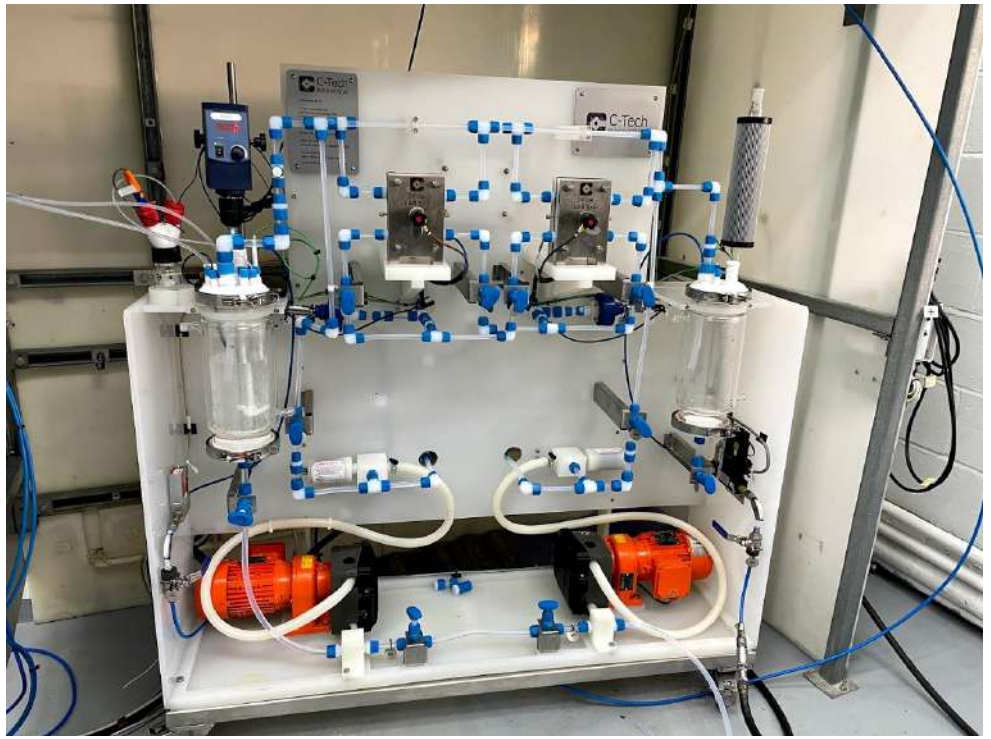
The purpose of ELENDES is to treat insoluble and immiscible organic matter which is contaminated with metallic radionuclides.

Our ELENDES technology transforms current techniques used in nuclear decontamination. An innovative electrochemical nuclear decontamination technology that safely oxidises the solvent at the end of its useable life.

The ELENDES™ system is able to oxidise a range of organic The ELENDES technology was developed for the electrochemical oxidation of insoluble organic material. This application of the technology allows for radioactively contaminated solutions that contain organic matter to be treated and made suitable for conventional downstream effluent treatment.

ELENDES removes the radioactive content from multiple batches of organic waste material and concentrate it into an acidic effluent which is then suitable for conventional downstream processing. Overall the process involves converting a material from something hazardous and expensive to store into a safe form that is easily disposed, this is a critical enabler for ***nuclear fuel recycle.***

ELENDES gives the ability to dispose of solvent safely and sustainably once it has reached the end of its usable life.



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