

# Case Study: Magnox FED Processing



## Innovative FED Solution and Collaborative Working for Bradwell

First of a kind, innovative and unique solution to facilitate fast and effective Problematic radioactive waste treatment



Magnox



LLW Repository Ltd

Tradebe Inutec, working in collaboration with Magnox and the Low Level Waste Repository (LLWR) removed the risk from the complex Fuel Element Debris (FED) radioactive waste at one of the UK's earliest nuclear sites with approximately two years of dissolution operations saved, representing £29M in taxpayer savings.

Bradwell FED is a radioactive waste from the cladding of fuel elements used in Magnox reactors. Waste streams containing high quantities of reactive metals, such as FED, are a long-standing radioactive waste management challenge for transport, storage, treatment, conditioning & pre-disposal safety.

Tradebe Inutec, Magnox and the LLWR provided a new management route for this radioactive waste, enabling disposal at the LLWR, and diverting suitable FED from dissolution to mitigate delay risk to Bradwell entering 'Care & Maintenance'.

Tradebe Inutec provided early and sustained engagement, establishing an integrated project team to go beyond the traditional waste owner / programme manager / supply-chain provider relationship.

A clear and shared understanding of the scope of work was developed, enabling the team to quickly and effectively address complex technical issues and safety case requirements whilst meeting challenging delivery targets.



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**Tradebe Inutec in collaboration with Magnox and the LLWR facilitated a first-of-a-kind route for FED to the LLWR which required both theoretical and operational expertise from our integrated project team, specialising in:**

- FED properties and radiological characterisation
- Radioactive materials transport
- Corrosion mechanisms of reactive metals
- High force compaction systems
- Modelling and R&D for hydrogen safety studies
- Co-packaging of wastes to reduce LLWR waste volumes
- Revision of operational safety cases for treatment, transport and disposal
- Disposal site Environmental Safety Case and permit compliance

The collaboration resulted in approximately 1,400 FED drums shipping from Bradwell, and the identification of new solutions and techniques to deal with Problematic radioactive waste more quickly and efficiently.

Magnox is now using the Bradwell FED project approach as a key component of its strategy to manage FED inventories at Sizewell and Oldbury.

Tradebe Inutec will use its FED experience and co-packaging approach to support sites across the UK in safely dealing with a range of other strategic and Problematic radioactive wastes.

#makingcomplexwastesimple

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