



## Pile Fuel Cladding Silo (PFCS) Project

Provision of temporary access to support Bechtel Cavendish Nuclear Solutions with a complex decommissioning challenge to safely retrieve and transfer hazardous waste to a new storage facility on-site.

Location: **Sellafield**

## Navigating Complexity with Precision at Sellafield

Having established ourselves as an integral part of Sellafield's high-hazard risk reduction programme strategy, Enigma continues to provide exceptional temporary works support on a range of complex projects across the Sellafield estate.

In 2015, Enigma was selected by Bechtel Cavendish Nuclear Solutions to support the Pile Fuel Cladding Silo (PFCS) project, deemed one of the most complex and difficult decommissioning challenges in the world by the Nuclear Decommissioning Authority (NDA). The project, located in one of Europe's most demanding radiological environments, required innovative design solutions that allowed Enigma's in-house design team to utilise state-of-the-art methods.



### Project Summary

Initially constructed in the 1950s, the Pile Fuel Cladding Silo concrete 'locked vault' structure was purposely designed to safely store used cladding peeled away from the reactor fuel rods, alongside other radioactive materials from military projects and power plants, as well as other hazardous debris. The 60ft tall Pile Fuel Cladding Silo structure containing over 3,200 cubic metres of intermediate-level waste across six internal compartments stopped receiving waste in the early 1970s.

Enigma's role was to support various temporary works requirements as the project team engineered solutions to access the top of the silo's storage compartments, while maintaining an airtight seal to mitigate the threat of a spontaneous fire within. For the first-time in 65-years, the project team planned to access the storage compartments and retrieve the waste by utilising remote-operated robotics. Once the waste was safely retrieved, it was to be securely packaged in specially designed stainless-steel box containers and transported to the Box Encapsulation Plant Product Store for final disposal. In August 2023, the project team successfully retrieved the first waste from the Pile Fuel Cladding Silo using a crane to reach into the silo, lower a robotic arm into the compartment and lift out and repackage the waste. The boxes of waste are then transferred to the Box Encapsulation Plant Product Store – Direct Import Facility (BEPPS-DIF), which is a new above-ground storage facility that has been specially constructed on the Sellafield site. Enigma also played a pivotal role in the delivery of the BEPPS-DIF project (see separate case study online).

The first retrievals represent a significant milestone in the decommissioning story at Sellafield and a step closer to reducing the UK's nuclear hazard.

### Value Engineering

The PFCS project posed intricate challenges that demanded innovative solutions and Enigma's internal teams worked diligently on-site at Sellafield and at the secondary Pile Fuel Cladding Silo site in Rosyth. Through early engagement with the various project stakeholders, Enigma's involvement supported increased certainty of achieving the programme and project milestones and targets. One way in which this was achieved was by mobilising Enigma's in-house Design Engineers, who worked meticulously to design temporary works around the Pile Fuel Cladding Silo mock-up and Pre-Assembled Units (PAUs) before they were transported to the Sellafield site. This strategic approach maximised efficiency during installation, demonstrating Enigma's commitment to adopting alternate solutions to achieve operational excellence.

### A Dynamic Partnership

Enigma's dedication to excellence has underpinned the enduring relationship with Bechtel Cavendish Nuclear Services, as we work together to create a clean and safe environment for future generations. Our support on the Pile Fuel Cladding Silo project was recently recognised following Bechtel Cavendish Nuclear Services receiving an award for 'Collaboration' from the British Energy Coast Business Cluster (BECBC). On receipt of the award, Wayne Mooney, BCNS Procurement Manager, celebrated the achievement and recognised Enigma's contribution to the project by announcing:

*"The BCNS PFCS team has won the BECBC Award for 'Collaboration' – a testament to the hard work of every individual who has contributed to our collective success.."*

*"We would like to recognise Enigma as a Company / Subcontractor for contributing massively to this success".*

Enigma's dedication, innovation, and collaborative spirit have undoubtedly left an indelible mark on the PFCS Project by supporting the clean-up and decommissioning of one of the most hazardous buildings on the Sellafield site.

### Head Office

Enigma Industrial Services Ltd  
Hawthorn House  
Woodlands Park  
Ashton Road  
Newton-le-Willows  
WA12 0HF

Tel: 0330 678 1199  
Email: [info@enigma-is.com](mailto:info@enigma-is.com)  
Web: [www.enigma-is.com](http://www.enigma-is.com)

