TRANSCEND

Transformative Science and Engineering for Nuclear Decommissioning

TRANSCEND is a collaborative research consortium of 11 universities and 8 industry partners. The £9.4million research programme comprises 40 projects which will address some of the key challenges within the areas of nuclear decommissioning and waste management.

Strategic Aims

The consortium's strategic aims in the area of decommissioning, immobilisation and management of nuclear waste are to:

- Carry out internationally leading science and engineering research
- Undertake fundamental and applied research that leads to innovative technology developments that can be applied in industry
- Develop new multi-disciplinary research and innovation partnerships between academic and industry researchers
- Train the next generation of UK researchers with relevant skills and experiences that can be applied in the sector
- Provide a focus for all stakeholders, including government, industry and academics, through which current and future research and innovation requirements can be discussed
- Provide a route for public understanding of research and development needs, opportunities and solutions

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@Transcend-epsrc

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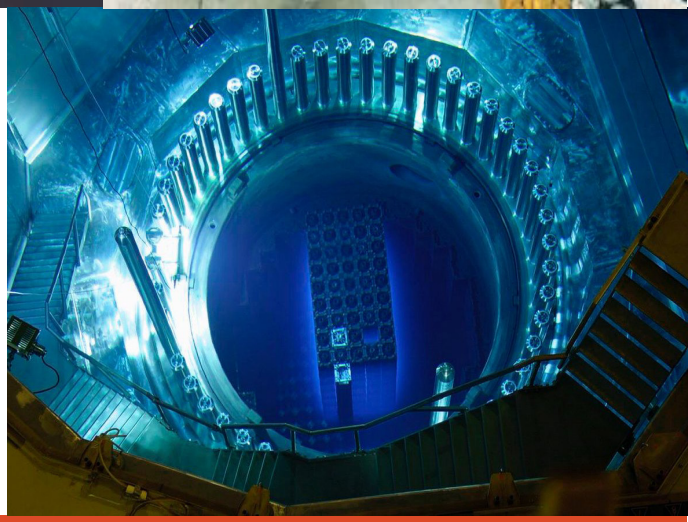

Engineering and Physical Sciences Research Council

Energy For a Low Carbon Future

This project has received funding from the EPSRC under grant agreement number EP/S01019X/1.

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Themes

Integrated Waste Management

The management of radioactive waste includes mobilisation, processing, packaging, storage, transport and final disposal. The research in this theme focuses on underpinning science and engineering in three areas of relevance to hazard reduction and decommissioning: removal of radionuclides from effluent; enhanced characterisation and modelling of the behaviour of sludges in the Sellafield ponds and silos; and development and evaluation of new wasteforms.

Site Decommissioning and Remediation

Decommissioning nuclear sites involves waste retrieval, decontamination, deconstruction and, where necessary, containment and/or remediation of the remaining structure and surrounding land. Critical to management of these processes is limiting radiation exposure for the workforce, restricting the spread of radionuclides in groundwater, surface water and airborne particulates, and minimising the volume of contaminated waste for disposal.

Spent Fuels

Spent nuclear fuel is a major concern for the UK as we have a large and complex inventory, due to the accumulation of waste from Magnox, AGR, PWR and prototype reactors. Retrieval and relocation operations for legacy fuels are imminent and any measurements or models that enhance our understanding of spent nuclear fuel evolution will mitigate the risks associated with fuel management and inform future decisions for long-term storage or disposal.

Nuclear Materials

The UK's civil inventory of nuclear materials contains significant stocks of separated Pu from the reprocessing of Magnox and AGR spent fuels. The preferred option for most of the 140t of Pu is re-use as mixed oxide fuel however, it will take >15 years to implement re-use, requiring that the Pu be kept in its current state for that period, i.e. as PuO_2 powder in inert steel storage cans at Sellafield. The aim of the research is to provide technical underpinning to ongoing option development for the UK civil Pu stockpile.

Imperial College London

Lancaster University

Queen's University Belfast

University of Birmingham

University of Bristol

University of Leeds

Manchester 1824 The University of Manchester

The University Of Sheffield.

University of Southampton

University of Strathclyde

University of Surrey

AWE

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LLW Repository Ltd

National Nuclear Laboratory

NDA

Radioactive Waste Management

Sellafield Ltd

TÜV SÜD Nuclear Technologies

UKRI Engineering and Physical Sciences Research Council

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